

# Draft Basic Assessment Report for the proposed Ormonde South development

Erven 1130 & 1131, Ormonde Ext 24 and Erven 962 & 963,  
Ormonde Ext 22 and Bloubos Spruit (Erf 1147)



February 2017



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

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### Kindly note that:

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

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### **DEPARTMENTAL DETAILS**

Gauteng Department of Agriculture and Rural Development  
Attention: Administrative Unit of the of the Environmental Affairs Branch  
P.O. Box 8769  
Johannesburg  
2000

Administrative Unit of the of the Environmental Affairs Branch  
Ground floor Diamond Building  
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377  
Department central telephone number: (011) 240 2500

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(For official use only)

<b>NEAS Reference Number:</b>						
<b>File Reference Number:</b>						
<b>Application Number:</b>						
<b>Date Received:</b>						

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

Not applicable

Is a closure plan applicable for this application and has it been included in this report?

**NO**

if not, state reasons for not including the closure plan.

Not applicable

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

**YES**

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

**YES**

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented?

**YES**

If no, why?

Not applicable

## SECTION A: ACTIVITY INFORMATION

### 1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

#### **Ormonde South Residential**

The subject property is situated north of the M1 highway and east of Nasrec Road. The southern boundary is next to the onramp from Nasrec Road to the M1 highway in Ormonde.

This environmental process is for the proposed development of a residential area. Several meetings with GDARD have been held to discuss the project and the wetland/watercourse that runs through the site.

It should be noted that the site is considered extremely degraded with alien and invasive plant species and illegal dumping taking place. The wetland (as a result of storm water from the M1 highway) has also been altered into a deep cut erosion channel. This is most likely due to the anthropogenic influence that results in the influx of water which created a highly eroded channel. To follow is some evidence of the current status of the site and the associated watercourse. This site is evidently disturbed and not in a good ecological state.

The proposed development would like to follow the development line (setback line if preferred) that is already followed by the existing developments:



The proposed development will not be within the delineated wetland or under the 1:100 year flood lines. It is not the intention of the developer to disturb the site. The developer identified a disturbed and vacant land with litter, illegal dumping and erosion in order to convert it to a development that will contribute to infill development and social upliftment. They will rather develop a disturbed site than a green fields site.

A meeting was held with the ward councillor of the area (two individuals that represent the surrounding residents were present at the meeting). During the meeting the ward councillor raised their concern regarding the vacant land. According to the ward councillor, the vacant site next to the river is a major problem in the area and they cannot deal with this uncontrolled land anymore. The area attracts vagrants, it is a local dumping site within some major litter dumps next to the freeway and many crimes and rapes already took place as a result of this dangerous open space area. The residents in the surrounding area will welcome a residential development that will turn more eyes onto the riverine area. Such a residential development will help to prevent crime and it will contribute to the upliftment of the area, only if the development is well planned and managed.

The residents raised certain concerns about the type of housing that they don't want in the area and they also queried the propose density. The ward councillors also raised concerns regarding the lack of services and the narrow roads in the area. Apparently, there is already water and sewer capacity problems and electricity is also a major issue. Apparently, the narrow roads are already congested during peak traffic times and higher residential densities will only give rise to roads that are more congested. It was requested that the TIA take the concerns of the surrounding residents into considerations. Certain suggestions for alternative accesses to the study area were also made during the meeting and the involved traffic engineers undertook to investigate the options as supplied.

It furthermore came to light that the golf course north of the site closed due to, amongst others, the illegal dumping and crime (such as burglary) in the surrounding area. The entire area, west of the golf course (next to the watercourse), has illegal dumping (see below). Open areas especially next to watercourses, as they provide a source of shelter, bathing and washing of clothes, are a major concern in this area.



On the proposed site:







This application for Environmental Authorisation is for the proposed residential development on Erven 1130 & 1131, Ormonde Ext 24 and Erven 962 & 963, Ormonde Ext 22. There will only be a sewer connection on a section of Erf 1147.

In the application submitted to GDARD it is indicated that the developer is applying for the following listed activities in terms of **Notice 1 and 3 (R983 and R985, 4 December 2014)**:

**Table 1: Listed Activities**

Indicate the number and date of the relevant Government Notice	Activity Number	Describe each listed activity as per the wording in the relevant listing notice
R. 983 December 2014	Listing Notice 1 Activity 9	The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (i) with an internal diameter of 0,36 metres or more; or (ii) ...-



		(a) ...; or (b) ...
R. 983 December 2014	Listing Notice 1 Activity 10	The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes (i) with an internal diameter of 0,36 metres or more; or  (ii) ...-  (a) ...; or  (b) ...
R,983 December 2014	Listing Notice 1 Activity 12	The development of- (i) canals exceeding 100 square metres in size; (ii) channels exceeding 100 square metres in size; (iii) bridges exceeding 100 square metres in size; (iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size; (v) weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size; (vi) bulk storm water outlet structures exceeding 100 square metres in size; (vii) marinas exceeding 100 square metres in size; (viii) jetties exceeding 100 square metres in size; (ix) slipways exceeding 100 square metres in size; (x) buildings exceeding 100 square metres in size; (xi) boardwalks exceeding 100 square metres in size; or (xii) infrastructure or structures with a physical footprint of 100 square metres or more;  where such development occurs- (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; -  excluding-

		<p>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such development occurs within an urban area; or</p> <p>(ee) where such development occurs within existing roads or road reserves.</p>
R,983 December 2014	Listing Notice 1 Activity 19	<p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from-</p> <ul style="list-style-type: none"> <li>(i) a watercourse;</li> <li>(ii) the seashore; or</li> <li>(iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater-</li> </ul> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving-</p> <ul style="list-style-type: none"> <li>(a) will occur behind a development setback;</li> <li>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or</li> <li>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.</li> </ul>
R,983 December 2014	Listing Notice 1 Activity 27	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-</p> <ul style="list-style-type: none"> <li>(i) the undertaking of a linear activity; or</li> <li>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</li> </ul>
R,985 December 2014	Listing Notice 3 Activity 4	<p>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>(c) In Gauteng:</p> <ul style="list-style-type: none"> <li>i. A protected area identified in terms of NEMPAA, excluding conservancies;</li> <li>ii. National Protected Area Expansion Strategy</li> </ul>

		<p>Focus Areas;</p> <ul style="list-style-type: none"> <li>iii. Gauteng Protected Area Expansion Priority Areas;</li> <li>iv. Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</li> <li>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</li> <li>vi. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority;</li> <li>vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas;</li> <li>viii. Important Bird and Biodiversity Area (IBA);</li> <li>ix. Sites or areas identified in terms of an International Convention;</li> <li>x. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the National Environmental Management: Protected Areas Act (Act No. 57 of 2003);</li> <li>xi. Sites designated as nature reserves within municipal SDFs; or</li> <li>xii. Sites zoned for a conservation or public open space or equivalent zoning.</li> </ul>
R,985 December 2014	Listing Notice 3 Activity 12	<p>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.</p> <p>(a) In Eastern Cape, Free State, Gauteng, Limpopo, North West and Western Cape provinces:</p> <ul style="list-style-type: none"> <li>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;</li> <li>ii. Within critical biodiversity areas identified in</li> </ul>

		<p>bioregional plans;</p> <p>iii. Within the littoral active zone or 100 metres inland from 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; or</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.</p>
R,985 December 2014	Listing Notice 3 Activity 14	<p>The development of-</p> <p>(i) canals exceeding 10 square metres in size ;</p> <p>(ii) channels exceeding 10 square metres in size;</p> <p>(iii) bridges exceeding 10 square metres in size;</p> <p>(iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size;</p> <p>(v) weirs, where the weir, including infrastructure and water surface area exceeds 10 square metres in size;</p> <p>(vi) bulk storm water outlet structures exceeding 10 square metres in size;</p> <p>(vii) marinas exceeding 10 square metres in size;</p> <p>(viii) jetties exceeding 10 square metres in size;</p> <p>(ix) slipways exceeding 10 square metres in size;</p> <p>(x) buildings exceeding 10 square metres in size;</p> <p>(xi) boardwalks exceeding 10 square metres in size; or</p> <p>(xii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs-</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>(b) In Gauteng:</p>

		<ul style="list-style-type: none"> <li>i. A protected area identified in terms of NEMPAA, excluding conservancies;</li> <li>ii. National Protected Area Expansion Strategy Focus Areas;</li> <li>iii. Gauteng Protected Area Expansion Priority Areas;</li> <li>iv. Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; -</li> <li>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</li> <li>vi. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority;</li> <li>vii. Sites or areas identified in terms of an International Convention</li> <li>viii. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the National Environmental Management: Protected Areas Act (Act No. 57 of 2003);</li> <li>ix. Sites designated as nature reserves within municipal SDFs; or</li> <li>x. Sites zoned for conservation or public open space or equivalent zoning.</li> </ul>
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Select the appropriate box

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

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

<b>YES</b> <b>X</b>	NO
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If yes, describe the legislation and the Competent Authority administering such legislation

There is a possibility of a Water Use License Application or General Authorisation Application that need to be submitted to the Department of Water and Sanitation as a wetland/watercourse traverses the site. The Department of Water and Sanitation will however need to confirm whether such application will be required and which process to be followed.

If yes, have you applied for the authorisation(s)?

YES	<b>NO</b> X
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If yes, have you received approval(s)? (attach in appropriate appendix)

YES	<b>NO</b> Not applicable
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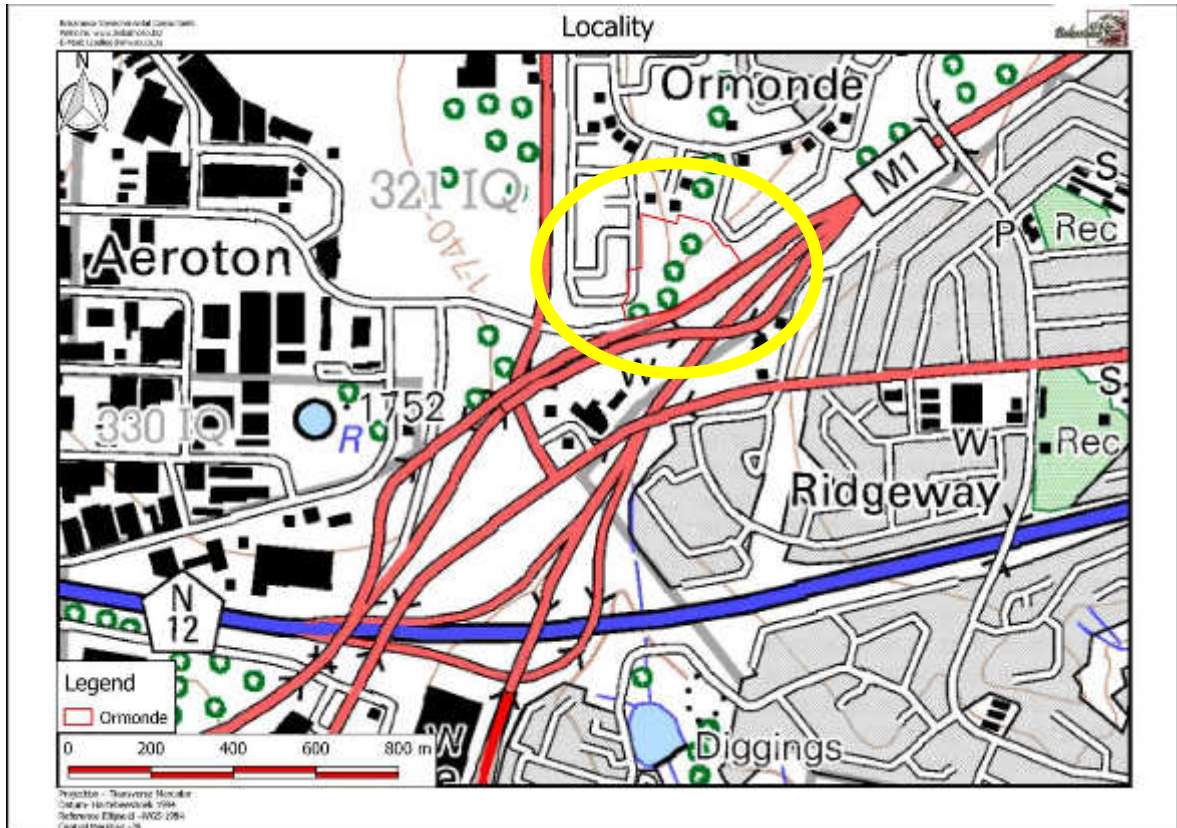


Figure 1: Locality map



Figure 2: Aerial map

## 2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:

Administering authority:

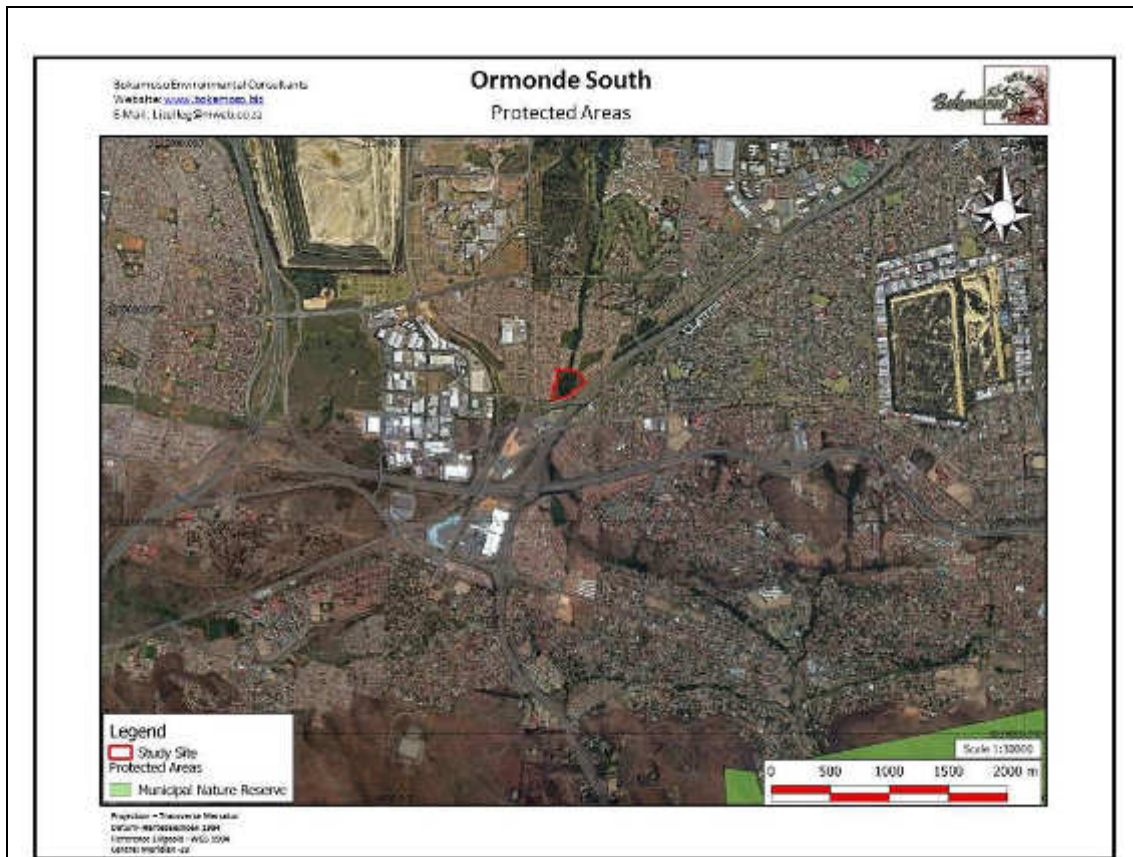
Promulgation Date:

National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	National & Provincial	27 November 1998
<p>The NEMA is primarily an enabling Act in that it provides for the development of environmental implementation plans and environmental management plans. The principles listed in the act serve as a general framework within which environmental management and implementation plans must be formulated.</p> <p>The Minister of Environmental Affairs and Tourism passed (in April 2006) Environmental Impact Assessment Regulations<sup>1</sup> (the Regulations) in terms of Chapter 5 of the National Environmental Management Act, 1998<sup>2</sup> (NEMA). The new Regulations came into effect on 3 July 2006.</p> <p>The Minister of Environmental Affairs passed (in June 2010) the Amended Environmental Impact Assessment Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA). The Regulations were amended once again in 2014. The Amended Regulations came into effect on 8 December 2014, and therefore all new applications must be made in terms of the Amended NEMA regulations and not in terms of the 2010 NEMA Regulations. The purpose of this process is to determine the possible negative and positive impacts of the proposed development on the surrounding environment and to provide measures for the mitigation of negative impacts and to maximize positive impacts.</p> <p>Notice <b>No. R 983, R 984 and R 985</b> of the Amended Regulations list the activities that indicate the process to be followed. The activities listed in Notice No. R 983 requires that a Basic Assessment process be followed and the Activities listed in terms of Notice No. R 984 requires that the Scoping and EIA process be followed. Notice No. 985 has been introduced to make provision for Activities in certain geographical and sensitive areas.</p>		
National Water Act (Act No. 36 of 1998)	National & Provincial	20 August 1998
<p>The purpose of this Act is to ensure that the Nation's water resources are protected, used, developed, conserved, managed and controlled in ways that take into account, amongst other factors, the following:</p> <ul style="list-style-type: none"> <li>❑ Meeting the basic human needs of present and future generations;</li> <li>❑ Promoting equitable access to water;</li> <li>❑ Promoting the efficient, sustainable and beneficial use of water in the public interest;</li> <li>❑ Reducing and preventing pollution and degradation of water resources;</li> </ul>		





drawings for the external services) that are submitted for approval.		
<b>Conservation of Agricultural Resources Act (Act No. 43 of 1983)</b>	<b>National</b>	<b>1 June 1983</b>
This act provides for control over the utilization of natural agricultural resources of South Africa in order to promote the conservation of soil, water sources and the vegetation as well as the combating of weeds and invader plants; and for matters connecting therewith.		
<b>National Heritage Resources Act (Act No. 25 of 1999)</b>	<b>National &amp; Provincial</b>	<b>1999</b>
The National Heritage Resources Act legislates the necessity and heritage impact assessment in areas earmarked for development, which exceed 0.5ha and linear development exceeding 300m in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).		
<b>National Environmental Management: Waste Act (Act No. 59 of 2009)(as amended)</b>	<b>National</b>	<b>11 June 2010</b>
<p>This Act came into effect on 11 June 2009. It aims to consolidate waste management in South Africa, and contains a number of commendable provisions, including:</p> <ul style="list-style-type: none"> <li>• The establishment of a national waste management strategy, and national and provincial norms and standards, for amongst other, the classification of waste, waste service delivery, and tariffs for such waste services;</li> <li>• Addressing reduction, reuse, recycling and recovery of waste;</li> <li>• The requirements for industry and local government to prepare integrated waste management plans;</li> <li>• The establishment of control over contaminated land;</li> <li>• Identifying waste management activities that requires a license, which currently include facilities for the storage, transfer, recycling, recovery, treatment and disposal of waste on land;</li> <li>• Co-operative governance in issuing licenses for waste management facilities, by means of which a licensing authority can issue an integrated or consolidated license jointly with other organs of state that has legislative control over the activity; and</li> <li>• The establishment of a national waste information system.</li> </ul> <p>On the 29<sup>th</sup> of November 2013 the Minister of Environmental Affairs and Tourism amended the list of waste management activities that might have a detrimental effect on the environment. These listed activities are promulgated under Government Notice 921 (of 29 November 2013) of the National Environmental Management Waste Act (Act No. 59 of 2008).</p>		
<b>National Environmental Management Protected Areas Act (Act No. 57 of 2003)</b>	<b>National</b>	<b>2003</b>
The purpose of this Act is to provide for the protection, conservation, and management of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes.		



**Figure 4: Protected Areas**

**National Environmental Management: Biodiversity Act (Act 10 of 2004)**

**National**

**2004**

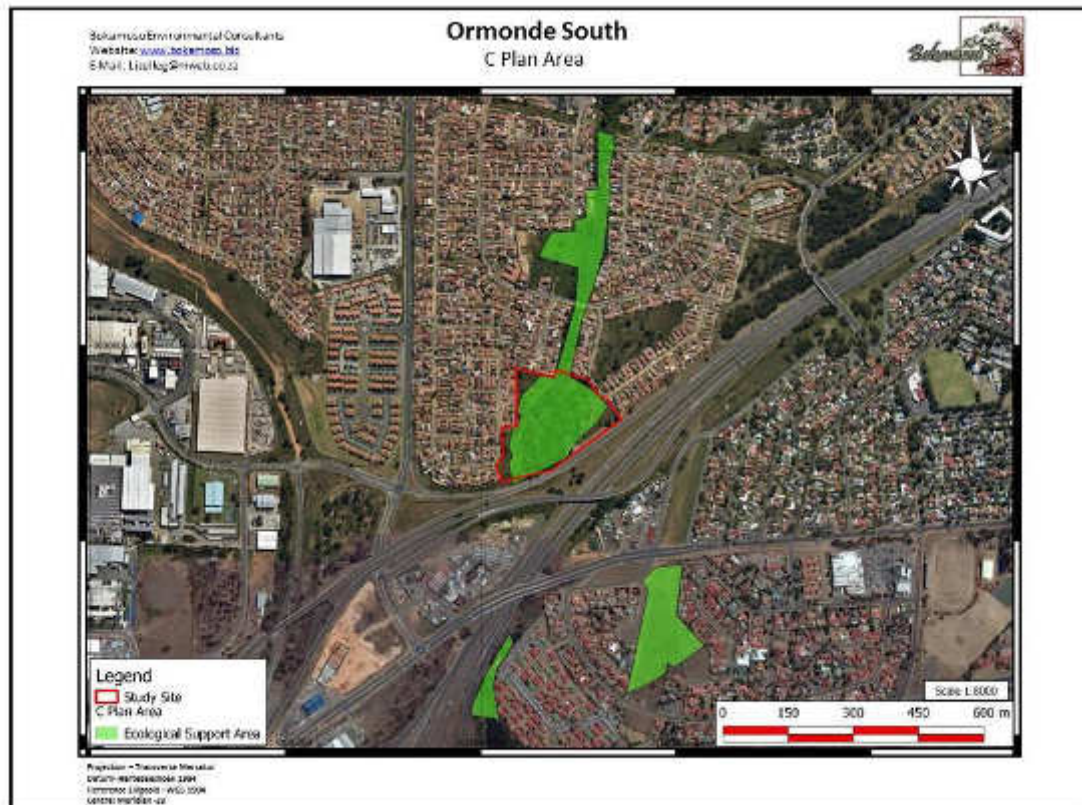
The Biodiversity Act provides for the management and protection of the country's biodiversity within the framework established by NEMA. It provides for the protection of species and ecosystems in need of protection, sustainable use of indigenous biological resources, equity, and bio prospecting, and the establishment of a regulatory body on biodiversity-South African National Biodiversity Institute.

Objectives of the Act:

- (a) With the framework of the National Environmental Management Act, to provide for:
  - (i) The management and conservation of biological diversity within the Republic and of the components of such biological diversity;
  - (ii) The use of indigenous biological resources in a sustainable manner; and
  - (iii) The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;
- (b) To give effect to ratified international agreements relating to biodiversity which are binding on the republic;
- (c) To provide for co-operative governance in biodiversity management and conservation; and

(d) To provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

Under this Act notices are published in terms of alien and invasive species or threatened ecosystems in order to promote the biodiversity of natural resources and protect species endemic to South Africa.



**Figure 5: Conservation Areas**



**Figure 6: Irreplaceable Areas**

<b>National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)</b>	<b>National &amp; Provincial</b>	<b>2004</b>
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The NEMA: AQA serves to repeal the Atmospheric Pollution Prevention Act (45 of 1965) and various other laws dealing with air pollution and it provides a more comprehensive framework within which the critical question of air quality can be addressed.

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

- Institutional frameworks, roles and responsibilities
- Air quality management planning
- Air quality monitoring and information management
- Air quality management measures
- General compliance and enforcement.

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

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

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

plans. These include:

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

<b>Gauteng Transport Infrastructure Act</b>	<b>Provincial</b>	<b>2001</b>
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The act was created to consolidate the laws relating to roads and other types of transport infrastructure in Gauteng; and to provide for the planning, design, development, construction, financing, management, control, maintenance, protection and rehabilitation of provincial roads, railway lines and other transport infrastructure in Gauteng; and to provide for matters connected therewith.

In terms of Section 46 of the Act, no person may erect, construct, or lay, or establish a structure or object on or over, or below the surface of a provincial road or railway line or land in a building restriction area.

This Act was then amended in 2003, the Gauteng Transport Infrastructure Amendment Act. The aim of this Amendment Act is to amend the Gauteng Transport Infrastructure Act, 2001 so as to amend and insert certain definitions; to provide for the necessary land use rights with respect to stations and for the necessary powers of the MEC to enter into contracts for road and rail projects; to amend the procedure in relation to route determination; to make a second environmental investigation at the stage of preliminary design of a road or railway line unnecessary where the competent environmental authority decides that the environmental investigation at the stage of route determination is adequate; and to provide for incidental matters.

<b>Occupational Health &amp; Safety Act, 85 of 1993</b>	<b>National &amp; Provincial</b>	<b>1993</b>
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The Act was created to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.

<b>GDARD Draff Ridges Policy</b>	<b>Provincial</b>	<b>2001</b>
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This policy is provided for the protection, conservation, and maintenance of ridges within the Gauteng Province.



**Figure 7: Ridges**

<b>Gauteng Conservation Plan (C-Plan) Version 3.3</b>	<b>Provincial</b>	<b>March 2014</b>
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Gauteng Nature Conservation (hereafter Conservation), a component of the Gauteng Department of Agriculture and Rural Development (GDARD) produced the Gauteng Conservation Plan Version 3 (C-Plan 3) in December 2010. The conservation plan was edited on three occasions since then: C-Plan 3.1 was released in July 2011 after it became apparent that some areas were not desirable in Critical Biodiversity Areas (CBAs hereafter). Not all areas were addressed in the first round of editing, so this was done during September 2011 resulting in C-Plan Version 3.2. It was soon released however, that some CBAs became separated by the removal of undesirable areas causing some attributes not to be completely reflective of that CBAs any longer. C-Plan 3.3 became available in October 2011 after this issue was addressed.

The main purposes of C-Plan 3.3 are:

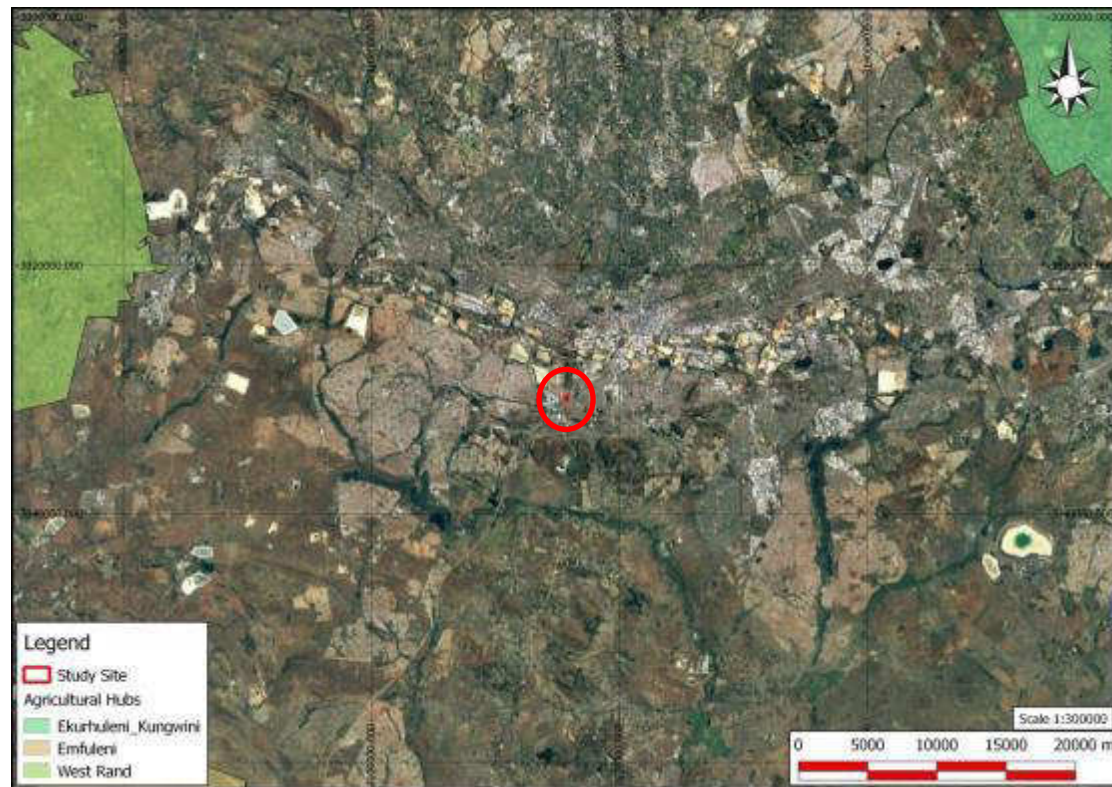
- to serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process;
- to inform protected area expansion and biodiversity stewardship programs in the province;
- To serve as a basis for development of Bioregional Plans in municipalities within the province.

Please refer to Figure 5 and 6.

<b>GDARD Agricultural Hub Policy</b>	<b>Provincial</b>	<b>2006</b>
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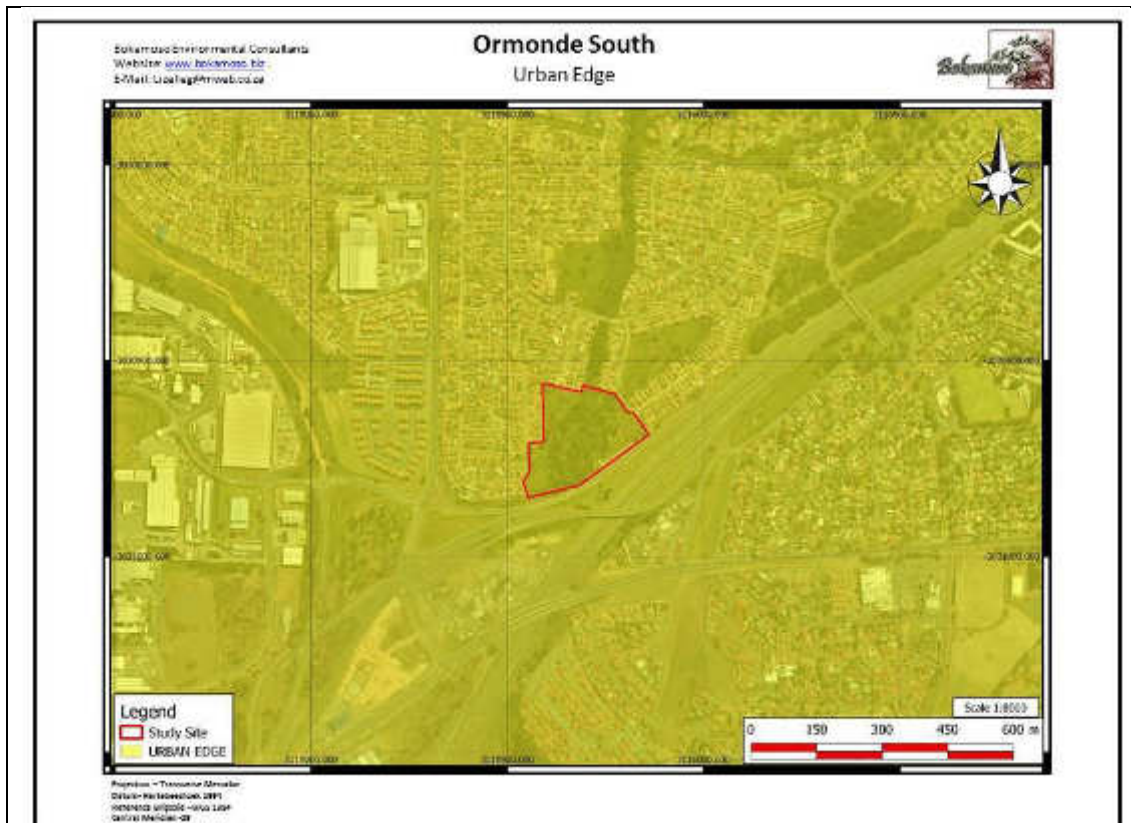
GDARD identified 7 Agricultural Hubs in Gauteng Province. These hubs are

earmarked for agricultural activities and there are policies and guidelines that should be taken into consideration when one plans to develop in these hubs areas. Urban development is usually not supported in these hubs.



**Figure 8: Agricultural Hubs**

<b>Gauteng Guidelines on Red List Plant Species</b>	<b>Provincial</b>	<b>2001 (amended in 2006)</b>
The main purpose of the draft Red Data Policy is to protect red data fauna and flora species in Gauteng Province. This policy requires that red data species are conserved.		
<b>Gauteng Noise Control Regulations</b>	<b>Provincial</b>	<b>1999</b>
The regulation controls noise pollution. According to the acceptable noise levels in a residential area situated within an urban area is 55dBA and the maximum acceptable noise levels in a rural area is 45dBA.		
<b>Gauteng Urban Edge</b>	<b>Provincial</b>	<b>2011</b>
According to the Gauteng Department of Economic Development the urban edge is now delineated on a yearly basis and it is the responsibility of the local authorities to request for a yearly amendment to the urban edge. The aim of the Urban Edge Policy is to curb unbridled urban growth.		



**Figure 9: Gauteng Urban Edge**

<b>Gauteng Provincial Environmental Management Framework</b>	<b>Provincial</b>	<b>2014</b>
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The Gauteng Department of Agriculture and Rural Development (GDARD) decided to produce an Environmental Management Framework for the whole of Gauteng (GPEMF). The GPEMF replaces all other EMFs in Gauteng with the exception of the Cradle of Humankind World Heritage Site which is incorporated within the GPEMF.

The objective of the GPEMF to guide sustainable land use management within the Gauteng Province. The GPEMF, inter alia, serve the following purposes:

- To provide a strategic and overall framework for environmental management in Gauteng;
- Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng;
- Determine geographical areas where certain activities can be excluded from an EIA process; and
- Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making.

The Province has been divided into 5 management zones of which Zone 1: Urban Development Zone and Zone 5: Industrial and Large Commercial focus zone, proposes the exclusion of certain NEMA listed activities in order to streamline development.



Description of compliance with the relevant legislation, policy or guideline:

Legislation, policy of guideline	Description of compliance
<b>National Environmental Management Act No. 107 of 1998 (as amended)</b>	The application for the proposed development consists of activities listed under Notice R. 983 and R. 985 (Listing No. 1 and 3) and therefore a Basic Assessment Report will be submitted to GDARD for consideration of environmental authorisation.
<b>National Water Act (Act No. 36 of 1998)</b>	The proposed development site has been assessed by a specialist and a wetland has been delineated on the site. The wetland traverses the site. Refer to Figure 3.
<b>Conservation of Agricultural Resources Act (Act No. 43 of 1983)</b>	The proposed development site does not fall in an Agricultural Hub of Gauteng. No Agricultural Potential Study was conducted as the site is very small and within the Gauteng Urban Edge and therefore it is not expected that the site will have high agricultural potential. Due to the aforementioned the site is not considered suitable for agricultural activities.
<b>National Heritage Resources Act (Act No. 25 of 1999)</b>	Specialists (ecological) have been on the site and nothing of cultural or historical importance has been identified on the site. The site is also located within a residential area and is adjacent to the highway and therefore it is not suspected to find anything of cultural importance. The site is also very small and disturbed. If any remains/cultural resources are exposed or uncovered during the construction phase, it should immediately be reported to the South African Heritage Resources Agency (SAHRA). Burial remains should not be disturbed or removed until inspected by an archaeologist.
<b>National Environmental Management : Waste Act (Act 59 of 2009)</b>	No listed waste activities will take place on site and therefore a waste license will not be required. Construction and operational general waste will have to be removed to a registered landfill site.
<b>National Environmental Management Protected Areas Act (Act No. 57 of 2003)</b>	The proposed development site does not form part of a protected area or occur near a protected area. Refer to Figure 4.
<b>National Environmental Management : Biodiversity Act (Act 10 of 2004)</b>	The site is regarded as disturbed due illegal dumping and severe degradation. It is further not expected that any Threatened flora or fauna species occur on the study area at the time when this study was conducted. There are no Irreplaceable Areas on the proposed development site.
<b>National Environmental Management : Air Quality</b>	During the construction phase of the proposed development, generation of dust could become a factor to surrounding residents. During the operational phase, fumes from hydrocarbons could be of concern to clients if fuel is not managed correctly.

<b>Act, 2004 (Act 39 of 2004)</b>	However if the development is well planned and the mitigating measures are successfully implemented the proposed development's contribution to air and noise pollution can become insignificant.
<b>Gauteng Transport Infrastructure Amendment Act</b>	The proposed development site runs in close proximity to the M1 highway and Nasrec Road. The proposed site is within an established and built-up area.
<b>Occupational Health &amp; Safety Act, 85 of 1993</b>	Considering the proposed development will occur within an urban environment next to other residential developments, the Act not only applies to the persons who will be responsible for construction, but also to the safety of members of the public.
<b>GDARD Draft Ridges Policy</b>	No ridges occur on, or in the direct vicinity of the study site. The development site has a level topography (sloping towards the watercourse that runs from south to north) with a slight slope. Please refer to Figure 8.
<b>Gauteng Conservation Plan (C-Plan) Version 3.3</b>	The proposed development comprises of Ecological Support areas in terms of the Gauteng Conservation Plan. No Important areas are situated on the study area.
<b>GDARD Agricultural Hub Policy</b>	As mentioned earlier, the proposed development site does not fall in an Agricultural Hub of Gauteng. No Agricultural Potential Study was conducted as the site is very small and within the Gauteng Urban Edge and therefore it is not expected that the site will have high agricultural potential. Due to the aforementioned the site is not considered suitable for agricultural activities.
<b>Gauteng Guidelines on Red List Plant Species</b>	No red listed plant species are anticipated to occur on the study area as majority of the study area has been transformed by human disturbances.
<b>Gauteng Noise Control Regulations</b>	If well planned and if mitigation measures are successfully implemented, the proposed development will not contribute to significant noise generation in the area. The noise impacts will mainly be during the construction phase and is therefore only short term.
<b>Gauteng Urban Edge</b>	The proposed development site falls within the Gauteng Urban Edge. The proposed development is regarded as being in line with the Urban Edge Policy. Refer to Figure 9.
<b>Gauteng Provincial Environmental Management Framework</b>	The proposed residential development occurs within Zone 1 of the GPEMF i.e. identified as urban development zone i.e. ideal for the development that has been authorised on the study area. The proposed residential development will therefore be in line. Some areas of Zone 2 also occur on the site.

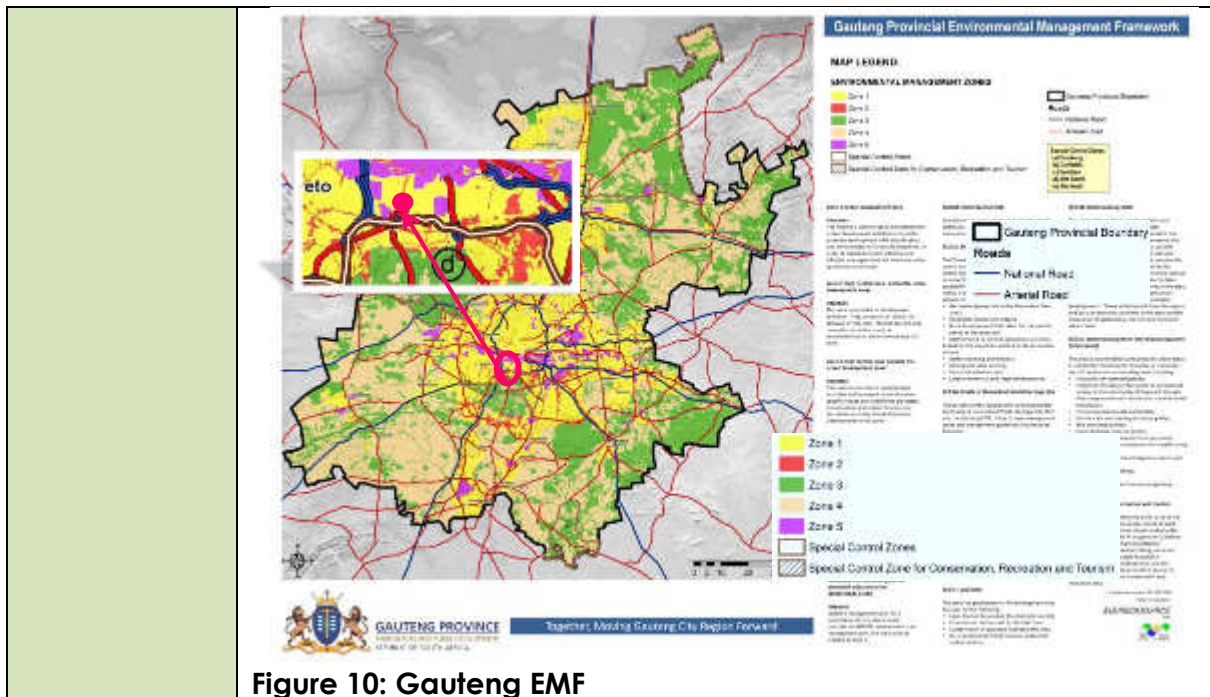


Figure 10: Gauteng EMF

### 3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not** include the no go option into the alternative table below.

**Note:** After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

Meetings were held with the applicant regarding the proposed development and the vision for the development and the site. Due to the size of the site and it being divided by a water course, there was only one layout and no alternatives.

Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
1	Proposal	Refer to Figure 11 and 12 for the layout of the proposed residential development. Larger images are attached to Appendix D.
2	Alternative 1	
3	Alternative 2	
	Etc.	

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

During the meetings regarding the proposed residential development, it was clear that there are no site alternative as this property is owned by the applicant. Other properties that are owned by the applicant in the surrounding area are also being developed. The site is also ideally located for a residential development with similar uses in the surrounding area. The site is also in close proximity to the M1 highway. Residential land use is ideal for the site and development such as commercial or industrial will not fit in with the surrounding area's characteristics.

The site was regarded as ideal for a residential development, because it will be in line with the surrounding land-uses, it will create an opportunity for the rehabilitation of the riverine area and it will resolve the security issues associated with the current vacant stand which serves as hiding place and home for vagrants and criminals.

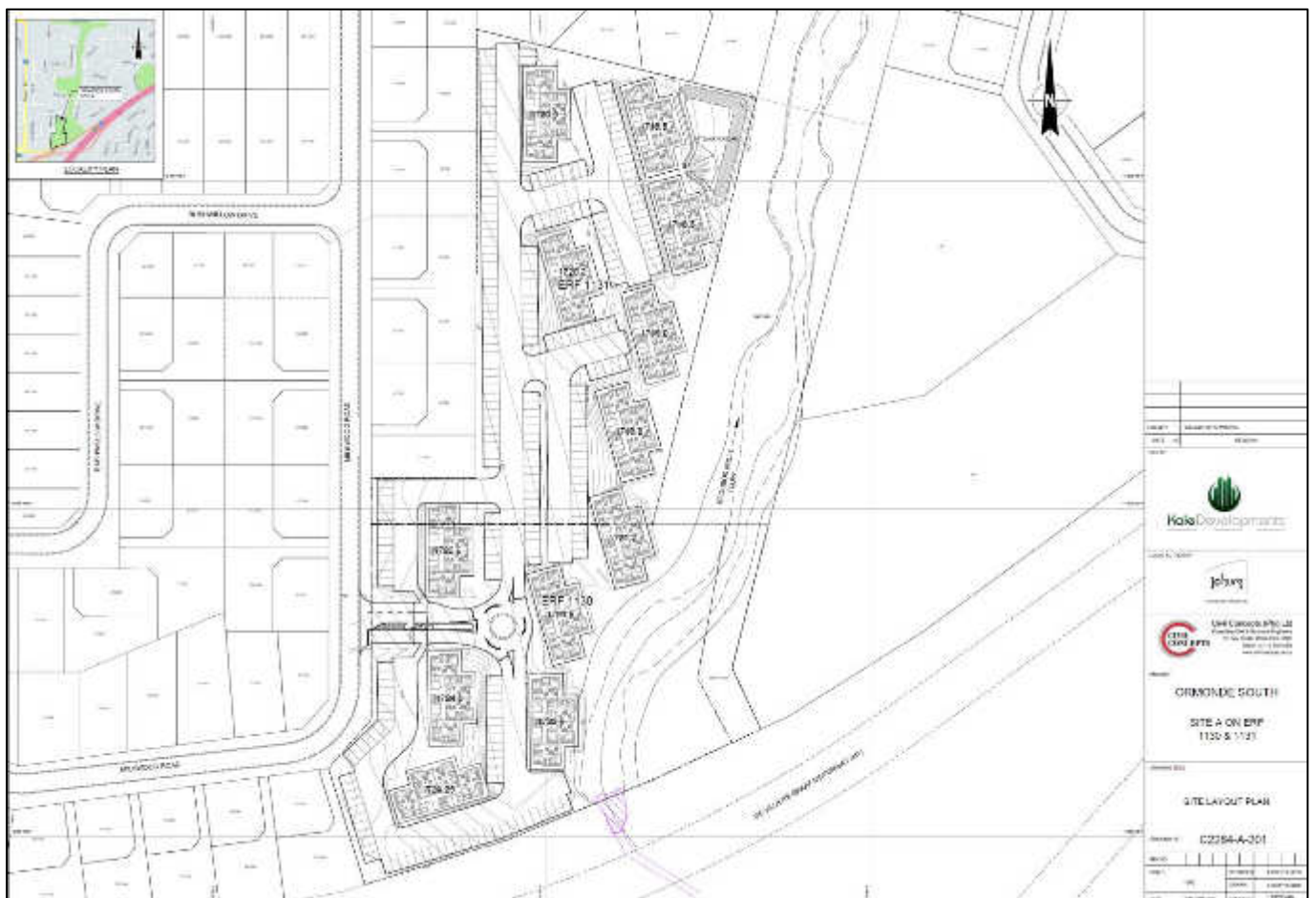


Figure 11: Layout – Site A

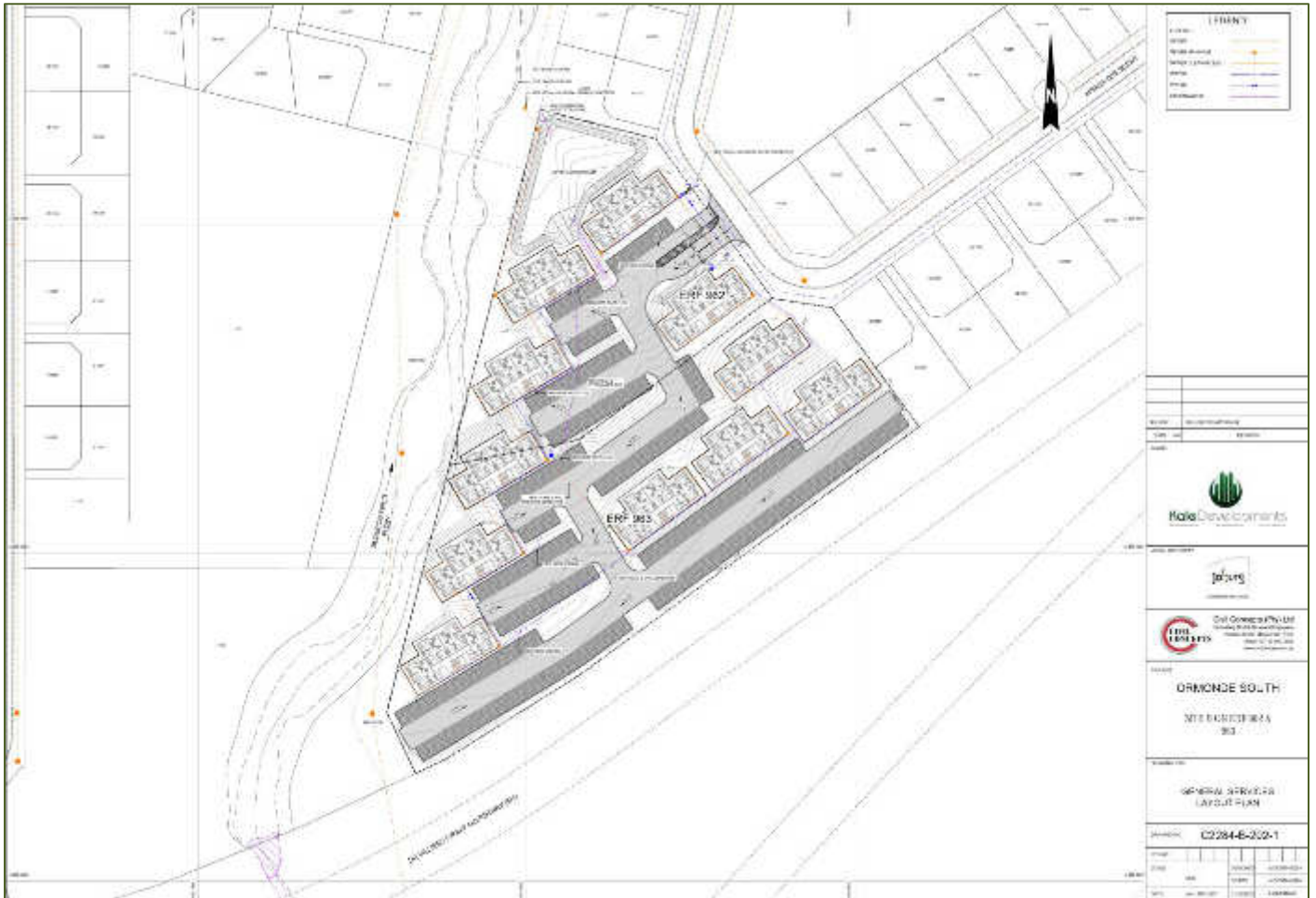


Figure 12: Layout – Site B

#### 4. PHYSICAL SIZE OF THE ACTIVITY

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

Proposed activity (**Total environmental (landscaping, parking, etc.) and the building footprint**)

**Alternatives:**

Alternative 1 (if any)

Alternative 2 (if any)

**Size of the activity:**

± 5 ha

Ha/ m<sup>2</sup>

or, for linear activities:

Proposed activity

**Alternatives:**

Alternative 1 (if any)

Alternative 2 (if any)

m/km

**Length of the activity:**


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

Proposed activity

**Alternatives:**

Alternative 1 (if any)

**Size of the site/servitude:**

± 5 ha

Alternative 2 (if any)

Ha/m <sup>2</sup>

**5. SITE ACCESS**

**Proposal**

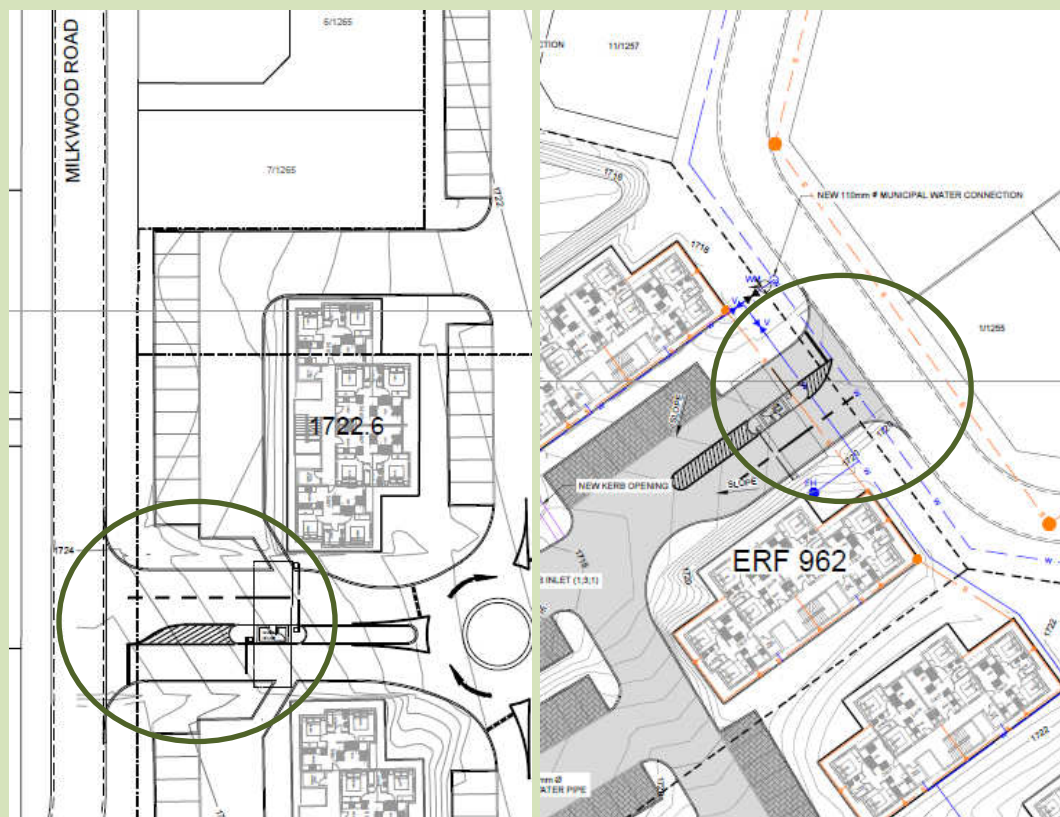
Does ready access to the site exist, or is access directly from an existing road?

<b>YES</b>	NO
<b>X</b>	
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

There is currently existing roads from which access will be gained. Figure 13 below indicates details on the access to the proposed residential development. The one access is gained from Milkwood Road and the other from Msasa Crescent.



**Figure 13: Access**

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

**Alternative 1**

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

--

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

**Alternative 2**

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

--

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

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

Section A 6-8 has been duplicated

0

Number of times

(only complete when applicable)

### 6. LAYOUT OR ROUTE PLAN

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

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

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

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

Refer Appendix A

### 7. SITE PHOTOGRAPHS

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

Refer Appendix B

### 8. FACILITY ILLUSTRATION

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

Refer Appendix C



# SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

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

**Instructions for completion of Section B for linear activities**

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

Section B has been duplicated for sections of the route  times

**Instructions for completion of Section B for location/route alternatives**

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

Section B has been duplicated for location/route alternatives  times (complete only when appropriate)

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

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

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

Section B - Section of Route  (complete only when appropriate for above)

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

## 1. PROPERTY DESCRIPTION

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

Residential development on Erven 1130 & 1131, Ormonde Ext 24 and Erven 962 & 963, Ormonde Ext 22.

There will be a sewer connection on Erf 1147 (Bloubos Spruit).

## 2. ACTIVITY POSITION

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

**Alternative:**

Latitude (S):	Longitude (E):
26°15'17.56"S	27°59'19.33"E

**In the case of linear activities:**

**Alternative:**

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

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

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

Addendum of route alternatives attached

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	Q	0	7	7	4	0	0	0	0	1	3	3	0	0	0	0	0
	T	0	I	Q	0	7	7	4	0	0	0	0	1	3	3	1	0	0	0	0
	T	0	I	Q	0	7	7	4	0	0	0	0	0	9	6	3	0	0	0	0
	T	0	I	Q	0	7	7	4	0	0	0	0	0	9	6	2	0	0	0	0
ALT. 1																				
ALT. 2																				
etc.																				

**3. GRADIENT OF THE SITE**

Indicate the general gradient of the site.

Flat	<b>1:50 – 1:20 X</b>	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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**4. LOCATION IN LANDSCAPE**

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

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	<b>River front X</b>
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**5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE**

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

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

Soils with high clay content (clay fraction more than 40%)

<b>YES X</b> Only in some areas near the wetland	NO
YES	<b>NO X</b>
<b>YES X</b>	NO
YES	<b>NO X</b>
YES	<b>NO X</b>
YES	<b>NO X</b>

Any other unstable soil or geological feature

YES

NO

X

An area sensitive to erosion

YES

X

NO

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

Geotechnical Investigations was done for each of the four erven.

Erf number 963, Ormonde Extension 22

The site is located on transported sand and gravel soils that overlays sediment such as shale, quartzite and conglomerate. These sediments belong to the Turffontein Subgroup, Central Rand Group and the Witwatersrand Supergroup. The erf is also characterised by two soil zones (as per the Geotechnical Investigation):

A – Thin to moderate horizon of loose, colluvial silty sand and coarse pebble marker gravels over very dense residual quartzite. Colluvium is potentially moderately collapsible and compressible.

- Compaction of soil below footings
- Soil raft foundations
- Deeper than normal strip footings placed onto very dense residual quartzite

B – Prominent horizon of loose to very loose, colluvial and alluvial silty sand presumably underlain by dense to very dense residual quartzite at depth. Colluvium and alluvium are potentially moderately collapsible and compressible. Shallow ground water conditions prevail.

- Compaction of soil below footings
- Soil raft foundations
- Piled foundations
- Stiffened or cellular raft foundations

Erf number 962, Ormonde Extension 22

The site is located on transported sand and gravel soils that overlays sediment such as shale, quartzite and conglomerate. These sediments belong to the Turffontein Subgroup, Central Rand Group and the Witwatersrand Supergroup. A typical soil profile that could be encountered on the site is as follows:

- No rocky outcrops
- Very loose silty sand
- Abundant coarse, medium and fine quartz gravels
- On a deeper level the sand is coarse and very dense.

Erf number 1131, Ormonde Extension 24

Similar to Erf 962 - The site is located on transported sand and gravel soils that overlays sediment such as shale, quartzite and conglomerate. These sediments belong to the Turffontein Subgroup, Central Rand Group and the Witwatersrand Supergroup. A typical soil profile that could be encountered on the site is as follows:

- No rocky outcrops
- Very loose silty sand
- Abundant coarse, medium and fine quartz gravels
- On a deeper level the sand is coarse and very dense.

Erf number 1130, Ormonde Extension 24

The site is located on transported sand and gravel soils that overlays sediment such as shale, quartzite and conglomerate. These sediments belong to the Turffontein Subgroup, Central Rand Group and the Witwatersrand Supergroup. The erf is also characterised by two soil zones (as per the Geotechnical Investigation):

A – Moderate horizon of loose, colluvial silty sand and coarse pebble marker gravels over very dense residual quartzite. Colluvium is potentially moderately collapsible and compressible.

- Compaction of soil below footings
- Soil raft foundations
- Deeper than normal strip footings placed onto very dense residual quartzite

B – Prominent horizon of loose to very loose colluvial silty sand and coarse ferricrete gravels extending to more than 2.0m, and presumably underlain by dense to very dense residual quartzite at depth. Colluvium is potentially moderately collapsible and compressible. Shallow ground water conditions prevail.

- Compaction of soil below footings
- Soil raft foundations
- Piled foundations
- Stiffened or cellular raft foundations

Please refer to Appendix G for the Geotechnical Reports.

In the wetland study, the specialist took some photos of houses with cracks. The owners complain that it is due to the soil but it could also be old techniques of building. It is advised that the geotechnical engineer investigate this matter and ensure that the necessary preparations are made prior to construction commencing.

b) are any caves located on the site(s)

YES	<b>NO</b> X
-----	----------------

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

<b>Latitude (S):</b>	<b>Longitude (E):</b>
°	°

c) are any caves located within a 300m radius of the site(s)

YES	<b>NO</b> X
-----	----------------

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

<b>Latitude (S):</b>	<b>Longitude (E):</b>
°	°

d) are any sinkholes located within a 300m radius of the site(s)

YES	<b>NO</b> X
-----	----------------

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

<b>Latitude (S):</b>	<b>Longitude (E):</b>
°	°

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

## 6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?

YES	<b>NO</b> <b>X</b>
-----	-----------------------

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

## 7. GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % =	Natural veld with scattered aliens % = <b>20</b>	Natural veld with heavy alien infestation % = <b>40</b>	Veld dominated by alien species % = <b>40</b>	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

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

Are there any rare or endangered flora or fauna species (including red list species) present on the site

YES	<b>NO</b> <b>X</b>
-----	-----------------------

If YES, specify and explain:

--

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.

YES	<b>NO</b> <b>X</b>
-----	-----------------------

If YES, specify and explain:

--

Are there any special or sensitive habitats or other natural features present on the site?

<b>YES</b> <b>X</b>	NO
------------------------	----

If YES, specify and explain:

A specialist (appointed by the previous environmental consultants therefore a different project name) has undertaken a survey to determine the status of the site and ultimately the extent of indigenous vegetation. The specialist concluded that the site has been heavily invaded by alien invasive trees. From photos, it can also be concluded that grass such as Kikuyu is dominant in some areas.

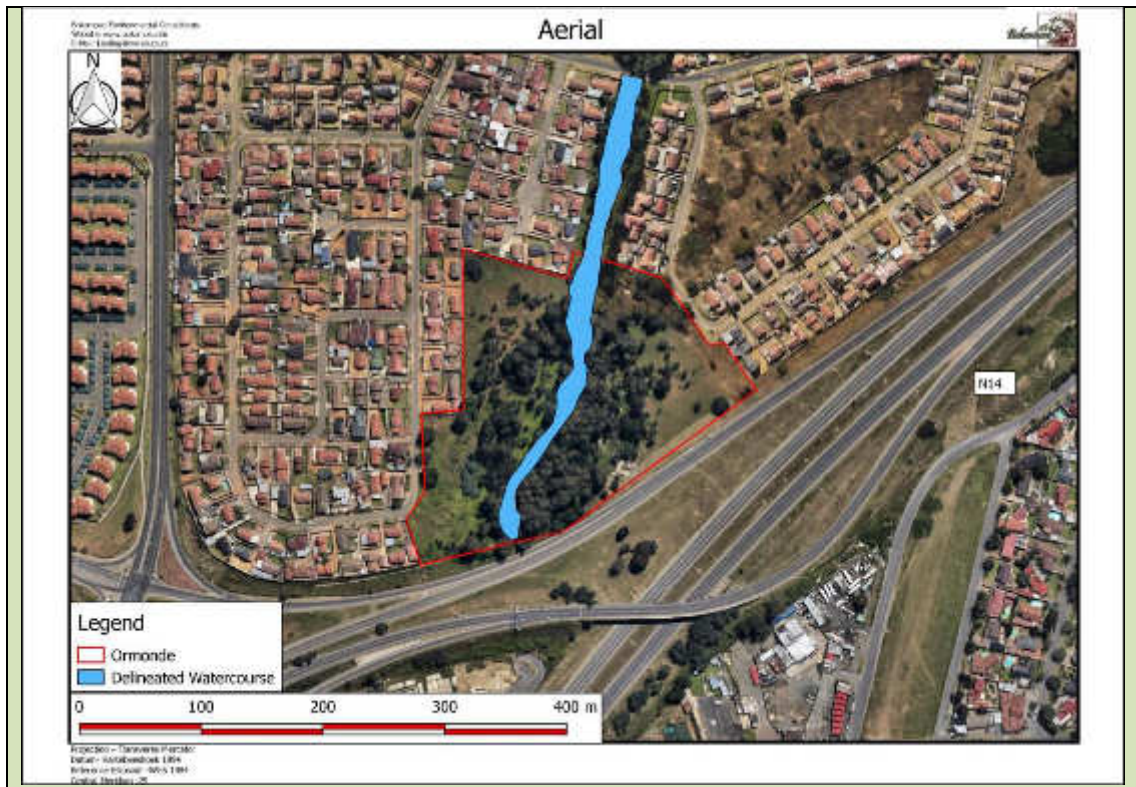
The study area falls within the Soweto Highveld Grassland vegetation type that ultimately falls within the grassland biome of South Africa and in the Mesic Highveld Grassland bioregion. It predominantly occurs in areas with shale, sandstone, mudstone or Karoo Suite dolerites and the general composition of the vegetation is characterised by dense, tufted grassland of short to medium height with *Themeda triandra* dominating. Other grasses commonly found include *Heteropogon contortus*, *Elionurus muticus*, *Tristachya leucothrix* and *Eragrostis racemosa*.

This vegetation type is considered endangered and its conservation target is 24%. A small percentage of this unit is conserved/protected in areas such as Waldrift, Krugersdorp, Leeukuil, Suikerbosrand, Rolfe's Pan Nature Reserves and privately conserved in Johanna Jacob's Tweefontein, Gert Jacobs, Nikolaas and Avalon Nature Reserves and Heidelberg Natural Heritage Site. This vegetation type is almost halfway transformed as a result of cultivation, urban sprawl, mining and construction of road infrastructure (Mucina and Rutherford, 2006). However, according to the specialist no natural areas remain on the proposed development area.

A wetland study was done and in the report it is confirmed that the wetland on the site was most probably formed as a result of the storm water runoff from the M1 highway. However, due to the human influence/impact to the influx of water, a highly eroded channel has been created that runs from south to north. The soils in the wetland area are highly erodible. This is evident when one has a look at the photographs in the wetland study. The specialist did not recommend a 32m buffer around the delineated wetland as it will have little effect on the protection and preservation of the watercourse. The focus should instead be on the rehabilitation of the stream and effective storm water implementations.

The Civil Engineer also mentioned in the Storm Water Management Report that sufficient attenuation has been provided at the attenuated areas plus the direct runoff to the natural stream is still below the pre-developed runoff.

Please refer to Figure 3 for the Wetland Delineation. Also Refer to Appendix G for the specialist reports.



Was a specialist consulted to assist with completing this section

<b>YES</b> <b>X</b>	NO
------------------------	----

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

If yes complete specialist details

Name of the specialist:

Garth van Rooyen

Qualification(s) of the specialist:

BSc (Hons) Science

Postal address:

P.O Box 11375, Maroelana, Pretoria

Postal code:

0161

Telephone:

012 346 3810

Cell:

-

E-mail:

info@bokamoso.net

Fax:

086 570 5659

Are any further specialist studies recommended by the specialist?

YES	<b>NO</b> <b>X</b>
-----	-----------------------

If YES, specify:

--

If YES, is such a report(s) attached?

YES	NO
-----	----

If YES list the specialist reports attached below

--

Signature of specialist: \_\_\_\_\_

Date:

August 2016

### 8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
----------------	---------------------------	-----------------------------	----------------------	--------------------





make optimal use of limited resources such as land and existing infrastructure and services. Such densification also contributes to the reduction of the ecological footprint as a result of shortened travel distances where as low density developments threaten the sustainability of the city through loss of valuable agricultural land on the urban edges and growing urban sprawl, resulting in longer and more expensive commutes. In view of the above, it is evident that densification within urban areas is needed in order to ensure a sustainable city in the long term. The proposed residential development is in close proximity of the M1 highway interchange at Nasrec Road. There are also industrial and commercial developments in the nearby area which makes the location ideal for high density residential development bordering the M1 highway. Such a development will also increase employment opportunities, especially to unskilled workers.

**10. CULTURAL/HISTORICAL FEATURES**

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

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

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site-*
  - (i) exceeding 5 000 m2 in extent; or*
  - (ii) involving three or more existing erven or subdivisions thereof; or*
  - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years;*
- or*
- (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) the re-zoning of a site exceeding 10 000 m2 in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

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

If YES, explain:

YES	<b>NO X</b>
-----	-----------------

Ecological specialists investigated the site and no graves or historical features were identified. Should any graves or artefacts be discovered during the ground works or construction activities, an archaeologist should be contacted to determine the way forward.

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

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

Will any building or structure older than 60 years be affected in any way?

YES	<b>NO X</b>
-----	-----------------

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	<b>NO</b> <b>X</b>
-----	-----------------------

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

# SECTION C: PUBLIC PARTICIPATION (SECTION 41)

## 1. ADVERTISEMENT

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

## 2. LOCAL AUTHORITY PARTICIPATION

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

Was the draft report submitted to the local authority for comment?

<b>YES</b> X	NO
-----------------	----

If yes, has any comments been received from the local authority?

YES	<b>NO</b> X
-----	----------------

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

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

The Basic Assessment Report is still in Draft form and is now distributed to the I&AP's and stakeholders for review. All comments will be included in the Final Basic Assessment Report.

## 3. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?

YES	<b>NO</b> X
-----	----------------

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

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

The Basic Assessment Report is still in Draft form and is now distributed to the I&AP's and stakeholders for review. All comments will be included in the Final Basic Assessment Report.

## 4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that

should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

## 5. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice

Appendix 2 – Written notices issued as required in terms of the regulations

Appendix 3 – Proof of newspaper advertisements

Appendix 4 – Communications to and from interested and affected parties

Appendix 5 – Minutes of any public and/or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix 8 –Comments from I&APs on amendments to the BA Report

Appendix 9 – Copy of the register of I&APs

Appendix 10 – Comments from I&APs on the application

Appendix 11 - Other

Refer to **Appendix E**

# SECTION D: RESOURCE USE AND PROCESS DETAILS

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

**Instructions for completion of Section D for alternatives**

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

Section D has been duplicated for alternatives 0 times  
(complete only when appropriate)

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

## 1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

**Solid waste management**

Will the activity produce solid construction waste during the construction/initiation phase?

<b>YES</b> <b>X</b>	NO
Not yet available	

If yes, what estimated quantity will be produced per month?

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

During construction the disposal of solid waste will be the responsibility of the main contractor appointed by the developer. An area on the application site will be earmarked for temporary dumping of solid waste to be disposed of during the construction phase. This area must be situated carefully not to be visually unpleasant to neighbouring estates and residential units. The demarcated area must be easily accessible for dumping trucks to collect waste. The waste, including builder's rubble, will be carted to a nearby registered landfill site.

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

All solid waste resulting from construction activities will be disposed nearest registered landfill site allowed to take building rubble. No solid waste will be dumped on open or adjacent properties.

Will the activity produce solid waste during its operational phase?

<b>YES</b> <b>X</b>	NO
Not yet available	

If yes, what estimated quantity will be produced per month?

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

This will be the responsibility of the Local Municipality. If the Local Municipality does not have the capacity for waste disposal, the developer will appoint a waste removal company to dispose of the solid waste generated by the Residential Township.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?

YES	<b>NO</b> <b>X</b>
-----	-----------------------

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

This will be the responsibility of the Municipality. Should waste not be disposed of into the municipal waste stream the developer will appoint a waste removal company to dispose of the solid waste generated by the Residential Township.

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

YES	<b>NO</b> X
-----	----------------

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

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	<b>NO</b> X
-----	----------------

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

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

It is proposed that all waste construction materials be sorted into recyclable and non-recyclable materials. The recyclable materials should be re-used wherever possible or disposed of by a reputable recycling company.

**Liquid effluent (other than domestic sewage)**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	<b>NO</b> X
-----	----------------

If yes, what estimated quantity will be produced per month?

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?

m <sup>3</sup>	
YES	NO

Will the activity produce any effluent that will be treated and/or disposed of on site?

Yes	<b>NO</b> X
-----	----------------

If yes, what estimated quantity will be produced per month?

m <sup>3</sup>	
----------------	--

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

Not applicable

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	<b>NO</b> X
-----	----------------

If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

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

Not applicable

**Liquid effluent (domestic sewage)**

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?

<b>YES</b> X	NO
-----------------	----

If yes, what estimated quantity will be produced per month?

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?

± 3992.7 kℓ	
YES	<b>NO</b> X

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES	<b>NO</b>
-----	-----------

	<b>X</b>
--	----------

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

Not applicable

**Emissions into the atmosphere**

Will the activity release emissions into the atmosphere?

The proposed development will not generate any emissions. Some additional vehicle/truck traffic during the construction phase may have an influence but this can be regarded as insignificant.

YES	<b>NO</b> <b>X</b>
YES	NO

If yes, is it controlled by any legislation of any sphere of government?

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

If no, describe the emissions in terms of type and concentration:

The proposed development will not generate any emissions.

**2. WATER USE**

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

Municipal <b>X</b>	Directly from water board	groundwater	river, stream, dam or lake	other
-----------------------	---------------------------	-------------	----------------------------	-------

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

Not applicable

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

Does the activity require a water use permit from the Department of Water Affairs?

<b>YES</b> <b>X</b>	NO
------------------------	----

If yes, list the permits required

There is a possibility of a Water Use License Application or General Authorisation Application that need to be submitted to the Department of Water and Sanitation as a wetland/watercourse traverses the site. The Department of Water and Sanitation will however need to confirm whether such application will be required and which process to be followed.

If yes, have you applied for the water use permit(s)?

YES	<b>NO</b> <b>X</b>
-----	-----------------------

If yes, have you received approval(s)? (attached in appropriate appendix)

YES	<b>NO</b> <b>N/A</b>
-----	-------------------------

**3. POWER SUPPLY**

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

City Power

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

Not applicable

#### 4. ENERGY EFFICIENCY

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

The developer will promote energy efficiency, renewable energy and post contract energy management as follows:

##### Electrical Energy Efficiency

- Provide state of art devices and equipment providing for maximum efficiency e.g. luminaries with fluorescent lamps and electronic control gear i.e. providing more light output per watt consumed.
- Provide appropriate systems for electrical demand management e.g. power factor correction equipment, building management systems, etc i.e. allowing the shedding of non-critical loads i.e. air conditioning loads to manage precinct load factor in conjunction with the utility.

##### Electrical Renewable Energy

The developer will promote renewable energy systems by providing space, risers etc. for tenants to link to the following renewable energy systems:

- Use of day lighting in perimeter areas via light shelves and controlled shading.
- Voltaic panels for the charging of batteries providing UPS backup in buildings.

The following could also be considered:

- Where possible energy saving light bulbs must be used in all the units as well as outside.
- Time switches must be used for outdoor lighting.
- Geysers must be fitted with insulation blankets.
- Solar panels can be used to heat the water and geysers and for outdoor lighting.

The developer is committed to search and investigate more solutions and opportunities to increase the sustainability of this development making it a project that will be a landmark on many levels.

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

The following alternative energy sources can be considered:

##### **Wind turbines**

This option was rejected because the wind conditions required cannot be met in this region.

##### **Biomass**

This option was rejected because the fuel required for producing electricity is not locally available, the distance between the source of biomass and the power plant must be short for economic viability.

##### **Gas**

This option was rejected because natural gas is not available and the Egoli



Gas pipeline is remote and the energy spent in processing the gas and transporting it affects the viability of this process. Gas as a source of energy could be used by individuals for ovens, stoves and heaters for example.

**Coal fired generation**

This option was rejected because of the distance from the coal fields and because pollution is not allowed in this area.

**Nuclear**

This option could not be considered due to South Africa's nuclear policy.

**Solar**

Solar power generation will be encouraged with each individual building.

# SECTION E: IMPACT ASSESSMENT

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

## 1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

A Public Participation Process was conducted according to the National Environmental Management Act, 1998 (Act No 107 of 1998) and the new Amended Environmental Impact Assessment Regulations, December 2014.

- Site notices were erected (13 October 2016) at prominent points on and around the study area.
- Flyers were distributed (13 October 2016) to the neighboring properties and estates/ developments that may be affected by the proposed development.
- Registered mail was sent to surrounding land owners who did not receive a notice during hand delivery.
- Notices regarding the project was e-mailed and faxed to the councilors in the area and possible stakeholders in the area.
- An advertisement was placed in the "The Star" newspaper on 13 October 2016.

Up to date no Interested and Affected Parties from the public has registered on this project.

It is the opinion of Bokamoso that the public participation was extensive and transparent enough to ensure any comments or issues in regards to the proposed development to be addressed and to suggest possible mitigation measures.

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

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

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

### significance Description Methodology

The significance of Environmental Impacts was assessed in accordance with the following method:

**Significance is the product of probability and severity. Probability describes the likelihood of the impact actually occurring, and is rated as follows:**

Likelihood	Description	Rating
Improbable	Low possibility of impact to occur either because of design or historic experience	2
Probable	Distinct possibility that impact will occur	3
Highly probable	Most likely that impact will occur	4
Definite	Impact will occur, in the case of adverse impacts regardless of any	5

prevention measures																																																					
<p>The severity factor is calculated from the factors given to "intensity" and "duration". Intensity and duration factors are awarded to each impact, as described below.</p> <p><b>The Intensity factor is awarded to each impact according to the following method:</b></p> <table border="1"> <thead> <tr> <th>Intensity</th> <th>Description</th> <th>Rating</th> </tr> </thead> <tbody> <tr> <td>Low intensity</td> <td>Natural and man-made functions not affected.</td> <td>1</td> </tr> <tr> <td>Medium intensity</td> <td>Environment affected but natural and man-made functions and processes continue.</td> <td>2</td> </tr> <tr> <td>High intensity</td> <td>Environment affected to the extent that natural or man-made functions are altered to the extent that it will temporarily or permanently cease or become dysfunctional.</td> <td>4</td> </tr> </tbody> </table> <p><b>Duration is assessed and a factor awarded in accordance with the following:</b></p> <table border="1"> <thead> <tr> <th>Duration</th> <th>Description</th> <th>Rating</th> </tr> </thead> <tbody> <tr> <td>Short term</td> <td>&lt;1 to 5 years - Factor 2</td> <td>2</td> </tr> <tr> <td>Medium term</td> <td>5 to 15 years - Factor 3</td> <td>3</td> </tr> <tr> <td>Long term</td> <td>Impact will only cease after the operational life of the activity, either because of natural process or by human intervention.</td> <td>4</td> </tr> <tr> <td>Permanent</td> <td>Mitigation, either by natural process or by human intervention, will not way or in such a time span that the impact can be considered transient.</td> <td>4</td> </tr> </tbody> </table> <p><b>The severity rating is obtained from calculating a severity factor, and comparing the severity factor to the rating in the table below. For example:</b></p> <p>The Severity factor = Intensity factor X Duration factor  = 2 x 3  = 6</p> <p>A Severity factor of six (6) equals a Severity Rating of Medium severity (Rating 3) as per table below:</p> <table border="1"> <thead> <tr> <th>Severity Factor</th> <th>Severity</th> <th>Rating</th> </tr> </thead> <tbody> <tr> <td>Calculated values 2 to 4</td> <td>Low Severity</td> <td>2</td> </tr> <tr> <td>Calculated values 5 to 8</td> <td>Medium Severity</td> <td>3</td> </tr> <tr> <td>Calculated values 9 to 12</td> <td>High Severity</td> <td>4</td> </tr> <tr> <td>Calculated values 13 to 16</td> <td>Very High severity</td> <td>5</td> </tr> </tbody> </table> <p>A Significance Rating is calculated by multiplying the Severity Rating with the Probability Rating.</p> <table border="1"> <thead> <tr> <th>Significance</th> <th>Rating</th> <th>Influence</th> </tr> </thead> <tbody> <tr> <td>Low significance</td> <td>Rating 4 to 6</td> <td>Positive impact and negative impacts of low significance should have no influence on the proposed development project.</td> </tr> <tr> <td>Medium significance</td> <td>Rating &gt;6 to 15</td> <td>Positive impact: Should weigh towards a decision to continue Negative impact: Should be mitigated to a level where the impact would be of medium significance before project can be approved.</td> </tr> </tbody> </table>			Intensity	Description	Rating	Low intensity	Natural and man-made functions not affected.	1	Medium intensity	Environment affected but natural and man-made functions and processes continue.	2	High intensity	Environment affected to the extent that natural or man-made functions are altered to the extent that it will temporarily or permanently cease or become dysfunctional.	4	Duration	Description	Rating	Short term	<1 to 5 years - Factor 2	2	Medium term	5 to 15 years - Factor 3	3	Long term	Impact will only cease after the operational life of the activity, either because of natural process or by human intervention.	4	Permanent	Mitigation, either by natural process or by human intervention, will not way or in such a time span that the impact can be considered transient.	4	Severity Factor	Severity	Rating	Calculated values 2 to 4	Low Severity	2	Calculated values 5 to 8	Medium Severity	3	Calculated values 9 to 12	High Severity	4	Calculated values 13 to 16	Very High severity	5	Significance	Rating	Influence	Low significance	Rating 4 to 6	Positive impact and negative impacts of low significance should have no influence on the proposed development project.	Medium significance	Rating >6 to 15	Positive impact: Should weigh towards a decision to continue Negative impact: Should be mitigated to a level where the impact would be of medium significance before project can be approved.
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	High significance	Rating 16 and more	<p>Positive impact: Should weigh towards a decision to continue, should be enhanced in final design.</p> <p>Negative impact: Should weigh towards a decision to terminate proposal, or mitigation should be performed to reduce significance to at least medium significance rating.</p>
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Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

### Proposal

Potential impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
<b>PLANNING PHASE</b>				
<b>Adverse Impacts</b>				
<b>Cultural/Historical</b>				
Low Potential for destroying potential paleontological finds.	<b>Low</b>	It is not anticipated that any graves or important cultural findings will be discovered during the construction of the external services.	<b>Low</b>	Low risk of study not being conducted.
<b>Environmental legal compliance</b>				
No financial provision for environmental management during construction and operational phase	<b>Moderate</b>	Developer to budget for environmental mitigation measures such as eradication of alien plant within the development site, specialist that might be required if archaeological finds are unearthed during construction, or sensitive fauna or flora is identified during construction. Developer also to budget for ECO to be part of the development team.	<b>Low</b>	Developer might omit budgeting for environmental monitoring
<b>Ecological Sensitive areas</b>				
Destruction of ecological sensitive areas identified on site	<b>Moderate</b>	All sensitive areas are to be denoted as No-Go areas during construction in order to avoid any pollution of the watercourse or further erosion.  This wetland area can be rehabilitated and must be left as natural areas which will contribute to the aesthetics of the approved development.	<b>Low</b>	Further degradation of the wetland area
<b>Wetland functioning</b>				
The proposed development could potentially negatively impact on the wetland/watercourse on the site.	<b>Moderate</b>	A wetland/watercourse that runs from south to north on the site must be protected by using bio-swales to filter storm water before it enters the wetland.	<b>Low</b>	If storm water is diverted from wetland, wetland will be protected.
<b>Protected fauna</b>				
Potential presence of Bullfrog species	<b>Low</b>	Storm water structure design should block amphibians from entering the road surface.	<b>None</b>	Design parameter might be

				omitted from final design drawings.
<b>CONSTRUCTION PHASE</b>				
<b>Beneficial Impacts</b>				
<b>Institutional Environment</b>				
The proposed development activity compliments proposed developments in the area i.e. the approved development on the site	<b>High</b>	None due to positive impact.	<b>None</b>	No risk due to positive impact
<b>Social &amp; Economic Environment</b>				
Creation of job opportunities during construction and operational phase of the project.	<b>Moderate</b>	The proposed residential estate will create job opportunities during the construction phase of the project. It is recommended that local employment be sourced.	<b>None</b>	No risk due to positive impact
<b>Fauna &amp; Flora</b>				
Eradication of invasive plant species.	<b>High</b>	Eradication of invasive plant species during the construction phase would benefit the biophysical environment. Not necessary to mitigate.	<b>None</b>	No risk due to positive impact
<b>Adverse Impacts</b>				
<b>Services</b>				
Disruption of services to adjacent properties during connecting of newly installed services.	<b>High</b>	Neighbours are to be informed of any service disruptions due to connecting to services at least 48 hours prior to service disruption. Service disruption should be as short as possible.	<b>Low</b>	Low risk due to communication
<b>Protected fauna</b>				
Potential presence of bullfrog species	<b>Low</b>	Contractors should be made aware of potential presence of bullfrogs. Take note no bullfrogs were identified during the site investigations. If encountered during the construction phase a Herpetologist should conduct an assessment.	<b>Low</b>	Contractors could ignore the presence of bullfrogs.
<b>Ecological Sensitive areas</b>				
Destruction of ecological sensitive areas identified on site	<b>High</b>	All sensitive areas are to be denoted as No-Go areas during construction. ECO to monitor.	<b>Low</b>	Contractors could disobey signage.
<b>Geology &amp; Soils</b>				
Collapse of structures	<b>Low</b>	Recommendations made by engineers to be incorporated into design and constructed as per design.	<b>Low</b>	Structures collapsing
If not planned and managed correctly topsoil will be lost.	<b>Low</b>	<ul style="list-style-type: none"> <li>Topsoil removed from the proposed excavations should be stored separately from all stockpiled materials and subsoil, according to the stockpiling methods as described below. The stockpiled topsoil should be used for rehabilitation</li> </ul>	<b>Low</b>	Soil erosion could occur if mitigation is

		<p>and landscaping purposes after construction has been completed;</p> <ul style="list-style-type: none"> <li>• The construction of residential units could leave soils exposed and susceptible to erosion. Soils should be stored adjacent to the excavated trenches that are excavated to install services, and this should be filled up with the in-situ material as the services are installed. All stones and rocks bigger than 80 mm should be removed from the top layer of soil and these disturbed areas should be re-vegetated immediately after works in a specific area are completed to prevent erosion;</li> <li>• Excavations on site must be kept to minimum and done only one section at a time. Excavated soils must be stockpiled directly on the demarcated area on site.</li> </ul>		not implemented
<b>Air quality pollution</b>				
Construction during the dry and windy season could cause excessive dust pollution during construction works.	<b>Low</b>	Regular and effective damping down of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that will have a negative impact on the surrounding residents and road users. When necessary, these working areas should be damped down at least twice a day.	<b>Low</b>	If mitigation is not implemented drivers visibility could be impaired.
Nuisance to neighbours and road users in terms of dust generation due to construction during the dry and windy season.	<b>Moderate</b>	The application site must be damped at a regular basis with water to prevent dust pollution to nearby residential area and commuters utilising surrounding roads.	<b>Low</b>	If mitigation is not implemented residents could complain about nuisance dust.
The noise created by earthmoving machinery will result in an increase in ambient noise levels. This will be short term, being generated only during the day.	<b>Low</b>	All construction activities must be restricted to normal working hours from 8:00 in the morning to no later than 18:00 in the afternoons. No construction may take place on Sundays and public holidays.	<b>Low</b>	If mitigation is not implemented residents could complain about nuisance noise.
<b>Habitat</b>				
Destruction of vegetation	<b>Low</b>	It is recommended that natural vegetation be retained as far as possible, if any natural areas are left. Excavations for the residential development should be done only as necessary and the footprint of disturbance should be limited.	<b>Low</b>	Low risk of total destruction of vegetation

				occurring on site
<b>Hydrology &amp; groundwater</b>				
Increased storm water run-off volumes and velocity	<b>Low</b>	Due to the clearing of vegetation the volume of storm water run-off will increase as well as the velocity. Temporary storm water management measures should be implemented to manage storm water during the construction phase.	<b>Low</b>	If storm water infrastructure is inadequate, erosion could occur.
Hydrocarbon pollution of surface and ground water	<b>Moderate</b>	Temporary storm water management measures should be implemented to manage storm water during the construction phase.	<b>Low</b>	Run-off can pollute the water resources in the surrounding area.
Excavated materials that are stockpiled in wrong areas can interfere with the natural drainage.	<b>Low</b>	The proposed development site varies in elevation; however an area must be allocated for stockpiling of topsoil before any construction take place on the application site. The stockpiles must be situated away from any water source or drainage channel. A sediment fence or barrier must be constructed around the stockpile, to prevent soil from washing away by rain or any water.	<b>Low</b>	If mitigation is not implemented, topsoil could be lost.
Construction during the rainy season can cause delays and damage to the environment.	<b>Low</b>	It is recommended that the construction phase be scheduled for the winter months; It is also recommended that the precautionary measures be taken in order to prevent the extensive loss of soil during rainstorms. Large exposed areas should adequately be protected against erosion by matting or cladding; Measures should be implemented during the rainy season to channel storm water away from open excavations and foundations.	<b>Low</b>	If mitigation is not implemented, erosion could occur.
<b>Roads and Traffic</b>				
Impact on provincial and national roads	<b>Moderate</b>	Considering the proposed development is in close proximity to the Nasrec Road and the site borders the M1 highway.	<b>Low</b>	If mitigation is not implemented, GDRT/ SANRAL could object to the development
Heavy vehicle traffic increase could disrupt the surrounding landowners' daily routines.	<b>Low</b>	Heavy vehicles responsible for material deliveries must be instructed to only use the main roads during off-peak hours.	<b>Low</b>	If mitigation is not implemented



				, traffic flow could be negatively affected.
Provision for safe and effective traffic flow.	<b>Moderate</b>	Health and safety mitigation/precautionary measures should be implemented during the construction work with regards to any upgrades near roads with public traffic.	<b>Low</b>	If mitigation is not implemented , motorists' safety could be at risk.
Access to existing properties.	<b>Low</b>	Construction activities should cater for continued access to existing properties, if applicable.	<b>Low</b>	If mitigation is not implemented , residents could complain about accessibility to their properties.
Construction might impact traffic flow.	<b>Moderate</b>	Liaison is required with the responsible traffic authorities to ensure compliance with legal requirements during construction activities. Appropriate signage and barricading will be required to ensure safe construction activities and smooth traffic flow during the construction phase.	<b>Low</b>	If mitigation is not implemented , motorists' safety could be at risk.
<b>Safety and Security</b>				
During the construction phase safety and security problems (especially surrounding residents) are likely to occur.	<b>Moderate</b>	<ul style="list-style-type: none"> <li>• Construction must be completed in as short time as possible.</li> <li>• No construction worker or relative may reside on the construction site during the construction phase. All construction workers must leave the site at the end of a day's work.</li> <li>• A security guard should be appointed on site to prevent any loss of materials and damage to construction equipment.</li> </ul>	<b>Low</b>	If mitigation is not implemented , residents and construction companies could be affected by crime.
The excavations associated with proposed residential development could pose a safety risk to pedestrians.	<b>Moderate</b>	The necessary safety precautions must be in place i.e. excavations must be fenced off with barrier tape; signage must be in place to identify excavations.	<b>Low</b>	If mitigation is not implemented , pedestrians'

				safety could be at risk.
Construction activities might affect the public e.g. road users	<b>Moderate</b>	Public safety is to be catered for during the construction phase.	<b>Low</b>	If mitigation is not implemented the public's safety could be at risk.
<b>Visual Impact</b>				
Dumping of builder's rubble on neighbouring properties.	<b>Low</b>	A specific location for building rubble must be allocated on site in order to concentrate and collect the building rubble and cart it to a registered landfill site. The allocated area must be out of sight of neighbouring properties not to have a visual impact.	<b>None</b>	If mitigation is not implemented, pollution could occur.
Stockpile areas for construction materials could have a negative visual impact and possibly impair drivers' views.	<b>Moderate</b>	An area on the site must be allocated for the stockpile of construction materials. The area must be situated on the construction site, and must be situated to have a minimal visual impact on the neighbouring area. Stockpiles may not be stockpiled higher than 2m in order to prevent impairing views (line of sight) of drivers utilising the surrounding roads.	<b>Low</b>	If mitigation is not implemented, vehicle accidents could occur.
The construction vehicles, the site camp, and other construction related facilities will have a negative visual impact during the construction phase.	<b>Moderate</b>	Before any construction commence on site, an area on site must be demarcated for a site camp. The selected site should not impair views (line of sight) of drivers utilising upgraded roads, nor should it be a distraction.	<b>Low</b>	If mitigation is not implemented, community complaints could occur.
<b>Cultural and Archaeology</b>				
Occurrence of cultural historical assets on the proposed development site.	<b>Low</b>	It is not anticipated that sites or features of cultural/ historical significance will be unearthed during construction; however, if finds are exposed during construction work, it should immediately be reported to an appropriately qualified specialist. Construction workers to be trained in the identification of paleontological finds.	<b>Low</b>	Cultural heritage finds unearthed during construction, could be destroyed
<b>Flora &amp; Fauna</b>				
Construction works might cause destruction of protected species	<b>Moderate</b>	No protected species were recorded on site. The following must be applied:	<b>Low</b>	If mitigation is not implemented

		<ul style="list-style-type: none"> <li>Construction personnel should be trained in identification of Bullfrogs species.</li> <li>The contractors must ensure that no fauna species are trapped, hunted, or killed during the construction phase.</li> <li>Should any mammal species be encountered during the construction phase, they should be relocated to natural areas in the vicinity.</li> </ul>		, protected species could be destroyed.
Uncontrolled fires may cause damage and loss to vegetation and fauna in the area.	<b>Low</b>	<ul style="list-style-type: none"> <li>No fires are allowed on the construction site.</li> <li>Smoking only allowed in designated areas away from vegetation which could possibly catch fire.</li> <li>Cigarette disposal facilities should be catered for in the designated smoking areas.</li> </ul>	<b>Low</b>	Protected species could be destroyed.
<b>Waste Management</b>				
Site office, camp and associated waste (visual, air and soil pollution)	<b>Moderate</b>	<p>The site camp should not be located in a highly visual area on the study area, or a screen or barrier should be erected as not have a negative impact on the sense of place.</p> <p>The site camp and the rest of the study area should appear neat at all times; A temporary waste storage point shall be determined and established on site by means of demarcation. This storage points shall be accessible by waste removal vehicles.</p> <p>The temporary storage site may not be highly visible from the properties of the surrounding residents.</p> <p>Waste materials should be removed from the site on a regular basis (at least weekly), to a registered landfill site.</p>	<b>Low</b>	If mitigation is not implemented, community complaints could be received.
Disposal of construction waste and waste materials.	<b>Moderate</b>	<p>All the waste generated by the proposed residential development construction must be temporarily stored at a preselected area on site to be carted to a registered landfill site allowed to take building rubble;</p> <p>Waste storage should occur in areas that have already been disturbed. These small waste receptacles must be emptied at the temporary waste storage area on a weekly basis for removal.</p> <p>All waste must be removed to a registered landfill site on a weekly basis. No waste materials may be disposed of on or adjacent to the site;</p> <p>The storage of solid waste on site, until such time that it may be disposed of, must be in the manner acceptable to the local authority; and</p> <p>Records of waste reused, recycled, and disposed must be kept for future reference or inspection by authorities.</p>	<b>Low</b>	If mitigation is not implemented, pollution might occur.
<b>OPERATIONAL PHASE</b>				
<b>Beneficial Impacts</b>				
<b>Social &amp; Economic Environment</b>				
Compatibility with the Local Municipality's development framework.	<b>High</b>	Optimum use of services.	<b>None</b>	No risk due to positive impact.

Adverse Impacts				
Fauna and Flora				
Invasive plant species occurrence	<b>Moderate</b>	Alien plant eradication to continue during operational phase of the project. Should any alien plant species occur in the areas where construction works and ground works took place, it should be eradicated from the area.	<b>Low</b>	If mitigation is not implemented, invasive plants could spread.
Hydrology and groundwater				
Increased storm water run-off volumes and velocity	<b>Low</b>	Due to the impermeable surfaces (specifically the roads and bridge) the volume of storm water run-off will increase as well as velocity. Storm water will have to be effectively channelled and storm water infrastructure will have to be maintained.	<b>Low</b>	If mitigation is not implemented, erosion could occur.

**No-Go Alternative**

Potential impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
<p>The no-go alternative will result in no development taking place within the area. No positive impacts are foreseen for the no-go alternative, as it would result in the application site remaining in its current state. The present state of the study site is associated with vacant land open to dumping. With the study area not being developed, the illegal dumping of rubble and waste will continue. This poses a risk of water pollution as well as soil pollution.</p> <p>The social and economic benefits associated with the potential development will not be realized if the development does not go ahead. There will be no job opportunities for the local community during the short and long term.</p> <p>From an ecological point of view, it is also crucial that the development takes place on the site in order to implement storm water management measures and possibly rehabilitate the water course. Without any development the watercourse will continue being polluted and erode even further.</p>				

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Geotechnical Investigation  
Wetland Study

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

There are no known gaps in this assessment.

### 3. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

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

#### Proposal

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
<b>Geology &amp; Soils</b>				
Soil erosion, siltation, and gully formation.	<b>Low</b>	Compaction of fill material following construction should take place. Topsoil stockpiled should be returned and used for rehabilitation of disturbed areas.	<b>Low</b>	If no mitigation measures are implemented, erosion of fill material could occur.
Loss of topsoil due to poor rehabilitation.	<b>Low</b>	Rehabilitation works must be done immediately after the involved works in an area is completed in order to prevent loss of topsoil and possible erosion.	<b>Low</b>	If no mitigation measures are implemented, loss of topsoil could occur.
<b>Hydrology &amp; Groundwater</b>				
Impacting wetland and groundwater functionality	<b>Moderate</b>	Decommissioning activities within 500m from a wetland poses potential for water pollution.	<b>Low</b>	If no mitigation measures are implemented, wetland could be negatively impacted.
Not reinstating natural run-off/drainage following completion of the decommissioning phase.	<b>Low</b>	Due to construction/decommissioning activities such as excavations and stockpiling, the natural drainage of the area will temporarily be changed. Following completion of the decommissioning phase and completion of rehabilitation, natural drainage should be reinstated to its former (prior to construction) state.	<b>Low</b>	If no mitigation measures are implemented, natural run-off could be negatively altered.
Demolition works during the rainy season can cause unnecessary delays and damage to the environment, especially damage to existing roads in the area.	<b>Low</b>	Should decommissioning take place in the wetter months, frequent rain could cause very wet conditions, which makes it extremely difficult to do the necessary rehabilitation works of disturbed areas. Wet soils are vulnerable to compaction. Wet conditions often causes delays and the draining of water away from the works (in the case of high water tables) into the water bodies of the adjacent properties, could (if not planned and managed correctly) have an impact on the water quality of these water bodies. Rehabilitation should be planned to take place prior to the onset on the rainy season i.e. prior to spring, if possible.	<b>Low</b>	If no mitigation measures are implemented, the environment could be damaged.
<b>Safety &amp; Security</b>				

Decommissioning activities could cause danger to drivers and pedestrians.	<b>Moderate</b>	The necessary safety precautions must remain in place until decommissioning phase is concluded i.e. signage must be in place to identify activities in progress.	<b>Low</b>	If no mitigation measures are implemented, erosion of fill material could occur.
<b>Waste Management</b>				
Site office, camp and associated waste (visual, air and soil pollution)	<b>Moderate</b>	Temporary site camp and waste storage areas are to be decommissioned. Disturbed areas are to be rehabilitated and returned to its former state (prior to construction commencing).	<b>Low</b>	If no mitigation measures are implemented, sense of place will be negatively affected.
Disposal of builders waste and waste materials.	<b>Moderate</b>	All waste generated during the decommissioning phase of the project is to be collected and disposed of at a registered landfill site. Records must be kept of waste reused, recycled, and disposed for inspection by authorities.	<b>Low</b>	If no mitigation measures are implemented, the environment will be polluted.
<b>Roads &amp; Traffic</b>				
Heavy vehicle traffic increase could disrupt the surrounding landowners' daily routines.	<b>Low</b>	Heavy vehicles responsible for collecting waste or rehabilitation during the decommissioning phase must be instructed to only use the main roads during off-peak hours.	<b>Low</b>	If no mitigation measures are implemented, residents might complain.
Restrictions of access to surrounding properties and the construction area during decommissioning and closure phases.	<b>Low</b>	To minimize the impacts on local traffic, vehicles associated with decommissioning should avoid using the local road network during peak traffic times. These vehicles should use only specific roads and strictly keep within the speed limits and abide to all traffic laws. No speeding or reckless driving should be allowed. Access to the site for decommissioning vehicles should be planned to minimize the impact on the surrounding network; and Warning signs should be erected on the roads that these vehicles will use, at big crossings/ access roads and on the site if needed.	<b>Low</b>	If no mitigation measures are implemented, residents might complain.
Damage to roads.	<b>Low</b>	Provisions made for temporary access to and from the construction/ decommissioning site along local roads should be removed. Any damage to the local road curbs at access points to construction site caused by construction activities should be repaired.	<b>None</b>	If no mitigation measures are implemented, road could be damaged without being repaired.
Access to adjacent properties	<b>Low</b>	Existing accesses to properties should be restored to former state prior to construction having commenced, in order to prevent complaints.	<b>None</b>	Adjacent properties might not be accessible.
<b>Air quality and noise</b>				
Demolition works during the dry and windy season.	<b>Low</b>	Regular and effective damping down of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that will have a negative impact on the surrounding environment. When necessary, these working areas should be damped down at least twice daily.	<b>Low</b>	If no mitigation measures are implemented, dust pollution could occur.
The noise created by	<b>Low</b>	All decommissioning and closure activities must be restricted to normal	<b>Low</b>	If no mitigation measures

decommissioning activities will result in an increase in ambient noise levels. This will be short term, being generated only during the day.		working hours from 8:00 in the morning to no later than 18:00 in the afternoons. No construction/ decommissioning may take place on Sundays and public holidays.		are implemented, noise pollution could occur.
<b>Visual Impact</b>				
Dumping of builder's rubble on neighbouring properties.	<b>Moderate</b>	All waste temporarily stored on the construction site during the operational phase has to be removed from the site during the decommissioning phase and prior to the project being regarded as closed.	<b>Low</b>	If no mitigation measures are implemented, pollution could occur resulting in community complaints.
<b>Flora</b>				
Not immediately rehabilitating disturbed areas resulting in spread of invasive plants and weeds.	<b>Moderate</b>	Disturbed areas to be rehabilitated as soon as construction has concluded in order to prevent the spread of invasive plants and weeds.	<b>Low</b>	If mitigation measures is not implemented, invasive species might thrive.
No rehabilitation with indigenous plant species resulting in spread of aliens.	<b>Moderate</b>	All landscaping should use indigenous plants only, with preference given to endemic plant species where possible.	<b>Low</b>	If mitigation measures is not implemented, invasive species might thrive.

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Geotechnical Investigation  
Wetland Study

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

Not applicable.

#### 4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

Should the proposed residential development be approved, the majority of cumulative impacts will be related to the construction phase. Residential developments within an urban residential area have very low environmental impacts during its operational phase.

- Traffic flow could be negatively affected by the proposed construction activities coupled with peak traffic hours. It is thus important that use of access roads be limited to off-peak hours. Traffic flow could be altered when the development is operational due to the additional residents.
- Cumulative negative visual impact on surrounding views due to the camp site, movement of construction vehicles, building rubble storage, and construction works etc. This impact may be minimized by locating the site camp and rubble storage area in an area with low visibility from surrounding developments and road networks.
- Background dust pollution caused by traffic could be aggravated by clearing of vegetated areas. Dust control can be applied by means of water trucks (grey water during water restriction periods), particularly in the dry winter months.
- During the construction phase some safety problems (especially for the surrounding residents and road users) are likely to occur due to construction activities. In order to minimize this, site workers are not to be allowed to sleep on the construction site at night and provision for adequate security/ site supervision must be made during the day.
- Potential cumulative impact on the wetland system situated on the proposed development site. Poor stockpiling could lead to topsoil stockpiles washing away and silting up the wetland or storm water infrastructure. Increased storm water run-off due to cleared areas, could lead to erosion and siltation of the wetland.

As illustrated, these cumulative impacts can be mitigated if activities are correctly planned and mitigation measures are implemented to manage activities which could cause any negative cumulative impacts.

#### 5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

##### Proposal

**The major impacts that is likely to occur during the construction and operational phase, after management, include:**



**NATURAL ENVIRONMENT**

- Temporary storm water management measures will be installed in order to reduce run-off and potential sedimentation in areas down slope from the study area.
- Functionality of the wetland on the development site will not be affected by the construction activities considering stockpiling methods and construction during dry periods, which will prevent loss of topsoil. Temporary storm water management measures will be installed in order to reduce run-off and potential sedimentation towards the wetland.
- The study area is extremely disturbed and transformed and it is therefore not expected that the natural environment will be severely impacted upon.

**SOCIAL ENVIRONMENT**

- Considering that cleared areas will be dampened it is not foreseen that air pollution will be a concern to residents and road users on the M1 highway and in the surrounding area.
- Construction activities (campsite, rubble storage areas etc.) will be placed out of site from local residents and traffic as far as possible, but might be temporarily visually unpleasant.
- Surrounding residents might experience intervals of service disruptions. This will be mitigated as far as possible by avoiding this otherwise notifying the residents.

**ECONOMIC ENVIRONMENT**

- The approved development will contribute to the economy of the area. The development of the residential area will create jobs for skilled and unskilled workers during the construction phase. Maintenance and management of the residential area will create job opportunities during the operational phase as well.

**Alternative 1**

Not applicable

**Alternative 2**

Not applicable

**No-go (compulsory)**

The no-go alternative will result in no residential development. No positive impacts are foreseen for the no-go alternative, as it would result in the application site remaining in its current state. The present state of the study site is associated with illegal dumping and a degrading natural environment. This poses a great threat to the soil and groundwater. It will also be a social impact in terms of visibility and air quality (smell) and safety.

The ecological environment will be deprived from any positive impacts should no development be approved. The watercourse is greatly disturbed and eroded and the number of alien and invasive plant species on the site is not beneficial to the ecological environment.

A residential development will fit in with the surrounding area and eliminate illegal dumping, therefore avoid pollution of the natural area. The social and economic benefits associated with the potential development (approved) will not be realized if the residential development cannot go ahead.

## 6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

Considering the proposed development occurs on a piece of land that has illegal dumping on it and where alien vegetation occur, the proposed residential development will not have a major negative impact on the ecological surroundings.

### **Bio-Physical**

- It is not anticipated that the development (residential) will have any effect on the bio-physical environment should management measures in the EMP be followed pertaining to stockpiling and storm water management. It is also recommended that, prior to construction commencement, a waste management company should be appointed to clean up the site from the illegal dumping,

### **Ecological**

- No Red Listed flora or fauna species are expected to occur on the site.
- It is recommended that prior to site clearance, the site need to be surveyed by a flora specialist in order to ensure there is no red listed plant species.
- Eradication of alien vegetation would improve conservation of indigenous flora species.

### **Institutional**

- The proposed residential development will result in the optimum utilisation of services of the surrounding urban area.
- The proposed residential development mainly occurs within Zone 1 of the GPEMF i.e. identified as Urban Development Zone with a section occurring in Zone 2.

**Economical**

- The construction and operational phase of the residential development will create needed employment opportunities to several skilled, semi-skilled, and un-skilled individuals.
- There will be rates and taxes payable to the local municipality.

**Social**

- The development will create employment opportunities during the construction and operational phase.
- The developer will have to notify surrounding residents in the case of service disruptions.

Based on the biophysical, institutional, social, and economical characteristics, it is evident that the site is suitable for the proposed residential development.

The development will create numerous job opportunities during the construction and operational phase which will be beneficial for the community, local authority and the Gauteng Province in general.

As already indicated in the report, most of the construction related activities could be mitigated to more acceptable levels and limited ecological impacts are anticipated. The proposed project (residential development) will in majority have an impact during the construction phase as it is already in an urban residential area and therefore the operational phase impacts will be limited.

As a result of the above mentioned information, we are of the opinion that the proposed development (only if planned, implemented and managed correctly) will promote sustainable development and it will have a significant positive impact on the local area.

It is therefore requested that the development be allowed to proceed, and that the implementation of the Environmental Management Programme **(Appendix H)** be a condition of such an approval.

For alternative:

Not applicable

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

The proposed residential development fits in with the surrounding area and the site is considered ideal for the proposed development. The site is subject to illegal dumping and the natural environment has been severely degraded due to the

aforementioned as well as various human activities. The surrounding area mainly includes residential areas with some business and industrial complexes further away. The proposed development will be seen as infill development as majority of the surrounding area is already developed. The impacts for this residential development will mainly be in the construction phase and these could be mitigated in order to minimise the impact.

**7. SPATIAL DEVELOPMENT TOOLS**

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

Spatial data was used to determine the agricultural potential, presence of rivers and wetlands and urban edge. Together with the Gauteng Conservation Plan (c-plan) data, the presence of ecological support areas and protected areas were also established.

**8. RECOMMENDATION OF THE PRACTITIONER**

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).

<b>YES</b> <b>X</b>	<b>NO</b>
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If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):


If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

Bokamoso is of the opinion that both beneficial and adverse impacts were thoroughly assessed, and the needs and benefits for this project have been assessed so as to give the proposed residential development the go-ahead. As a result, Bokamoso is of the opinion that the proposed residential area will have a significant long-term socio-economic beneficial impact on the subject property. Considering all the above mentioned information it is requested that this Basic Assessment be approved subject to the implementation of the mitigation measures contained in the Environmental Management Programme (**Appendix H**) and the other mitigation measures and recommendations mentioned below to achieve maximum advantage from beneficial impacts, and sufficient mitigation of adverse impacts. Should all the recommendations be adhered to it is foreseen that there would be no reason for this application not to be approved.

It is recommended that, based on the findings of the Basic Assessment Report and supplemental specialist information that:

- Should the proposed residential development obtain the necessary

environmental authorization, the Environmental Management Programme (EMPr) must be implemented for the construction and operational phases of the development. The EMPr, as attached to this document, should be made part of the contractual documents of the contractors;

- Mitigation measures, as set out in the EMPr, must be implemented during the construction and operational phases;
- External environmental monitoring must be conducted to ensure overall compliance with legislative requirements and the EMPr;
- If during construction any evidence of archaeological sites or artefacts, paleontological fossils, graves or other heritage resources are found, the operations must be stopped and a qualified archaeologist or SAHRA must be contacted immediately for an assessment of the find;
- The safety and security of the people in the surrounding area are important and must be taken into careful consideration during the construction phase;
- Local people are to be given employment preference;
- All recommendations made by the specialists in reports compiled for this development should be adhered to at all times.

**9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT** (as per notice 792 of 2012, or the updated version of this guideline)

In South African cities, medium to high density residential developments have become a growing trend. This is partly to be accommodating to the growing population. Further to this, the demand for higher density developments, in comparison to single dwelling houses, can be substantiated by the benefits that come with densification. Higher density developments promote a sustainable city in the long term because they make optimal use of limited resources such as land and existing infrastructure and services. In addition, densification within close proximity to economic centres, social amenities and educational institutions promotes access to job opportunities and ensures the social well-being of the population. Such densification also contributes to the reduction of the ecological footprint as a result of shortened travel distances where as low density developments threaten the sustainability of the city through loss of valuable agricultural land on the urban edges and growing urban sprawl, resulting in longer and more expensive commutes. In view of the above, it is evident that densification within urban areas is needed in order to ensure a sustainable city in the long term.

**10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED**  
(CONSIDER WHEN THE ACTIVITY IS EXPECTED TO BE CONCLUDED)

**10 years**

**11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)** (must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers "Yes" to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached

**YES**  
**X**

## SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Figures

Appendix J: Company Profile and CV

### CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.









# Appendix A

Site Plan(s)

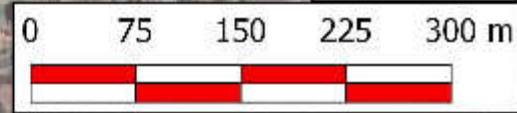


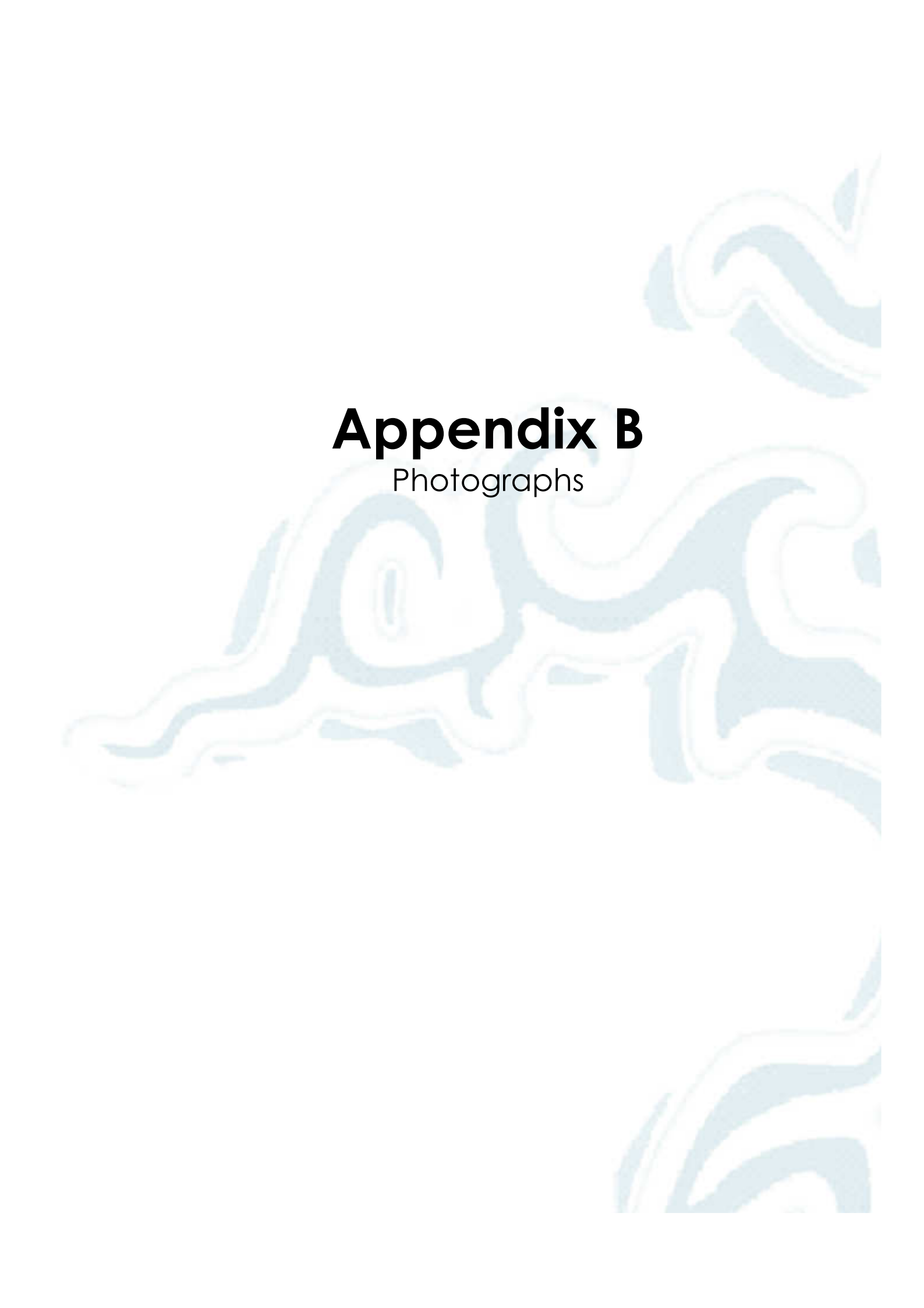


### Legend

-  Study Site
-  Watercourse
-  TRANSFORMED RIDGES  
C Plan Area
-  Ecological Support Area  
Wetland Buffers
-  Wetland  
River Buffers
-  Non-Perennial

Scale 1:6000

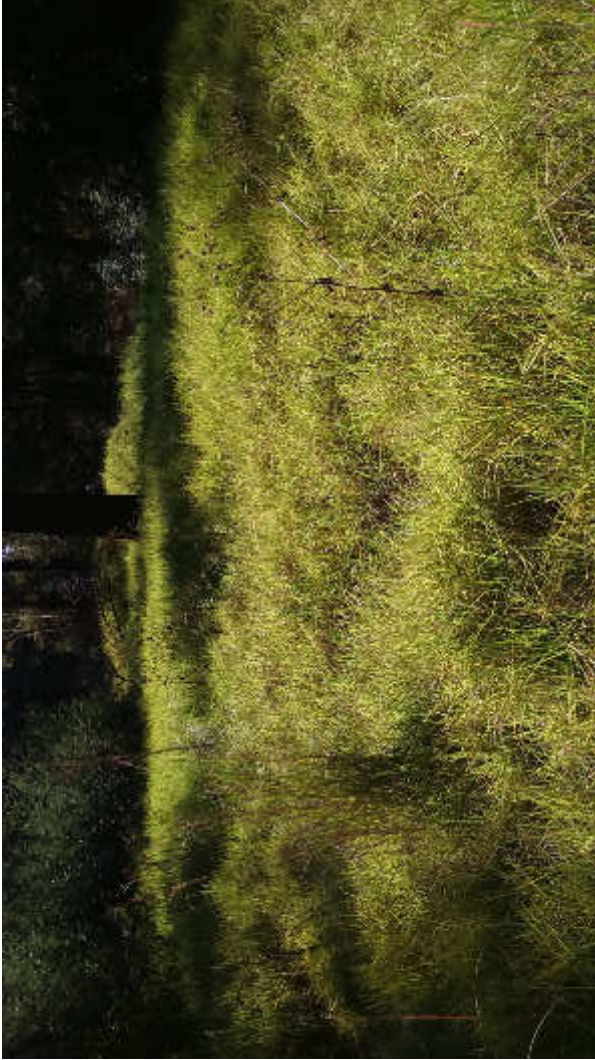




# Appendix B

Photographs



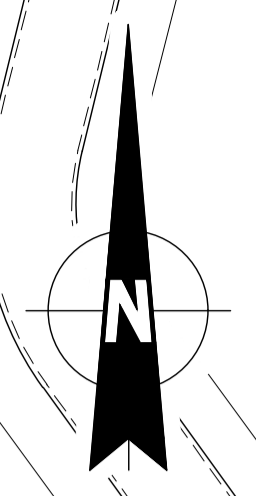
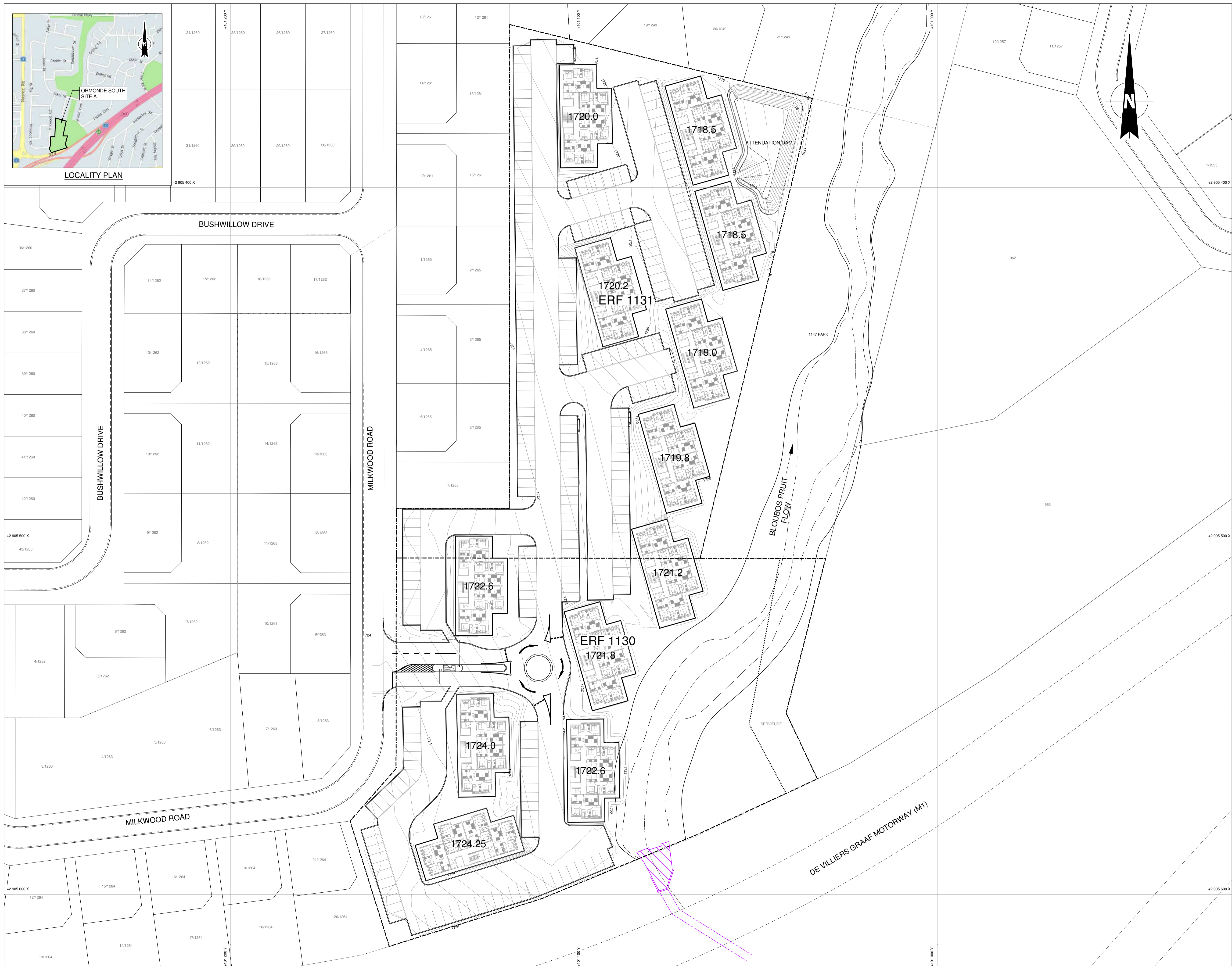


# Appendix C

Facility illustration(s)



LOCALITY PLAN



FEB 2017	-	ISSUED FOR APPROVAL
DATE	NO	REVISION

CLIENT

LOCAL AUTHORITY

Civil Concepts (Pty) Ltd  
Consulting Civil & Structural Engineers  
PO Box 36148, Menlo Park, 0102  
Office: +27 12 460 0008  
www.civilconcepts.co.za

PROJECT

**ORMONDE SOUTH**

**SITE A ON ERF 1130 & 1131**

DRAWING TITLE

**SITE LAYOUT PLAN**

DRAWING NO **C2284-A-201**

REV. NO.					
SCALE	1:500	DESIGNED	A.OOSTHUIZEN		
		DRAWN	A.OOSTHUIZEN		
DATE	JANUARY 2017	CHECKED	L.ZIETSMAN		



**LEGEND:**

LEGEND :

- SEWER
- SEWER MANHOLE
- SEWER CLEANING EYE
- WATER
- WATER
- STORMWATER

FEB 2017	-	ISSUED FOR APPROVAL
DATE	NO	REVISION

CLIENT



LOCAL AUTHORITY



a world class African city



**Civil Concepts (Pty) Ltd**  
 Consulting Civil & Structural Engineers  
 PO Box 36148, Menlo Park, 0102  
 Office: +27 12 460 0008  
 www.civilconcepts.co.za

PROJECT

**ORMONDE SOUTH**

**SITE B ON ERF 962 & 963**

DRAWING TITLE

**GENERAL SERVICES LAYOUT PLAN**

DRAWING NO **C2284-B-202-1**

REV. NO.					
SCALE	1:500	DESIGNED	A.OOSTHUIZEN		
		DRAWN	A.OOSTHUIZEN		
DATE	JANUARY 2017	CHECKED	L.ZIETSMAN		



# Appendix D

Route portion information

**N/A**





# **Appendix E**

## Public Participation Information

# **Appendix Ei**

Proof of Newspaper advertisement

**Accommodation**  
Johannesburg Sappers  
Retirement Village -  
Lombardy East  
Ages 60-80 Years (can apply  
No Pets, No Children  
Independent Living  
Safe and Secure  
Available Immediately  
3 Bedroom Cottage  
Rent - R4,392.00  
Levy - R1,251.00  
50 Years and older

**567 To Let Flats**  
**ACCOMMODATION TO LET**  
FLATS - BACH, 1 BED,  
2 BED, 3 BED +  
PTA - Arcadia,  
Sunnyside, Central &  
Korona Park,  
Rent from R2700.00pm\*  
Deposit payable over  
2 months  
Prepaid Electricity  
SPECIAL \*\*\* Ask about

**567 To Let Flats**  
**NEWLY REFURBISHED FLATS TO LET**  
NYABA VIEWS,  
27 NYABA STREET, 2148  
Available immediately  
1 bed & 2 bed flats  
- Situated less than 250m from the  
Constitutional Hill Braamfontein  
- Prepaid Electricity - 24 hrs Security  
with CCTV - Secure basement parking  
- DSTV aerial points  
Rentals start from  
R2,700.00pm\*

**569 To Let Homes**  
**FOURWAYS COUNTRY LIVING**  
5 km North from  
Fourways.  
2 Bedroom,  
2 Bathrooms, Open  
plan kitchen, lounge  
and dining room  
Good Security,  
Lock-up garage.  
Avail 1 November.

The Star



**TELE-AD CANVASSER (Contract)**

Independent Media seeks to employ a Tele-ad Canvasser that is highly self-motivated, results orientated, target-driven, go-getter with a vibrant personality to join our highly successful telesales team in the Classifieds Department in Gauteng.

**Responsibilities**

- Cold canvass new business and service existing clients.
- Do sales related administration.
- Ensure that all telephonic calls are answered promptly and efficiently.
- Achieve monthly sales targets.

**Minimum requirements**

- Excellent sales ability with a 2-3 year telesales track record preferably in a classified/ advertising environment.
- Be able to type fast and accurate (at least 35wpm).
- Proven cold canvassing ability and be able to consistently source new business opportunities.

**Competencies**

- Excellent command of the English language both written and verbal.
- Be customer service orientated.
- Be well organised with strong administration skills.
- Be able to work on tight deadlines with minimum supervision in a highly pressurised team environment.

Independent Media is committed to its Employment Equity and Affirmative Action plans. All interested and suitably qualified applicants should submit a written application and detailed CV via post or e-mail ([recruitment@iml.co.za](mailto:recruitment@iml.co.za)) by no later than 16:30pm on Friday, 14th October 2016 to:

Precious Thwala  
HR Officer  
PO Box 1014  
Johannesburg  
2000

**If you have not heard from us within six weeks of submitting your application, please consider you application unsuccessful**

**613 Drivers**  
Drivers, wanted smx "GD" to 34150 [www.jobster.co.za](http://www.jobster.co.za)

**620 General**  
**ARE YOU A TV PRESENTER IN HIDING?**  
Get connected  
Interact with professionals  
Intensive training offered.  
Course Venue:  
SABC, Auckland Park  
CO-MEDIA CONCEPTS  
Book now, limited space available.  
Course starts  
5 November 2016  
Call Claire  
482-4852 (o/h) only  
[www.mediaconcepts.co.za](http://www.mediaconcepts.co.za)

**630 Operation Employment**  
Bookkeeper / Junior Accountant, up to trial balance, part ACCA, postal exp is looking for a job. \* Isacc 063 699 0993  
Counselling or any general job, Psycholog honours, 1yr till pack exp, seek employment \* Neo 0742337250  
DRIVER - Code 10+ PDP, 15 yrs exp + navigation logistics level 4, Arts & Culture Admin, is looking for a job. \* Fumanisa 0782297217  
DRIVER - Code 8, PDP, 15 years experience, computer literate, is looking for a job. \* Thomas 072 548 2009  
PA Data Capturer/ HR admin, Comp Literate, ABET Tutor, Avail immed. 062-650-8064  
SANDBLASTING / Spray-painting, 6 years exp is looking for a job. \* Robben 0820784979  
Software Support / Help Desk, 10 yrs exp, Diploma, is looking for a job. Isacc 0736942697

**632 Part-time**  
BE on TV/ or A MODEL? Casting THIS Fri & Sat R390.5MB Yr Norms & Cell# 10 073 404-7360. \*Platinum-Blue.com\*

**639 Operation Employment**  
DOMESTIC Worker looking for a job. With Refs. \* 0733078725  
DOMESTIC Worker looking for work. With Refs. \* 0791708921  
DOMESTIC Worker looking for a job. 10 yrs exp. \* Caroline on 0735311832

**PHYSICAL ADDRESS:**  
The Controller of Petroleum Products  
Department of Energy  
152 Viaggie street, Pretoria  
**POSTAL ADDRESS:**  
The Controller of Petroleum Products  
Department of Energy  
Private Bag X 95, Pretoria.  
00017  
(STAR 10476442)

**710 Miscellaneous**  
**NOTICE for proposed re-instatement of: Erf 1877 Mayfair. Reg No. 1993/032925/23** to be made to CIPC. Objections can be lodged with CIPC within thirty (30) days. (STAR 10476211)  
**NOTICE for proposed re-instatement of: J Haller Investments. Reg No. 1993/032925/23** to be made to CIPC. Objections can be lodged with CIPC within thirty (30) days. (STAR 10475392)

**Zass Motors cc Reg No. 2004/076467/23.**  
Zass Motors cc, intends making application to CIPC, for the restoration of the above close corporation, previously deregistered. Any objection to the application must be lodged with CIPC within 21 clear days from the date of this advertisement.

**NOTICE OF A BASIC ASSESSMENT PROCESS**  
Notice is given of an application for a Basic Assessment Process that is to be submitted to the Gauteng Department of Agriculture and Rural Development, in terms of Regulation No. R982 published in the Government Notice No. 38282 of 4 December 2014 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing Basic Assessment Procedures (Listing Notice 1 and 3 - Government Notice R983 & R985) for the following activity:  
Project Name: Ormonde South Residential  
Proprietor Name: Media Projects (Pty) Ltd  
Project and Property Description:  
This application for Environmental Authorisation is for the proposed residential development on Erven 1130 & 1131, Ormonde Ext 24 and Erven 982 & 983, Ormonde Ext 22  
Location: The site is situated north of the M1 highway and east of Naarac Road. The southern boundary is next to the onramp from Naarac Road to the M1 highway in Ormonde.  
Listing Activities Applied for in terms of NEMA Regulations, 4 December 2014:  
\* GNR 983 (Listing Notice 1)  
\* Activity 9, 10, 12, 15 & 27  
\* GNR 985 (Listing Notice 3)  
\* Activity 4, 12 & 14  
(Listed Activities triggered will be confirmed during the application process)  
Date of Notice: 13 October 2016 - 14 November 2016  
The site-mentioned proposed development requires applications subject to a Basic Assessment. Representations with respect to this application may be made by phone, fax or e-mail within 30 days of the date of the notice. Please note that in order to continue to receive information regarding this project, you must register as an I&AP with the contact persons listed below. Queries regarding this matter should be referred to:  
BOKAMOSO LANDSCAPE ARCHITECTS AND ENVIRONMENTAL CONSULTANTS CC  
Public Participation registration and enquiries:  
Juanita De Beer  
Project Enquiries:  
Mary-Lou van Zyl  
P.O. Box 11375  
Sandton, 21161  
Tel: (011) 348 3810  
Fax: (085) 570-6559  
E-mail: [register@bokamoso.net](mailto:register@bokamoso.net)  
[www.bokamoso.net](http://www.bokamoso.net)  
(STAR 10476172)



For all your  
Legal  
Advertising  
Tel:  
011 870 7100

BERNARD POTASH & Attorneys  
11th Floor  
No. 1 Thibet  
CAPE TOWN  
(021) 416-  
chess@bnf.co.za  
(NEF-CHE)  
(STAR 10476172)

FC  
AK

01  
C

# Appendix Eii

Proof of Site Notice

# NOTICE OF A BASIC ASSESSMENT PROCESS

Notice is given of an application for a **Basic Assessment Process** that is to be submitted to the Gauteng Department of Agriculture and Rural Development, in terms of Regulation No. R982 published in the Government Notice No. 38282 of 4 December 2014 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing **Basic Assessment Procedures (Listing Notice: 1 and 3 – Government Notice R983 & R985)** for the following activity:

**Project Name:** Ormonde South Residential.

**Proponent Name:** Matla Projects (Pty) Ltd.

**Project & Property Description:** This application for Environmental Authorisation is for the proposed residential development on Erven 1130 & 1131, Ormonde Ext 24 and Erven 962 & 963, Ormonde Ext 22.

**Location:** The site is situated north of the M1 highway and east of Nasrec Road. The southern boundary is next to the onramp from Nasrec Road to the M1 highway in Ormonde.



**Listing Activities Applied for in terms of NEMA Regulations, 4 December 2014:**

GNR 983 (Listing Notice 1) – Activity 9, 10, 12, 19 & 27.

GNR 985 (Listing Notice 3) – Activity 4, 12 & 14.

**(Listed Activities triggered will be confirmed during the Application process)**

**Date of Notice: 13 October 2016 – 14 November 2016.**

The aforementioned proposed development requires applications subject to a Basic Assessment. Representations with respect to this application may be made by phone, fax or e-mail within 30 days of the date of the notice. Please note that in order to continue to receive information regarding this project, you must register as an I&AP with the contact person listed below.

**Queries regarding this matter should be referred to:**

**Bokamoso Landscape Architects and Environmental Consultants CC**

Public Participation registration and Enquiries: **Juanita De Beer**

Project Enquiries: **Mary-Lee van Zyl**

P.O. Box 11375

Maroelana 0161

www.bokamoso.net



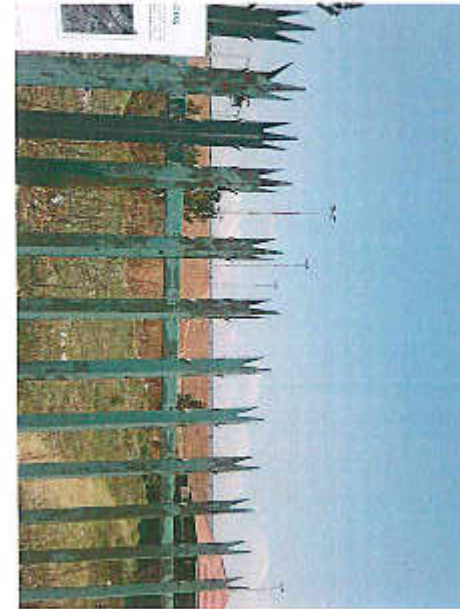
Tel: (012) 346 3810

Fax: (086) 570 5659

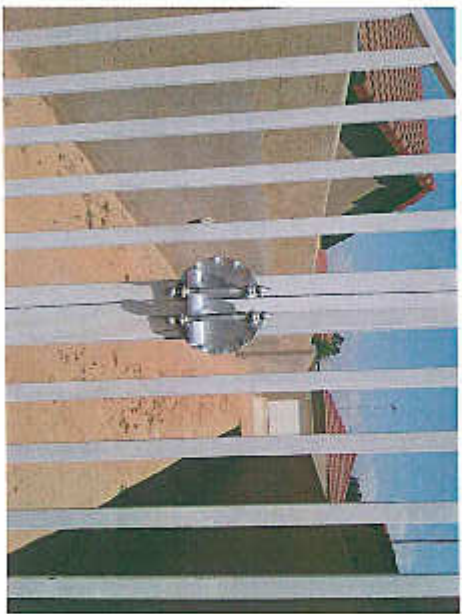
E-mail: [reception@bokamoso.net](mailto:reception@bokamoso.net)



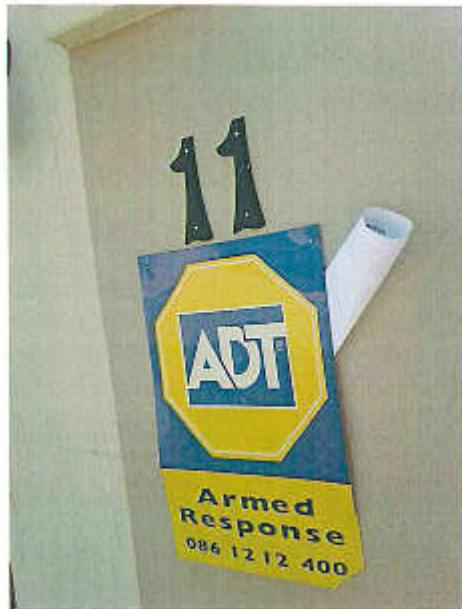
































# Appendix Eiii

Written Notice

# NOTICE OF A BASIC ASSESSMENT PROCESS

Notice is given of an application for a **Basic Assessment Process** that is to be submitted to the Gauteng Department of Agriculture and Rural Development, in terms of Regulation No. R982 published in the Government Notice No. 38282 of 4 December 2014 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing **Basic Assessment Procedures (Listing Notice: 1 and 3 – Government Notice R983 & R985)** for the following activity:

**Project Name:** Ormonde South Residential.

**Proponent Name:** Matla Projects (Pty) Ltd.

**Project & Property Description:** This application for Environmental Authorisation is for the proposed residential development on Erven 1130 & 1131, Ormonde Ext 24 and Erven 962 & 963, Ormonde Ext 22.

**Location:** The site is situated north of the M1 highway and east of Nasrec Road. The southern boundary is next to the onramp from Nasrec Road to the M1 highway in Ormonde.



**Listing Activities Applied for in terms of NEMA Regulations, 4 December 2014:**

GNR 983 (Listing Notice 1) – Activity 9, 10, 12, 19 & 27.

GNR 985 (Listing Notice 3) – Activity 4, 12 & 14.

**(Listed Activities triggered will be confirmed during the Application process)**

**Date of Notice: 13 October 2016 – 14 November 2016.**

The aforementioned proposed development requires applications subject to a Basic Assessment. Representations with respect to this application may be made by phone, fax or e-mail within 30 days of the date of the notice. Please note that in order to continue to receive information regarding this project, you must register as an I&AP with the contact person listed below.

**Queries regarding this matter should be referred to:**

**Bokamoso Landscape Architects and Environmental Consultants CC**

Public Participation registration and Enquiries: **Juanita De Beer**

Project Enquiries: **Mary-Lee van Zyl**

P.O. Box 11375

Maroelana 0161

www.bokamoso.net



Tel: (012) 346 3810

Fax: (086) 570 5659

E-mail: [reception@bokamoso.net](mailto:reception@bokamoso.net)

LEBOMBO GARDENS BUILDING  
36 LEBOMBO ROAD  
ASHLEA GARDENS

P.O. BOX 11375  
MAROELANA  
0181

Tel: (012) 346 3810  
Fax: 086 570 5659  
E-mail: [reception@bokamoso.net](mailto:reception@bokamoso.net)  
Website: [www.Bokamoso.net](http://www.Bokamoso.net)



**Dear Landowner/Tenant**

**13 October 2016**

You are hereby informed that **Bokamoso Landscape Architects and Environmental Consultants CC** were appointed (as EAP) by **Matla Projects (Pty) Ltd** to conduct the Basic Assessment Process in terms of the 2014 NEMA EIA Regulations for the proposed **Ormonde South Residential**.

**Project Description:**

This application for Environmental Authorisation is for the proposed residential development on Erven 1130 & 1131, Ormonde Ext 24 and Erven 962 & 963, Ormonde Ext 22.

In terms of Regulation No. R982 published in the Government Notice No. 38282 of 4 December 2014 of the National Environment Management Act, 1998 (Act No. 107 of 1998) Governing Basic Assessment Procedures (Notice 1 – Governing Notice R983 and Notice 3 Governing Notice R985) of the 2014 amended NEMA Regulations, the EAP must inform all landowners and tenants of properties adjacent to the proposed development.

This letter serves as notification to you, (landowner/tenant) of the property of the proposed development. Bokamoso requests that you supply the contact details of any tenants or other interested and affected parties that may reside or work on the property. Bokamoso will supply these parties with the necessary notification letters.

Alternatively, you are also welcome to distribute copies of your notification to these parties. We will however require proof that you supplied the notices to the tenants, landowners, workers etc. An alternative to the above option is to act as representative on behalf of these parties.

Please confirm within 30 days (via email/fax) that you received the landowners/tenant notification and this letter, please note that you can register throughout the Basic Assessment process. Kindly also confirm the number of tenants, if any, on your property and the preferred method of communication.

Please may you notify Bokamoso if you are planning to sell your property as the new owners will be required to be registered as an I&AP.

Regards

A handwritten signature in black ink, appearing to read 'Lizelle Gregory'.

.....  
Lizelle Gregory/Juanita De Beer

REG NO: CK 2010/087490/23  
VAT REG NO: 4080260872

BOKAMOSO LANDSCAPE ARCHITECTS AND ENVIRONMENTAL CONSULTANTS CC

MEMBER: Lizelle Gregory



# Ormonde South Residential - Landowner Notification

Acknowledgement of Receipt of land owner notification concerning the proposed Ormonde South Residential Project.

	Name	Address	Contact Details	Signature
1		Post Box	Email: Fax: Tel:	
2	Milkwood	Gate	Email: Fax: Tel:	
3	Milkwood	Gate	Email: Fax: Tel:	
4	House Post Box	Post Box	Email: Fax: Tel:	
5	14	14 Milkwood Gate	Email: Fax: Tel:	
6		Gate	Email: Fax: Tel:	
7	Pretty Mithethwa Milkwood Road	1. Spore wiken 18 hex House - Maita	Email: Fax: Tel: <del>078 2510 71</del>	
8		Gate	Email: Fax: Tel:	
9		Gate	Email: Fax: Tel:	
10	Koitswe W KAU	1265 PTM 3 Milkwood RD Xavier Reef Estate	Email: Fax: Tel: 2091	
11		Gate	Email: Fax: Tel:	
12	MRS T Mafokwane	1265/5 Xavier Reef	Email: Fax: Tel:	
13	1265/7	1265/7 Milkwood Estate Ormonde JHB	Email: Fax: Tel:	
14	Alex	1263/7 Milkwood Road Ormonde	Email: Fax: Tel:	076 964 8380 MA. ISKRA
15	Ipiteng	1263/9 Milkwood Xavier Ormonde	Email: Fax: Tel: (011) 496 3858	

# Ormonde South Residential - Landowner Notification

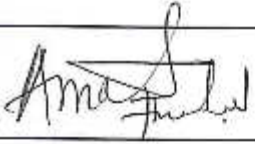
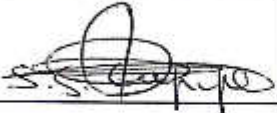

Acknowledgement of Receipt of land owner notification concerning the proposed Ormonde South Residential Project.

	Name	Address	Contact Details	Signature
1		1263/11 Gate;	Email: Fax: Tel:	
2		42B Milkwood Gate	Email: Fax: Tel:	
3		42 A Milkwood Gate.	Email: Fax: Tel:	
4		31 Gate.	Email: Fax: Tel:	
5		1263-6 Milkwood	Email: Fax: Tel:	
6		1263-5 Gate	Email: Fax: Tel:	
7		1263-4 Letter notice with P Dentley man.	Email: Fax: Tel:	
8		1263-3	Email: Fax: Tel:	
9	ZANA NRESELE	1264/14 Milkwood	Email: linda.vzno@ Fax: gmail.com Tel: 0839559436	
10		1264/13 Milkwood Gate	Email: Fax: Tel:	
11		1264/11 Gate	Email: Fax: Tel:	
12		1264/10 Gate	Email: Fax: Tel:	
13		126219 Bushwillow	Email: Fax: Tel:	
14	NANKIE JAM JAM	126218 Bushwillow	Email: Fax: Tel: 0727805706	
15		126213	Email: Fax: Tel:	



# Ormonde South Residential - Landowner Notification

Acknowledgement of Receipt of land owner notification concerning the proposed Ormonde South Residential Project.

	Name	Address	Contact Details	Signature
1		1262/11 Bushwillow Gate	Email: Fax: Tel:	
2		1262/12 Bushwillow Gate	Email: Fax: Tel:	
3	Nortica Sibanda	1216/4 Bushwillow	Email: Fax: Tel: 072 214 7203	
4	1260/32	27 Bushwillow Ormonde 2091 - Gate	Email: Fax: Tel:	
5	Jack	1260/21 Bushwillow	Email: Fax: Tel: 079-1129-659	
6		1260/28 Bushwillow Gate	Email: Fax: Tel:	
7	Ade	11 Brandybush	Email: Fax: Tel: 061 345 2912	
8		Brandybush	Email: Fax: Tel:	
9		Brandybush	Email: Fax: Tel:	
10	SIBULELE	1255/05 Msasa Crescent, Ormonde Xavier Reef Estate	Email: Fax: Tel: 014 2719139	
11		1255/06 Msasa	Email: Fax: Tel:	
12		1255/32 Msasa	Email: Fax: Tel:	
13		1255/1 Msasa	Email: Fax: Tel:	
14	Badigela	1255/02 Msasa	Email: Fax: Tel: 011 494 0329	
15			Email: Fax: Tel:	

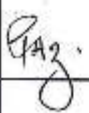

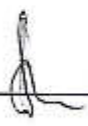
# Ormonde South Residential - Landowner Notification

Acknowledgement of Receipt of land owner notification concerning the proposed Ormonde South Residential Project.

	Name	Address	Contact Details	Signature
1		1260-30 Bushwillow Rd-gate	Email: Fax: Tel:	
2		1262-29 Bushwillow Rd gate	Email: Fax: Tel:	
3		Brandybush Cresce 5	Email: Fax: Tel:	
4		Gate Brandybush	Email: Fax: Tel:	
5		Gate Brandybush 9	Email: Fax: Tel:	
6		Gate Brandybush 11	Email: Fax: Tel:	
7		Brandybush 18-gate	Email: Fax: Tel:	
8		Brandybush 1249-25	Email: Fax: Tel:	
9		Brandybush 1249-22 gate	Email: Fax: Tel:	
10		1249-24 Brandybush close gate	Email: Fax: Tel:	
11		Brandybush close 1249-28-gate	Email: Fax: Tel:	
12		1249-20 Brandy Bushy close-gate	Email: Fax: Tel:	
13		1249-29 Brandy-bush close-gate	Email: Fax: Tel:	
14		1249-27 Brandybush close-gate	Email: Fax: Tel:	
15		1249-25 Brandy-bush close-gate	Email: Fax: Tel:	

# Ormonde South Residential - Landowner Notification


Acknowledgement of Receipt of land owner notification concerning the proposed Ormonde South Residential Project.

	Name	Address	Contact Details	Signature
1		1257-3 MS989 Postbox	Email: Fax: Tel:	
2		1257-4	Email: Fax: Tel:	
3		<del>1257-6</del>	Email: Fax: Tel:	
4		1257-9	Email: Fax: Tel:	
5		1257-8	Email: Fax: Tel:	
6	Thandi Maribuko	1257/9 MS989 Str.	Email: Fax: Tel: 074 941849	
7	Ntando Nhlapo	1257/10 Msasa Cres	Email: Fax: Tel: 083 453 3460	
8		1257/11 Gate Msasa Cres	Email: Fax: Tel:	
9		1256/35 MS989 Box	Email: Fax: Tel:	
10		1256/33 MS989 Gate	Email: Fax: Tel:	
11		1256/34 msasa Gate	Email: Fax: Tel:	
12	CHARLES MBELE	1256/37 MS989	Email: Fax: Tel: 074 4166865	
13		1256/31 - Gate MS989	Email: Fax: Tel:	
14		1256/30 MS989	Email: Fax: Tel:	
15		1255/29 MS989	Email: Fax: Tel:	

4

# Ormonde South Residential - Landowner Notification

Acknowledgement of Receipt of land owner notification concerning the proposed Ormonde South Residential Project.

	Name	Address	Contact Details	Signature
1		Brandybush Close-13 gate	Email: Fax: Tel:	
2		Brandybush Close-15	Email: Fax: Tel:	
3		Brandybush Close-23	Email: Fax: Tel:	
4		Brandybush Close-21	Email: Fax: Tel:	
5	Andrew Wyle	INASREC ROAD CHUCK CHARLIES	Email: Andrew@Southbank Motors COZA Fax: Tel: 011 496 9059 082 371 0244	
6			Email: Fax: Tel:	
7			Email: Fax: Tel:	
8			Email: Fax: Tel:	
9			Email: Fax: Tel:	
10			Email: Fax: Tel:	
11			Email: Fax: Tel:	
12			Email: Fax: Tel:	
13			Email: Fax: Tel:	
14			Email: Fax: Tel:	
15			Email: Fax: Tel:	



# **Appendix Eiv**

## Comments and Issues Register

**COMMENT AND RESPONSE REPORT-  
FOR THE PROPOSED ORMONDE SOUTH RESIDENTIAL DEVELOPMENT**

Issue	Commentator	Response
<p>I acknowledge with thanks receipt of your email dated 13 October 2016, regarding the above mentioned subject matter.</p> <p>Kindly note that the matter has been brought to the attention of the Deputy Director General: Spatial Planning &amp; Land Use: Dr Nozizwe Makgalemele for attention and response.</p> <p>Should you wish to make a follow up on this, kindly contact Malebo Baloi email: <a href="mailto:malebo.baloi@drdlr.gov.za">malebo.baloi@drdlr.gov.za</a> or <a href="mailto:Ramaleho.saila@drdlr.gov.za">Ramaleho.saila@drdlr.gov.za</a></p> <p>Thank you for your notification regarding this development.</p> <p>In terms of the National Heritage Resources Act, no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that prior to development it is incumbent on the developer to ensure that a Heritage Impact Assessment is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.</p> <p>The quickest process to follow for the archaeological component is to contract an accredited specialist (see the website of the Association of Southern African Professional Archaeologists <a href="http://www.asapa.org.za">www.asapa.org.za</a>) to provide a Phase 1 Archaeological Impact Assessment Report. This must be done before any large development takes place.</p> <p>The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38) about the</p>	<p>Tshego Manale <a href="mailto:DGOffice@drdlr.gov.za">DGOffice@drdlr.gov.za</a> <b>Department of Land Claims</b> 14 October 2016</p> <p>Andrew Salomon <b>SAHRA</b> <a href="mailto:asalomon@sahra.org.za">asalomon@sahra.org.za</a> 14 October 2016</p>	<p>Noted.</p> <p>Noted.</p> <p>The site is less than 5 hectares and extremely degraded and disturbed with illegal dumping and therefore is not regarded as necessary to conduct a heritage impact assessment. Should you wish that we send a letter from a heritage practitioner, please let us know.</p> <p>The EMPr also makes provision should any findings be made during construction.</p>

<p>process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites.</p> <p>Where bedrock is to be affected, or where there are coastal sediments, or marine or river terraces and in potentially fossiliferous superficial deposits, a Palaeontological Desk Top study must be undertaken to assess whether or not the development will impact upon palaeontological resources – or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. Please note that a nationwide fossil sensitivity map is now available on SAHRIS to assist with determining the fossil sensitivity of a study area.</p> <p>If the property is very small or disturbed and there is no significant site the heritage specialist may choose to send a letter to the heritage authority motivating for exemption from having to undertake further heritage assessments.</p> <p>Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.</p>		
<p><b>Letter – 18 October 2016</b></p> <p>We refer to your letter dated 17 October 2016.</p> <p>We confirm that as at the date of this letter no land claims appear on our database in respect of the Property. This includes the database for claims lodged by 31 December 1998; and those lodged between 1 July 2014 and 27 July 2016 in terms of the Restitution of Land Rights Amendment Act, 2014.</p>	<p>Tswelopele  <a href="mailto:smartgov@ddrdr.gov.za">smartgov@ddrdr.gov.za</a>  <b>Department of Rural  Development and Land Reform</b>  25 January 2017</p>	<p>Thank you for your response and feedback in this regard.</p>

	<p>Whilst the Commission takes reasonable care to ensure the accuracy of the information it provides, there are various factors that are beyond the Commission's control, particularly relating to claims that have lodged but not yet been gazette such as:</p> <ol style="list-style-type: none"><li>1. Some Claimants referred to properties they claim dispossession of rights in land against using historical property description which may not match the current property description; and</li><li>2. Some Claimants provided the geographic descriptions of the land they claim without mentioning the particular actual property description they claim dispossession of rights in land against.</li></ol> <p>The Commission therefore does not accept any liability whatsoever if through the process of further investigation of claims it is found that there is in fact a land claim in respect of the above property.</p> <p>If you are aware of any change in the description of the above property after 19 June 1913 kindly supply us with such description so as to enable us to do a further search.</p> <p>In conclusion, please note that enquiries should be forwarded to Desiree Tsholofelo Kgole who could be reached at the following contact details: Tel: 012 310 6578 or via email at <a href="mailto:desiree.kgole@drdlr.gov.za">desiree.kgole@drdlr.gov.za</a></p> <p><b>Letter</b></p> <p>The Department acknowledge receipt of the notice for a Basic Assessment Process received on 13 October 2016.</p> <p>The above mentioned notice entails an application for Environmental Authorisation for the proposed residential development on Erven 1130 &amp; 1131 in Extension 24 and Erven 962 &amp; 963 Extension 22 within Ormonde South, Gauteng Province. In terms of the Restitution of Land Rights Amendment Act, 2014 the database of the</p>
--	---



<p>Department for claims lodged by 31 December 1998, and between 01 July 2014 and 27 July 2016 indicates that no claims were lodged against the proposed site for development.</p> <p>In light of the above findings, the Department does not have any objection to the proposed activity.</p>		



# **Appendix Ev**

Communication to and from  
I&AP

**juanita@bokamoso.net**

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**From:** smartgov@drdlr.gov.za  
**Sent:** 25 January 2017 11:50 AM  
**To:** juanita@bokamoso.net  
**Subject:** Ormonde South Residential - Public Participation Process  
**Attachments:** Notice for a Basic Assessment Process - Ormonde South.pdf; RLCC - LODGED CLAIMS.pdf; letter4492614.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Good Day

Kindly find the attached letter for your attention

Regards

Tswelopele

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Tswelopele



## rural development & land reform

Department:  
Rural Development and Land Reform  
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE DEPUTY DIRECTOR-GENERAL: SPLUM  
Spatial Planning and Land Use Management  
Private Bag X833, Pretoria, 0001; 224 Helen Joseph Street, Capitol Towers, Pretoria, 0001  
Tel: 012 312 9556; Fax: 012 323 1167

Reference: 16/R

Ms J De Beer  
Senior Public Participation Consultant & EAP in training  
36 Lebombo Street  
Ashlea Gardens  
**PRETORIA**  
0161

As per Email: [juanita@bokamoso.net](mailto:juanita@bokamoso.net)

Dear Ms De Beer

### **ORMONDE SOUTH RESIDENTIAL - PUBLIC PARTICIPATION PROCESS**

The Department acknowledge receipt of the notice for a Basic Assessment Process received on 13 October 2016.

The above mentioned notice entails an application for Environmental Authorisation for the proposed residential development on Erven 1130 & 1131 in Extension 24 and Erven 962 & 963 Extension 22 within Ormonde South, Gauteng Province. In terms of the Restitution of Land Rights Amendment Act, 2014 the database of the Department for claims lodged by 31 December 1998, and between 01 July 2014 and 27 July 2016 indicates that no claims were lodged against the proposed site for development.

In light of the above findings, the Department does not have any objection to the proposed activity.

Kind regards

**DR N MAKGALEMELE**  
**DEPUTY DIRECTOR GENERAL: SPATIAL PLANNING & LAND USE**  
**DATE: 25 JANUARY 2017**



OFFICE OF THE REGIONAL LAND CLAIMS COMMISSIONER: GAUTENG

No. 9 Bailey Lane, Arcadia, 0007 | Private Bag X 03, Arcadia, 0007

Tel: (012) 310 6500 | Fax: (012) 323 0312

Enquiries: Desiree Tsholofelo Kgole  
Telephone: (012) 310 6578

Dear Mr / Ms Fhulufhedzan Rasimphi

**LAND CLAIMS ENQUIRY – ERVEN 1130 & 1131 ORMONDE EXT 24 GAUTENG.  
ERVEN 962 & 963 ORMONDE EXT 22 GAUTENG.**

We refer to your letter dated 17 October 2016.

We confirm that as at the date of this letter no land claims appear on our database in respect of the Property. This includes the database for claims lodged by 31 December 1998; and those lodged between 1 July 2014 and 27 July 2016 in terms of the Restitution of Land Rights Amendment Act, 2014.

Whilst the Commission takes reasonable care to ensure the accuracy of the information it provides, there are various factors that are beyond the Commission's control, particularly relating to claims that have lodged but not yet been gazetted such as:

1. Some Claimants referred to properties they claim dispossession of rights in land against using historical property descriptions which may not match the current property description; and
2. Some Claimants provided the geographic descriptions of the land they claim without mentioning the particular actual property description they claim dispossession of rights in land against.

The Commission therefore does not accept any liability whatsoever if through the process of further investigation of claims it is found that there is in fact a land claim in respect of the above property.

If you are aware of any change in the description of the above property after 19 June 1913 kindly supply us with such description so as to enable us to do a further search.

In conclusion, please note that **enquiries should be forwarded to Desiree Tsholofelo Kgole** who could be reached at the following contact details: Tel: (012) 310-6578 or via e-mail at [desiree.kgole@drdlr.gov.za](mailto:desiree.kgole@drdlr.gov.za)

Yours faithfully

  
MS. C. BENYANE  
CHIEF DIRECTOR  
OFFICE OF THE REGIONAL LAND CLAIMS COMMISSION  
GAUTENG PROVINCE  
DATE: 18/10/2016

**juanita@bokamoso.net**

---

**From:** DG Office <DGOffice@drdlr.gov.za>  
**Sent:** 14 October 2016 02:07 PM  
**To:** juanita@bokamoso.net  
**Subject:** RE: Ormonde South Residential - Public Participation Process  
**Attachments:** image001.jpg

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Dear Juanita

I acknowledge with thanks receipt of your email dated 13 October 2016, regarding the above mentioned subject matter.

Kindly note that the matter has been brought to the attention of the Deputy Director General: Spatial Planning & Land Use: Dr Nozizwe Makgalemele for attention and response.

Should you wish to make a follow up on this, kindly contact ;Malebo Baloi email: [malebo.baloi@drdlr.gov.za](mailto:malebo.baloi@drdlr.gov.za) or [ramaleho.saila@drdlr.gov.za](mailto:ramaleho.saila@drdlr.gov.za)

Kind regards  
Tshego Manale  
Office of the Director General

---

**From:** juanita@bokamoso.net [mailto:juanita@bokamoso.net]  
**Sent:** 13 October 2016 04:54 PM  
**To:** Noziphom@joburg.org.za; jgrobler@geoscience.org.za; msebesho; asalomon@sahra.org.za; keetm@dwaf.gov.za; Siwelanel@dws.gov.za; tshifaror@dwa.gov.za; mathebet@dwa.gov.za; paia@eskom.co.za; central@eskom.co.za; kumen govender; nkoneigh; mmpshe; loveous.tampane@transnet.net; CLCC; Magezi Mhlanga; DG Office; Fhulufhedzan Rasimphi; schmidk; manny@democratic-alliance.co.za; sergio.ward54@vodamail.co.za  
**Subject:** Ormonde South Residential - Public Participation Process

Dear Interested and/or Affected Parties,

Please refer to the attached Public Notice regarding the proposed **Ormonde South Residential** Project.

Kind Regards/Vriendelike Groete

**Juanita De Beer**  
Senior Public Participation Consultant & EAP in training



**Landscape Architects &  
Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

**From:** juanita@bokamoso.net  
**Sent:** 13 October 2016 04:54 PM  
**To:** Noziphom@joburg.org.za; 'jgrobler@geoscience.org.za'; msebesho; 'asalomon@sahra.org.za'; 'keetm@dwaf.gov.za'; 'SiwelaneL@dws.gov.za'; 'tshifaror@dwa.gov.za'; 'mathebet@dwa.gov.za'; 'paia@eskom.co.za'; 'central@eskom.co.za'; kumen govender; nkoneigh; mmpshe; 'loveous.tampane@transnet.net'; CLCC; magezi.mhlanga@drdlr.gov.za; dgoffice@drdlr.gov.za; Fhulufhedzan Rasimphi (Fhulufhedzan.Rasimphi@drdlr.gov.za); schmidk; 'manny@democratic-alliance.co.za'; 'sergio.ward54@vodamail.co.za'  
**Subject:** Ormonde South Residential - Public Participation Process  
**Attachments:** Ormonde South - Public Notice BA.pdf; image001.jpg

Dear Interested and/or Affected Parties,

Please refer to the attached Public Notice regarding the proposed **Ormonde South Residential** Project.

Kind Regards/Vriendelike Groete

**Juanita De Beer**

**Senior Public Participation Consultant & EAP in training**



**Landscape Architects &  
Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161



**juanita@bokamoso.net**

---

**From:** juanita@bokamoso.net  
**Sent:** 25 January 2017 12:03 PM  
**To:** smartgov@drdlr.gov.za  
**Subject:** RE: Ormonde South Residential - Public Participation Process  
**Attachments:** image001.jpg

Dear Tswelopele,

Thank you for your response, Bokamoso Environmental noted your comments on our Issues and Comments Register.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects &  
Environmental Consultants**

**T:** (+27)12 346 3810 | **F:** (+27) 86 570 5659 | **E:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
**36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161**

---

**From:** smartgov@drdlr.gov.za [mailto:smartgov@drdlr.gov.za]  
**Sent:** 25 January 2017 11:50 AM  
**To:** juanita@bokamoso.net  
**Subject:** Ormonde South Residential - Public Participation Process

Good Day

Kindly find the attached letter for your attention

Regards

Tswelopele

---

Tswelopele



Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: [asalomon@sahra.org.za](mailto:asalomon@sahra.org.za)  
CaseID: 10243

Date: Friday October 14, 2016  
Page No: 1

## Letter

### In terms of Section 38 of the National Heritage Resources Act (Act 25 of 1999)

Attention: Matla Projects (Pty) Ltd

**This application for Environmental Authorisation is for the proposed residential development on Erven 1130 & 1131, Ormonde Ext 24 and Erven 962 & 963, Ormonde Ext 22.**

Thank you for your notification regarding this development.

In terms of the National Heritage Resources Act, no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that prior to development it is incumbent on the developer to ensure that a **Heritage Impact Assessment** is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.

The quickest process to follow for the archaeological component is to contract an accredited specialist (see the web site of the Association of Southern African Professional Archaeologists [www.asapa.org.za](http://www.asapa.org.za)) to provide a Phase 1 Archaeological Impact Assessment Report. This must be done before any large development takes place.

The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38) about the process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites.

Where bedrock is to be affected, or where there are coastal sediments, or marine or river terraces and in potentially fossiliferous superficial deposits, a Palaeontological Desk Top study must be undertaken to assess whether or not the development will impact upon palaeontological resources - or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full



an agency of the  
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za  
South African Heritage Resources Agency | 111 Harrington Street | Cape Town  
P.O. Box 4637 | Cape Town | 8001  
www.sahra.org.za

Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: asalomon@sahra.org.za  
CaseID: 10243

Date: Friday October 14, 2016  
Page No: 2

Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. **Please note that a nationwide fossil sensitivity map is now available on SAHRIS to assist with determining the fossil sensitivity of a study area .**

If the property is very small or disturbed and there is no significant site the heritage specialist may choose to send a letter to the heritage authority motivating for exemption from having to undertake further heritage assessments.

Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

---

Andrew Salomon  
Heritage Officer: Archaeology  
South African Heritage Resources Agency

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John Gribble  
Manager: Maritime and Underwater Cultural Heritage Unit / Acting Manager: Archaeology, Palaeontology and Meteorites Unit  
South African Heritage Resources Agency

Our Ref: 10243



an agency of the  
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: [info@sahra.org.za](mailto:info@sahra.org.za)  
South African Heritage Resources Agency | 111 Harrington Street | Cape Town  
P.O. Box 4637 | Cape Town | 8001  
[www.sahra.org.za](http://www.sahra.org.za)

Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: [asalomon@sahra.org.za](mailto:asalomon@sahra.org.za)  
CaseID: 10243

Date: Friday October 14, 2016  
Page No: 3

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**ADMIN:**

Direct URL to case: <http://www.sahra.org.za/node/374184>  
(GDARD, Ref: )



# **Appendix Evi**

List of Interested and Affected Parties



**REGISTERED INTERESTED AND AFFECTED PARTIES**  
 Please include all authorities as well as attendees from the public meetings  
 PROJECT TITLE: \_\_\_\_\_ Ormonde South Residential

CONTACT	NAME	PHONE	FAX	E-MAIL	ADDRESS (Postal/Physical)
Client	Matia Projects (Pty) Ltd				
Competent Authority - GDARD					
City of Johannesburg	Environmental Management Department			<a href="mailto:noziphom@joburg.org.za">noziphom@joburg.org.za</a>	
Council Geo-Science	J. Grobler			<a href="mailto:grobler@geoscience.org.za">grobler@geoscience.org.za</a> / <a href="mailto:msebesho@geoscience.org.za">msebesho@geoscience.org.za</a>	
SAHRA	Andrew Salomon			<a href="mailto:asalomon@sahra.org.za">asalomon@sahra.org.za</a>	
DWS	Lilian Siwelane			<a href="mailto:keetm@dwaf.gov.za">keetm@dwaf.gov.za</a> ; <a href="mailto:siwelanel@dwa.gov.za">siwelanel@dwa.gov.za</a> ; <a href="mailto:shifaro@dwa.gov.za">shifaro@dwa.gov.za</a> ; <a href="mailto:mathebet@dwa.gov.za">mathebet@dwa.gov.za</a>	
Eskom				<a href="mailto:paia@eskom.co.za">paia@eskom.co.za</a> ; <a href="mailto:central@eskom.co.za">central@eskom.co.za</a>	
GDRT	Kumen Govender			<a href="mailto:kumen.govender@gauteng.gov.za">kumen.govender@gauteng.gov.za</a>	
Randwater	Natalie Koneight			<a href="mailto:nkoneigh@randwater.co.za">nkoneigh@randwater.co.za</a> ; <a href="mailto:mmpsh@randwater.co.za">mmpsh@randwater.co.za</a>	
Spoornet	Loveous Tampene			<a href="mailto:loveous.tampene@transnet.net">loveous.tampene@transnet.net</a>	
Department of Land Claims	Ms Nomfundo Gobodo			<a href="mailto:CLCC@drdlr.gov.za">CLCC@drdlr.gov.za</a> ; <a href="mailto:magezi.mhlanga@drdlr.gov.za">magezi.mhlanga@drdlr.gov.za</a> ; <a href="mailto:DGOffice@drdlr.gov.za">DGOffice@drdlr.gov.za</a> ; <a href="mailto:Fhulufhedzani.Rasimphi@drdlr.gov.za">Fhulufhedzani.Rasimphi@drdlr.gov.za</a>	
SANRAL	Klaus Schmidt			<a href="mailto:schmidk@mra.co.za">schmidk@mra.co.za</a>	
Constituency head - JHB South	Manny De Freitas	Cell: 082 788 6824		<a href="mailto:manny@democratic-alliance.co.za">manny@democratic-alliance.co.za</a>	
Ward Councillor - Ward 54, City of Johannesburg	Sérgio Isa José Pombo Dos Santos	Cell: 082 394 4053		<a href="mailto:sergio.ward54@vodamail.co.za">sergio.ward54@vodamail.co.za</a>	





# **Appendix F**

Water use license(s)  
authorisation, SAHRA  
information, service letters from  
municipalities, water supply  
information





Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: [asalomon@sahra.org.za](mailto:asalomon@sahra.org.za)  
CaseID: 10243

Date: Friday October 14, 2016  
Page No: 1

## Letter

### In terms of Section 38 of the National Heritage Resources Act (Act 25 of 1999)

Attention: Matla Projects (Pty) Ltd

**This application for Environmental Authorisation is for the proposed residential development on Erven 1130 & 1131, Ormonde Ext 24 and Erven 962 & 963, Ormonde Ext 22.**

Thank you for your notification regarding this development.

In terms of the National Heritage Resources Act, no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that prior to development it is incumbent on the developer to ensure that a **Heritage Impact Assessment** is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.

The quickest process to follow for the archaeological component is to contract an accredited specialist (see the web site of the Association of Southern African Professional Archaeologists [www.asapa.org.za](http://www.asapa.org.za)) to provide a Phase 1 Archaeological Impact Assessment Report. This must be done before any large development takes place.

The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38) about the process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites.

Where bedrock is to be affected, or where there are coastal sediments, or marine or river terraces and in potentially fossiliferous superficial deposits, a Palaeontological Desk Top study must be undertaken to assess whether or not the development will impact upon palaeontological resources - or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full



an agency of the  
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za  
South African Heritage Resources Agency | 111 Harrington Street | Cape Town  
P.O. Box 4637 | Cape Town | 8001  
www.sahra.org.za

Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: asalomon@sahra.org.za  
CaseID: 10243

Date: Friday October 14, 2016  
Page No: 2

Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. **Please note that a nationwide fossil sensitivity map is now available on SAHRIS to assist with determining the fossil sensitivity of a study area .**

If the property is very small or disturbed and there is no significant site the heritage specialist may choose to send a letter to the heritage authority motivating for exemption from having to undertake further heritage assessments.

Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

---

Andrew Salomon  
Heritage Officer: Archaeology  
South African Heritage Resources Agency

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John Gribble  
Manager: Maritime and Underwater Cultural Heritage Unit / Acting Manager: Archaeology, Palaeontology and Meteorites Unit  
South African Heritage Resources Agency

Our Ref: 10243



an agency of the  
Department of Arts and Culture

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CaseID: 10243

Date: Friday October 14, 2016  
Page No: 3

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**ADMIN:**

Direct URL to case: <http://www.sahra.org.za/node/374184>  
(GDARD, Ref: )



# Appendix G

Specialist Reports



# **Appendix G1**

Geotechnical Reports

289 Polaris Avenue  
Waterkloof Ridge 0181  
Pretoria GAUTENG  
SOUTH AFRICA

TEL: 012-347 8467  
MOBILE : 082 570 2222  
FAX: 0866 858 369  
Email: [jovdm@iafrica.com](mailto:jovdm@iafrica.com)

P.O. Box 95562  
WATERKLOOF 0145  
Pretoria, GAUTENG  
SOUTH AFRICA

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**PROJECT No: M15/3507**

**10 July 2015**

MATLA PROJECTS (Pty) Ltd  
P.O. Box 14152  
BREDELL 1623

**Attention: Mr. Erich Danzfuss**

Dear Sir,

**REPORT ON PHASE 1 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR: A PROPOSED CLUSTER HOMES DEVELOPMENT ON: *ERF NUMBER 1131, ORMONDE EXTENSION 24, JOHANNESBURG, GAUTENG PROVINCE***

## **1. INTRODUCTION**

Acting upon instruction received from Mr. Erich Danzfuss who is acting on behalf of Mr. Jacques Pienaar of Matla Projects (Pty) Ltd, a Phase 1 geotechnical investigation was carried out at the above site. The purpose of the investigation was for enrolment purposes with the NHBRC and to determine foundation conditions for the construction of a new cluster homes development comprising triple-storey units at a density of 80 units per hectare.

The purpose of the investigation is to satisfy the requirements of the National Home Builders Registration Council to assess the geological suitability of the proposed project with regards to the development of a residential township.

## **2. TERMS OF REFERENCE**

The objectives of the investigation were to: -

- Determine the engineering properties of the site soils and bedrock including potentially expansive material, low bearing capacity soils and areas difficult to excavate.
- Present appropriate recommendations for residential township design and precautionary measures in accordance with the requirements of the National Home Builders Registration Council's guidelines.

Written instructions to proceed with the investigation were obtained from Mr. Erich Danzfuss in his electronic mail dated February 2015.

## **3. INFORMATION CONSULTED**

The following information was available and was consulted: -

- The 1: 50 000 scale Topographical Map 2626AA Roodepoort.
- The 1: 250 000 scale geological Map, Sheet Number 2628 West Rand.

- A site plan, prepared by Xan Swart Land Surveyors, showing the boundaries of the site and surface contours at 0,5m intervals.
- A coloured aerial photograph of the site was obtained from Google Earth via the Internet.
- The publication “National Home Builders Registration Council’s Home Building Manual, Part 1 & 2, February 1999.

#### 4. SITE DESCRIPTION

The study area is located in the western part of Johannesburg and the site for the new development is roughly trapezoidal in shape and covers a surface area of some 10 429m<sup>2</sup>. The site is bounded to the east by a perennial drainage feature and by extensions of Ormonde on the remaining sides. The site is densely covered by large Eucalyptus, Pine and Wattle trees and the surface slopes towards the east in the direction of the drainage feature at an average gradient of some 5%.

#### 5. SITE INVESTIGATION

Seven test pits were excavated across the site using a New Holland B90B backactor supplied by Kosmos Plant Hire from Honeydew. The number of pits that could be excavated was limited over the eastern portion of the site due to the dense tree growths that are present here. The test pit was entered, inspected and profiled by a registered engineering geologist according to the methods advocated by Jennings *et al* (1973). Disturbed and undisturbed soil samples were taken during the investigation and were submitted to Geoplan’s commercial soil laboratory for analysis. Copies of the soil profiles, the results of the laboratory soil tests and a Site Plan showing the site in relation to its surroundings are attached.

#### 6. SITE SOILS AND GEOLOGY

The proposed new residential development is located on transported sandy and gravelly soils overlying sediments (shale, quartzite and conglomerate) belonging to the Turffontein Subgroup, Central Rand Group, Witwatersrand Supergroup. No rock outcrops were observed during the investigation and a generalized description of the typical soil profile that may be encountered over the site is as follows: -

- 0,0 - 0,7: *Slightly moist, light brown becoming dark orange, very loose, voided, silty SAND; colluvium. Horizon extends down to depths ranging from 0,3m to 1,2m below surface.*
- 0,7 - 1,0: *Abundant coarse, medium and fine, QUARTZ GRAVELS, clast supported in a matrix as above; pebble marker. Overall consistency is loose.*
- 1,0 - 1,2: *Dry, light pink speckled white, very dense, intact, coarse SAND; residual quartzite. Grades to light purple and light pink, moderately weathered, soft rock QUARTZITE across portions of the site.*

Slow excavation to gradual refusal of the New Holland B90B backactor was experienced in the very dense residual quartzite and soft rock quartzite bedrock at depths ranging from 1,1m to 1,7m below surface and the water table, whether perched or permanent, was not encountered during the investigation that was carried out during the middle of the dry season.

## 7. GEOTECHNICAL CONSIDERATIONS

### 7.1 Compressible and Collapsible Soils

A number of undisturbed soil samples, representative of the colluvial soils that blanket the property, were tested to determine the collapse potential of the material according to the method advocated by Jennings (1974). A summary of the results of the laboratory tests appears below in Table 7.1.

**TABLE 7.1: COLLAPSE POTENTIAL TEST RESULTS**

HOLE NUMBER	DEPTH (m)	DRY DENSITY (kg/m <sup>3</sup> )	COLLAPSE POTENTIAL (%)	COMPRESSIBILITY (%)	TROUBLE RATING
ORG/1	0,50	1 724	3,50	5,86	Moderate Trouble
ORG/7	0,80	1 614	9,10	6,07	Trouble

An analysis of the above results indicate that the colluvial soils that blanket the site are potentially highly collapsible and moderately compressible with a collapse rating of “moderate trouble” to “trouble” in terms of collapse settlement, according to Jennings.

### 7.2 Expansive Soils

The blanketing site soils are sandy and gravelly and are potentially “low” in the degree of expansiveness based on the results of the laboratory tests and according to the Van der Merwe (1964) method. A total surface heave value of less than 5mm is predicted across this portion of the site, depending on the locality and should the moisture condition of the soils change from a dry to a saturated state.

### 7.3 Excavation Characteristics

Very hard machine excavation and possibly the use of jackhammers will be required to remove the very dense residual quartzite and quartzite bedrock from below 1,1m to 1,7m below surface. No problems should be experienced to remove the transported soils across the major portion of the site down to a depth of at least 0,8m below surface, using conventional earth moving equipment.

Stable sidewall conditions can be expected during construction in the dry season, unstable sidewall conditions may occur in the upper loose unconsolidated transported soils during the rainy season and in areas where perched water table conditions prevail and shoring of deep excavations may be required in these areas.

### 7.4 Foundations

The entire site is covered by a moderate to prominent horizon of potentially slightly compressible and collapsible soils and tentatively classify as NHBRC Site Class “C1/S1” and one of the following foundation solutions may be adopted for the construction of single-storey masonry residential structures: -.



### ***Deep Strip Foundations***

- Normal construction with drainage precautions and with mesh reinforced floor slabs.
- Founding on the dense residual horizon below the problem soils at depths ranging from 0,5m to 1,2m below surface and adopting a safe allowable bearing pressure of at least 300 kPa.

### ***Compaction of in situ soils below individual footings***

- Remove in situ material below foundations to a depth and width of 1,5 times the foundation width or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

### ***Soil Raft***

- Remove in situ material to 1m beyond perimeter of building to a depth of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

### ***Modified Normal Construction***

- Reinforced strip footings
- Articulation joints at some internal and all external doors
- Light reinforcement in masonry
- Site drainage and plumbing precautions to be taken
- Foundation pressure not to exceed 50 kPa.

It is understood that the development will comprise of ***triple-storey structures*** only and these may safely be founded onto the very dense residual quartzite, adopting a safe allowable bearing pressure of at least 300 kPa. Conventional spread or strip footings, placed onto the very dense residual quartzite at depths ranging from 0,7m to 1,3m below surface are envisaged for the multi-storey structures. Removal of the dense bush and trees that cover large portions of the site will probably result in a severe amount of ground disturbance which should be reinstated prior to construction of services and structures.

## **7.5 Earthworks**

A summary of the anticipated compaction characteristics of the upper 1,0m of the site soils, based on an empirical method determined by the Plasticity Index and the Grading Modulus of the soil (the so-called Kleyn's CBR which is comparable with the 90% Proctor CBR) appears below in Table 7.2:-

**TABLE 7.2: SUMMARY OF ANTICIPATED COMPACTION CHARACTERISTICS**

<b>HOLE NO</b>	<b>DEPTH (m)</b>	<b>SOIL TYPE</b>	<b>PI</b>	<b>GM</b>	<b>Kleyn's CBR*</b>
ORG/1	0,0 – 1,2	Silty SAND	4	0,83	25
ORG/2	0,8 – 1,1	Coarse SAND	5	1,58	35
ORG/5	0,3 – 0,9	Pebble Marker	4	1,85	45
ORG/7	0,3 – 0,9	Silty SAND	4	0,85	25

Note : PI = Plasticity Index  
GM = Grading Modulus  
CBR\* = California Bearing Ration at 90% Proctor compaction

Based on an analysis of the above table, it is evident that the transported silty sand and the pebble marker gravels which blanket the site, should be suitable for use as fill underneath surface beds and as selected layers (G7/G6 quality) in the construction of parking areas and roadways. Material for the construction of selected, subbase and base-course layers in roads and paved areas will have to be imported from a commercial source. The design of roads should take the potentially collapsible and compressible nature of the site soils into consideration.

## 7.6 Ground Water and Soil Chemistry

Although no ground water seepage was encountered in any test pit during the investigation, damp proofing precautions should be taken underneath structures. A seasonal water table, perched along the interface between the very dense residual quartzite and the overlying permeable soils, may possibly occur during periods of excessive downpour. The site soils are expected to be potentially neutral to slightly chemically aggressive with regards to underground ferrous metal pipes (pH values ranging from 8,0 to 8,9 and electrical conductivity values ranging from 0,0033 to 0,0261 S/m) and the use of non-ferrous metal pipes or plastic pipes are recommended for wet services, the foundation soils should be treated with an environmentally friendly insecticide to combat termites.

## 8. GENERAL

While every effort has been made to ensure that representative test pitting and sampling has been undertaken to probe the soils on-site, guaranteeing that isolated zones of either poor foundation material or hard rock excavation have not been identified, is impossible under the constraints of an investigation of this nature. The investigation has sought to highlight general areas of potential foundation and excavation problems, and to provide early warning to the design engineers and town planners. In view of the variability inherent in soils, all foundation excavations should be inspected by a competent person.

The placement of the engineered fills must be controlled with suitable field tests to ensure that the required densities are achieved during compaction, and that the quality of fill material is within specification.

We trust that the above information will meet with your immediate requirements. Please do not hesitate to call for any further information.

Yours faithfully



JOHANN VAN DER MERWE (Dr. Sci. Nat.)

Engineering Geologist

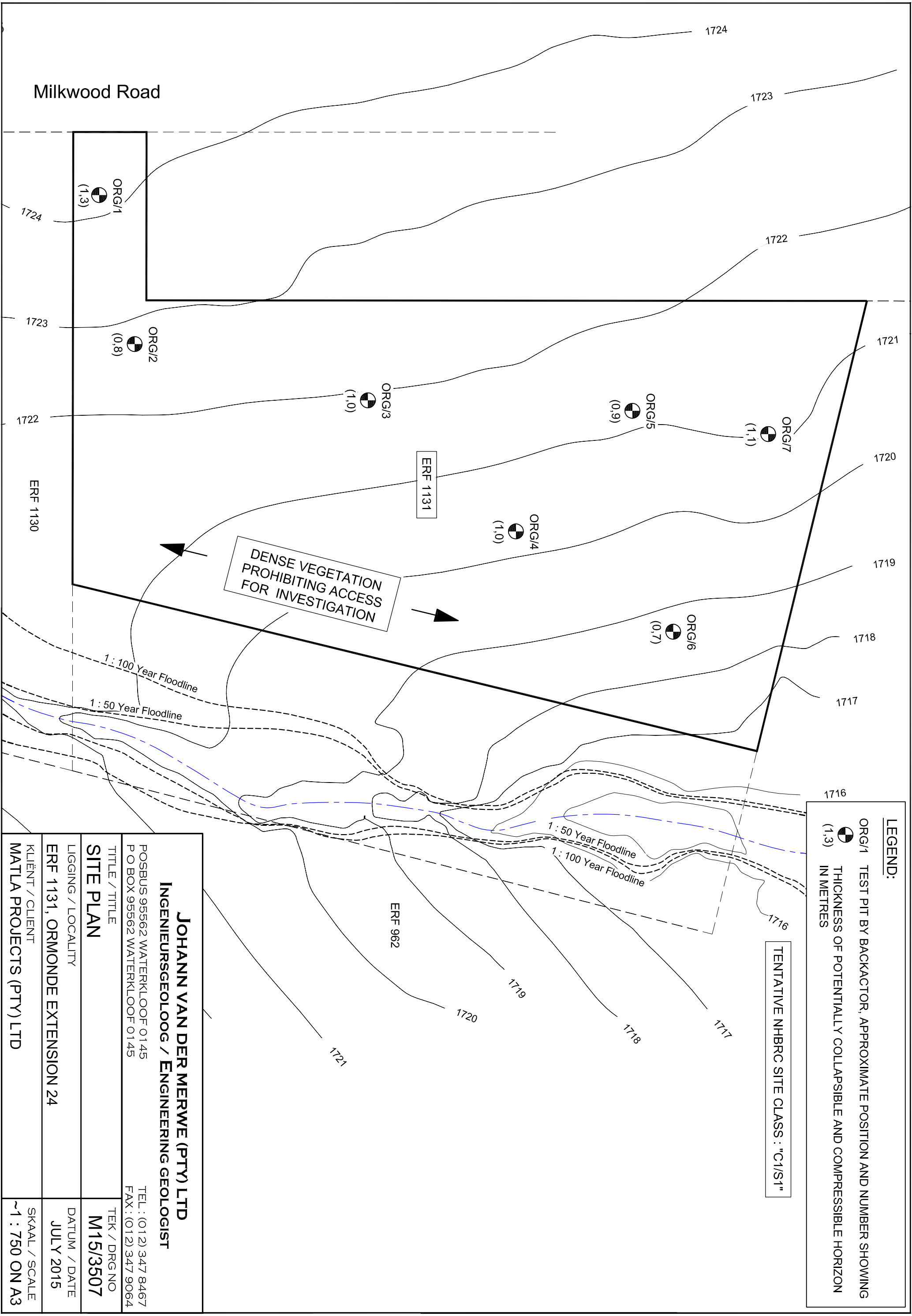
C:\WINDOWS\Desktop\data\reports\GEOPLAN\ORMONDE.doc

**9. APPENDICES**

**Test Pit Profiles**

**Laboratory Test Results**

**Site Plan**



**LEGEND:**

ORG/1 TEST PIT BY BACKACTOR, APPROXIMATE POSITION AND NUMBER SHOWING  
 (1.3) THICKNESS OF POTENTIALLY COLLAPSIBLE AND COMPRESSIBLE HORIZON  
 IN METRES

TENTATIVE NHBRC SITE CLASS : "C1/S1"

**JOHANN VAN DER MERWE (PTY) LTD**  
**INGENIEURSGEOLOOG / ENGINEERING GEOLOGIST**

POSBUS 95562 WATERKLOOF 0145  
 P O BOX 95562 WATERKLOOF 0145

TEL : (012) 347 8467  
 FAX : (012) 347 9064

TITLE / TITLE  
**SITE PLAN**

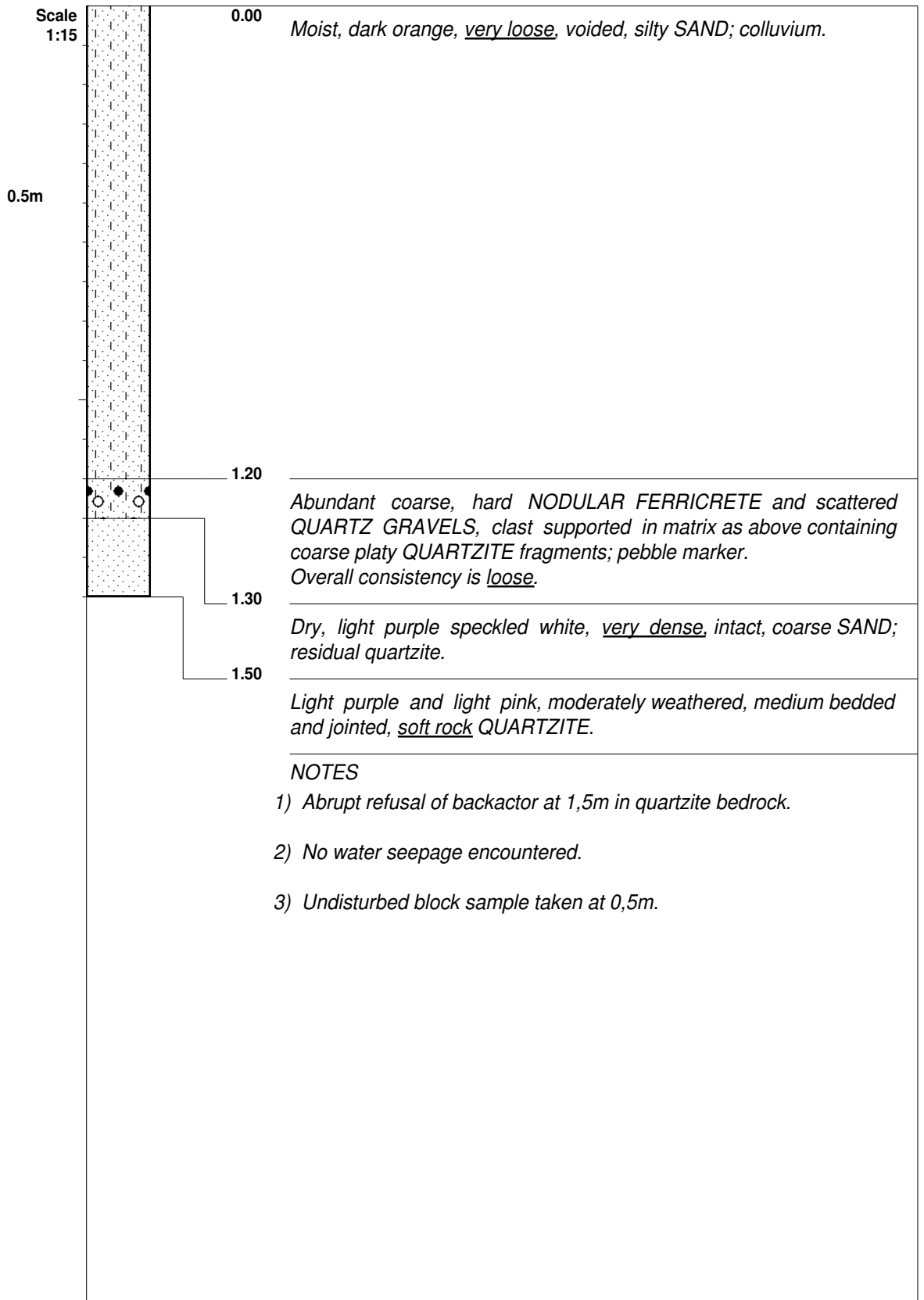
LIGGING / LOCALITY  
 ERF 1131, ORMONDE EXTENSION 24

KLIËNT / CLIENT  
 MATLA PROJECTS (PTY) LTD

TEK / DRG NO  
**M15/3507**

DATUM / DATE  
 JULY 2015

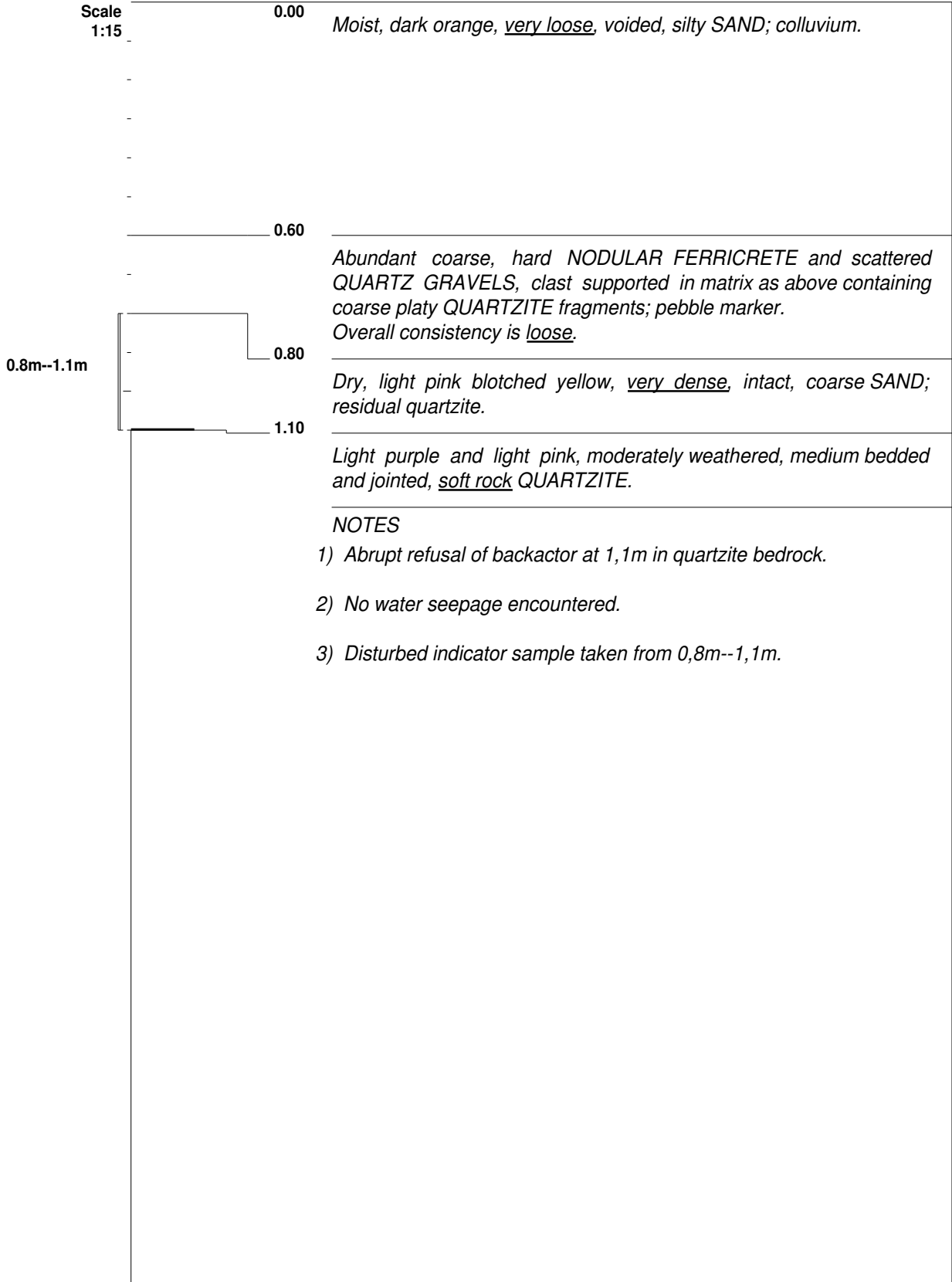
SKAAL / SCALE  
 ~1 : 750 ON A3



CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jovdm  
 SETUP FILE : STANDARD.SET

INCLINATION : Vertical  
 DIAM : Trench  
 DATE : 29/04/2015  
 DATE : 29/04/2015  
 DATE : 12/07/2015 21:10  
 TEXT : ..dotplot\ARCHIVE\3507.txt

ELEVATION :  
 X-COORD : S26 15 18.5  
 Y-COORD : E27 59 15.6



CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
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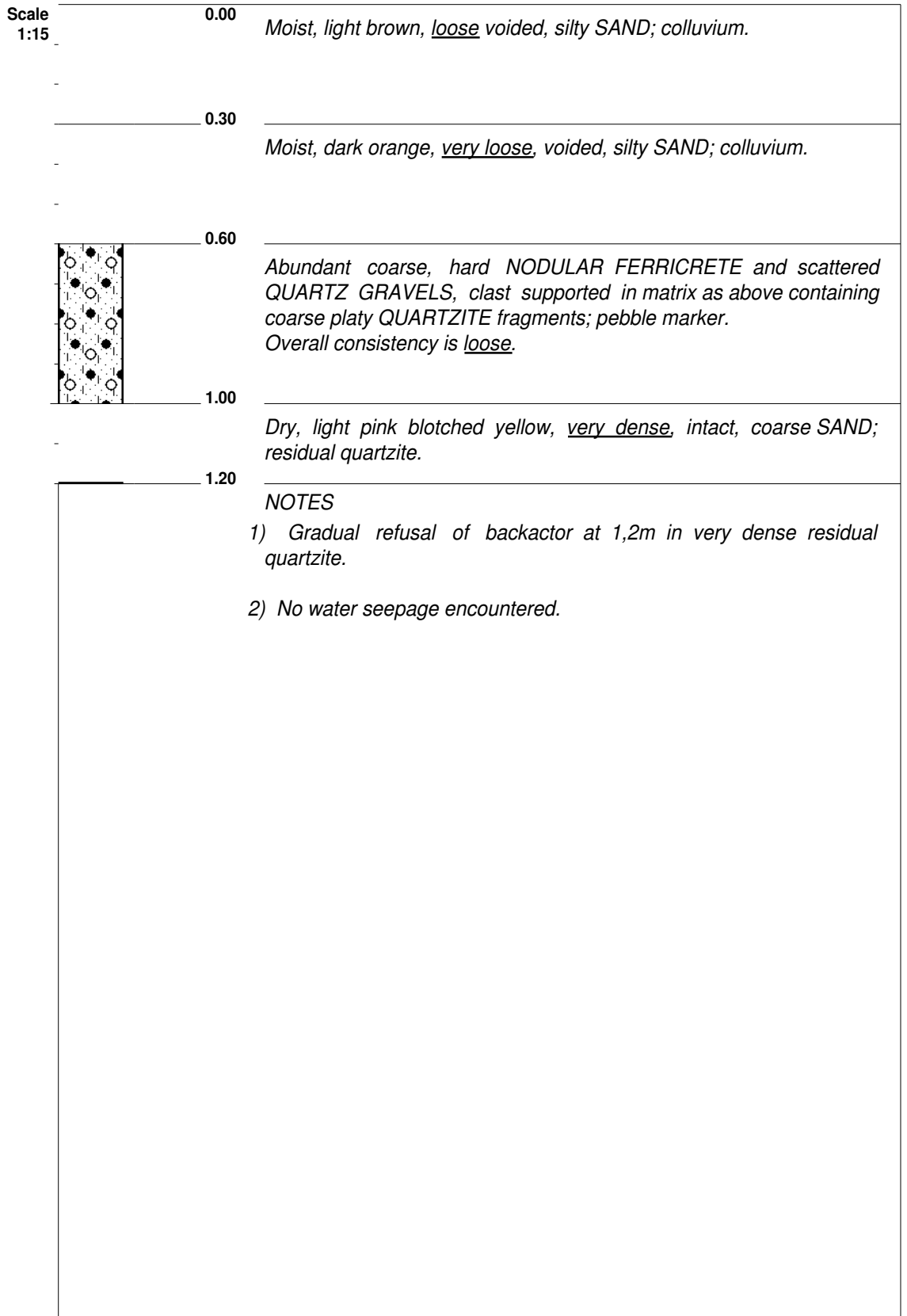
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 DATE : 29/04/2015  
 DATE : 12/07/2015 21:10  
 TEXT : ..dotplot\ARCHIVE\3507.txt

ELEVATION :  
 X-COORD : S26 15 18.3  
 Y-COORD : E27 59 16.6

MATLA PROJECTS (Pty) Ltd  
 Erf Number 1131, Ormonde Extension 24, Johannesburg, Gauteng Province  
 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR:  
**PROPOSED NEW CLUSTER HOMES DEVELOPMENT**

**HOLE No: ORG/3**  
**Sheet 1 of 1**

**JOB NUMBER: M15/3507**

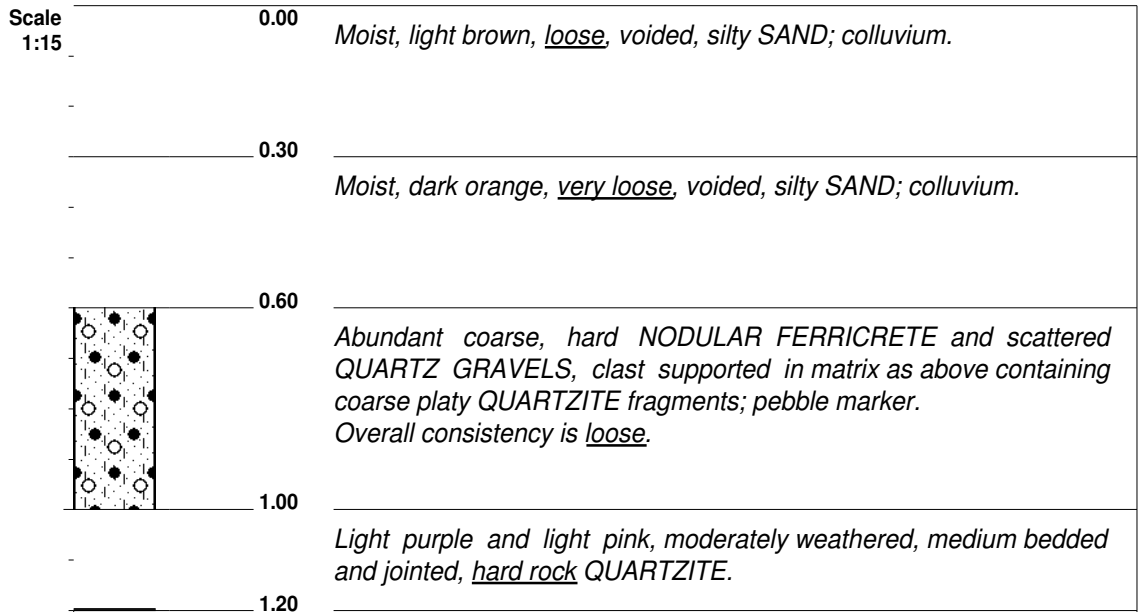


**CONTRACTOR :** Kosmos Civils  
**MACHINE :** New Holland B90B backactor  
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**PROFILED BY :** jvdm  
**TYPE SET BY :** jovdm  
**SETUP FILE :** STANDARD.SET

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**DIAM :** Trench  
**DATE :** 29/04/2015  
**DATE :** 29/04/2015  
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**Y-COORD :** E27 59 16.9

**HOLE No: ORG/3**

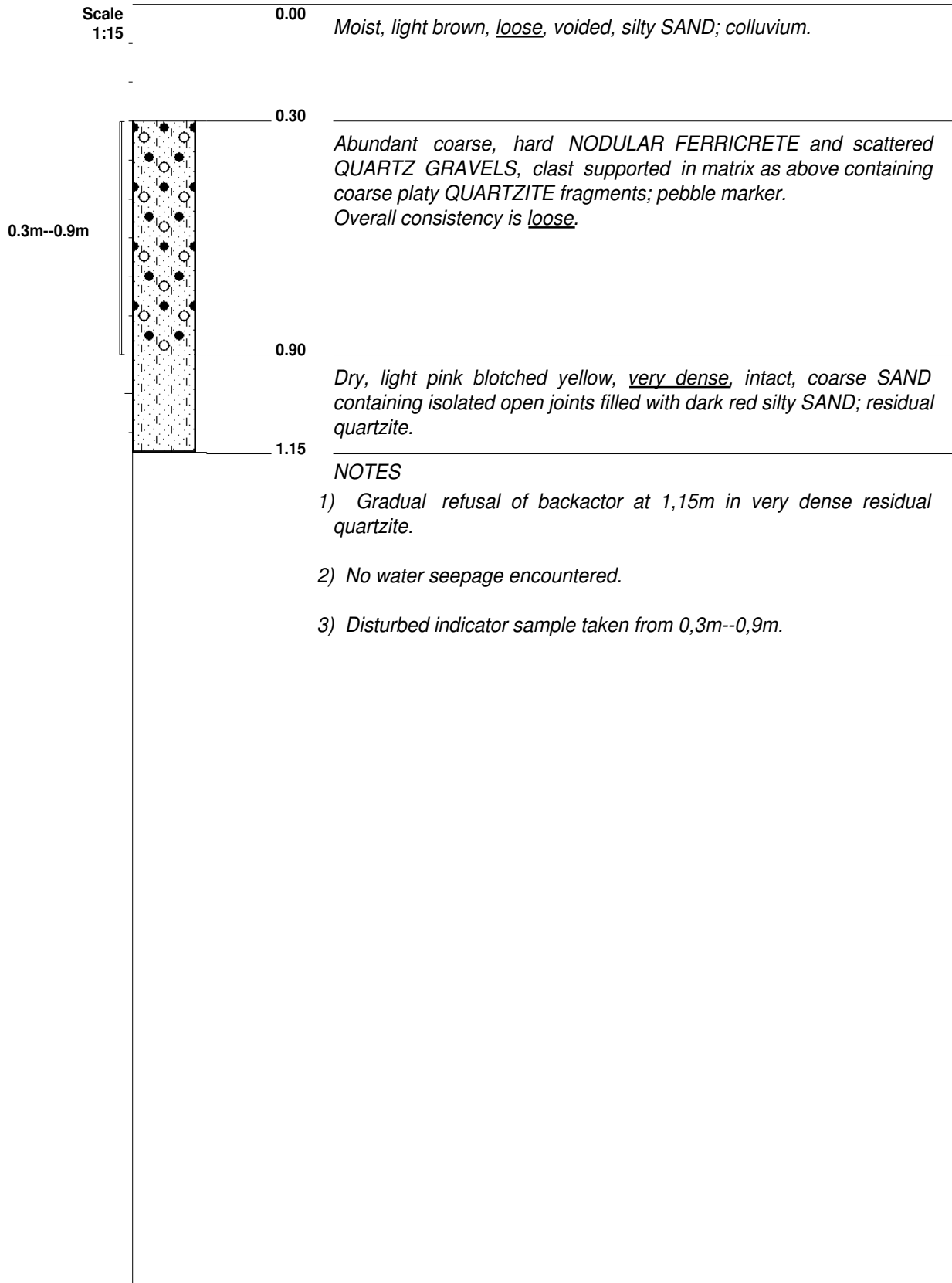


CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jvdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 29/04/2015  
 DATE : 29/04/2015  
 DATE : 12/07/2015 21:10  
 TEXT : ..dotplot\ARCHIVE\3507.txt

ELEVATION :  
 X-COORD : S26 15 16.1  
 Y-COORD : E27 59 17.7



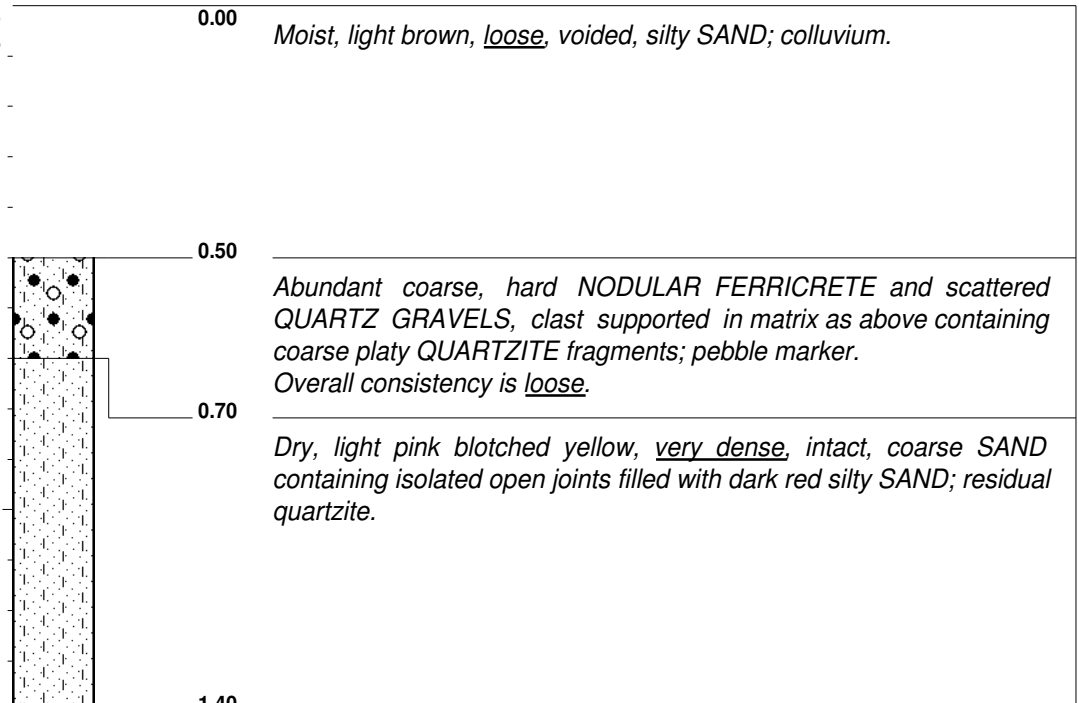


CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jvdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 29/04/2015  
 DATE : 29/04/2015  
 DATE : 12/07/2015 21:10  
 TEXT : ..dotplot\ARCHIVE\3507.txt

ELEVATION :  
 X-COORD : S26 15 15.2  
 Y-COORD : E27 59 16.9

Scale  
1:15



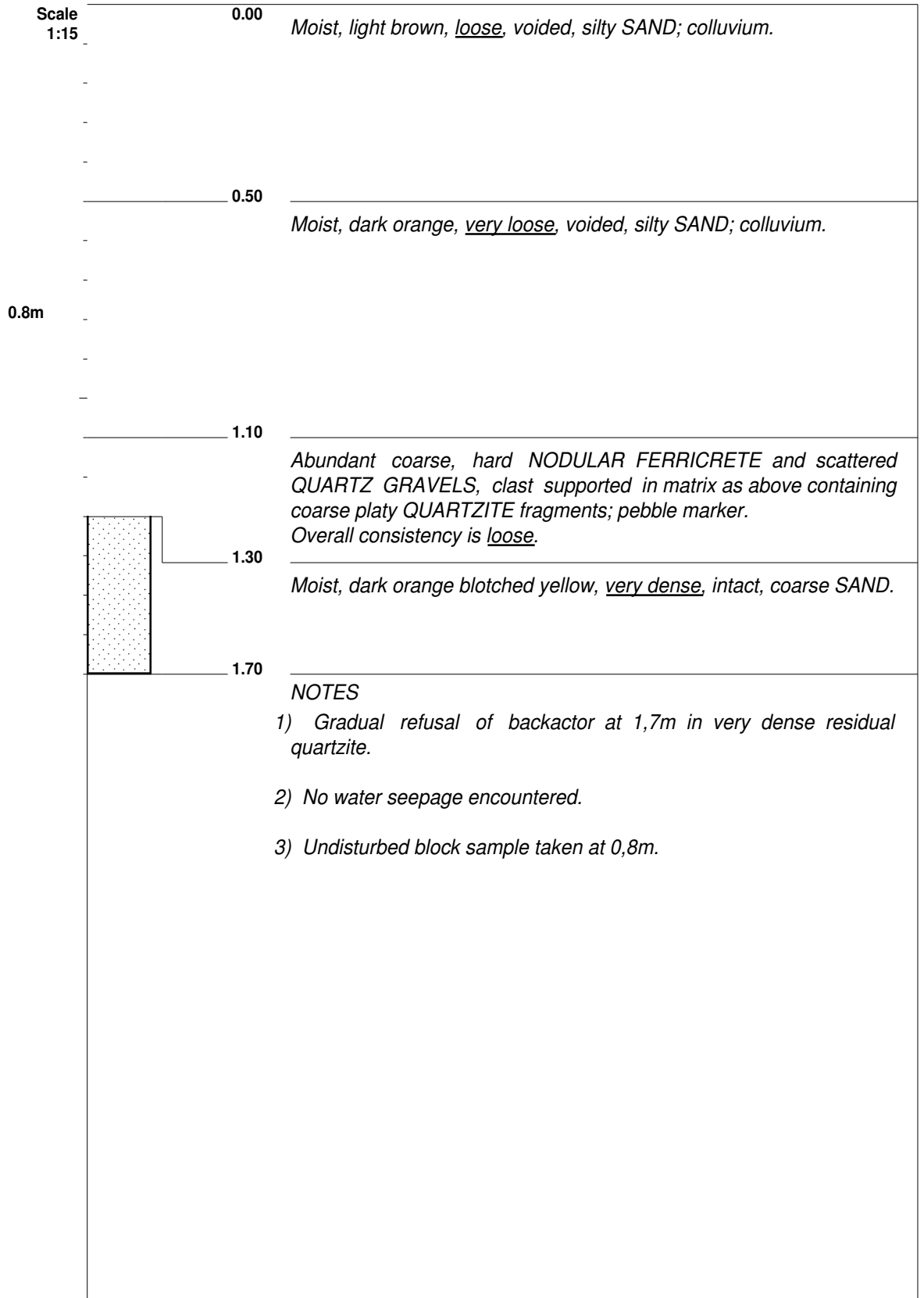
**NOTES**

- 1) Gradual refusal of backactor at 1,4m in very dense residual quartzite.
- 2) No water seepage encountered.

CONTRACTOR : Kosmos Civils  
MACHINE : New Holland B90B backactor  
DRILLED BY :  
PROFILED BY : jvdm  
TYPE SET BY : jvdm  
SETUP FILE : STANDARD.SET

INCLINATION :  
DIAM : Trench  
DATE : 29/04/2015  
DATE : 29/04/2015  
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ELEVATION :  
X-COORD : S26 15 14.8  
Y-COORD : E27 59 18.5



**CONTRACTOR :** Kosmos Civils  
**MACHINE :** New Holland B90B backactor  
**DRILLED BY :**  
**PROFILED BY :** jvdm  
**TYPE SET BY :** jovdm  
**SETUP FILE :** STANDARD.SET

**INCLINATION :**  
**DIAM :** Trench  
**DATE :** 29/04/2015  
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**TEXT :** ..dotplot\ARCHIVE\3507.txt

**ELEVATION :**  
**X-COORD :** S26 15 14.3  
**Y-COORD :** E27 59 17.2

# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 1131 ORMONDE - 3507  
 Prj. No. : JM06  
 20-May-15

Sample No. 0001  
 Test Pit ORG/1

Depth : 0.5m

### Sample Parameters

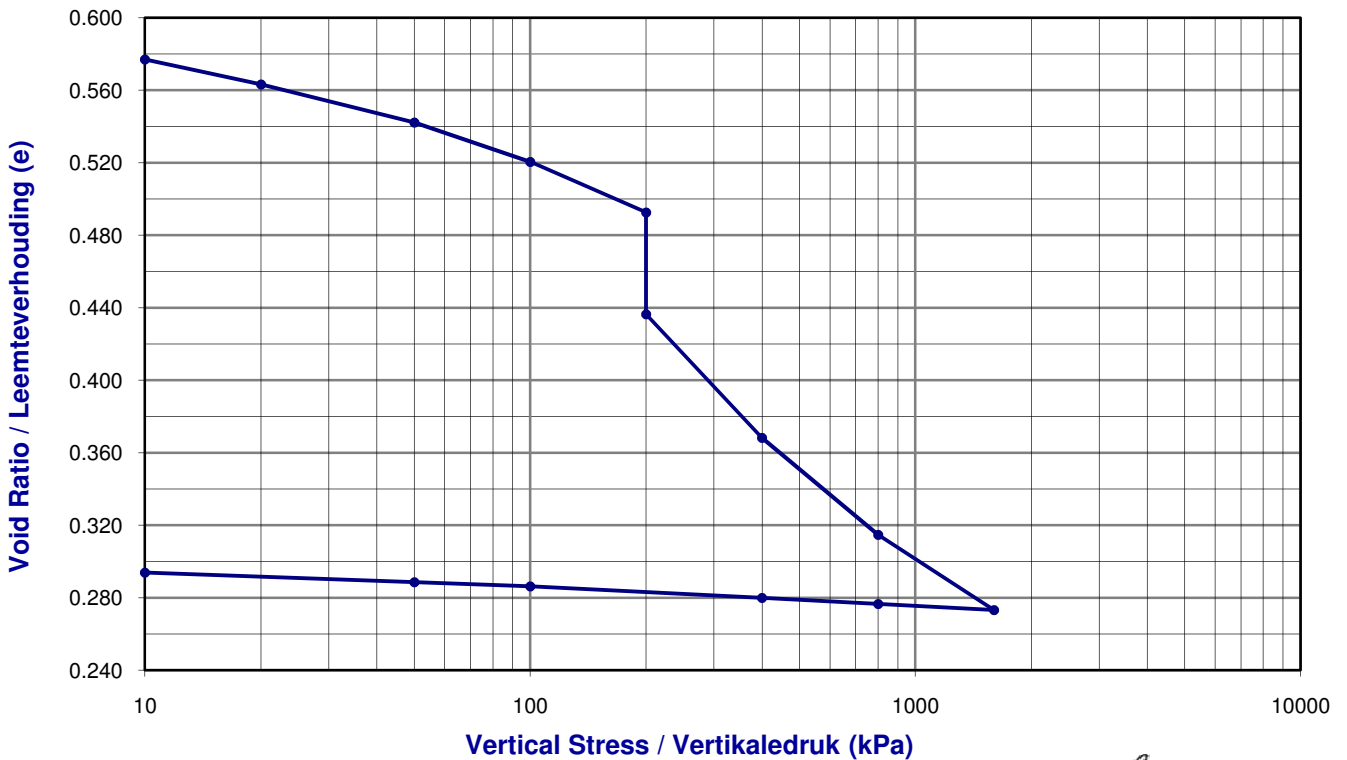
Machine	WF/F	Mass of Ring + wet sample (start of test)	212.8 g
Ring No	W1	Mass of Ring + dry sample	204.4 g
Ring Ht	18.92 mm	Mass of Ring + wet sample (end of test)	218.4 g
Ring Diam.	69.52 mm	Mass of ring	80.6 g
Ring Vol.	71.82 mm <sup>3</sup>	Dry Density	1.724
M/C at Start	6.8 %	M/C at End of Test	11.3 %
Sat. at Start	31.64 %	Sat. at End	105.2 %
Initial Voids Ratio	0.586	S.G.	2.735
Initial Ht. of Voids	6.99 mm	Ht. Of Solids	11.93 mm

**TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa**

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9890	9724	9474	9214	8882	8212	7398	6760	6266	6304	6345	6420	6448	6512
Strain (%)		0.58	1.46	2.78	4.15	5.91	9.45	13.75	17.12	19.74	19.53	19.32	18.92	18.77	18.44
Void Ratio	0.586	0.577	0.563	0.542	0.520	0.493	0.436	0.368	0.315	0.273	0.276	0.280	0.286	0.289	0.294
Cc		0.009	0.046	0.053	0.072	0.092		0.227	0.178	0.138	0.011	0.011	0.010	0.008	0.008
Mv (1/Mpa)		0.646	0.877	0.440	0.275	0.175		0.215	0.084	0.033	0.003	0.005	0.013	0.030	0.085

**Collapse Potential 3.5 %**



22-May



**GEOPLAN MATERIALS ENGINEERING (PTY) LTD**

Reg. No 2005/010539/07

# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 1131 ORMONDE - 3507  
 Prj. No. : JM06  
 20-May-15

Sample No. 0004  
 Test Pit ORG/7

Depth : 0.8m

### Sample Parameters

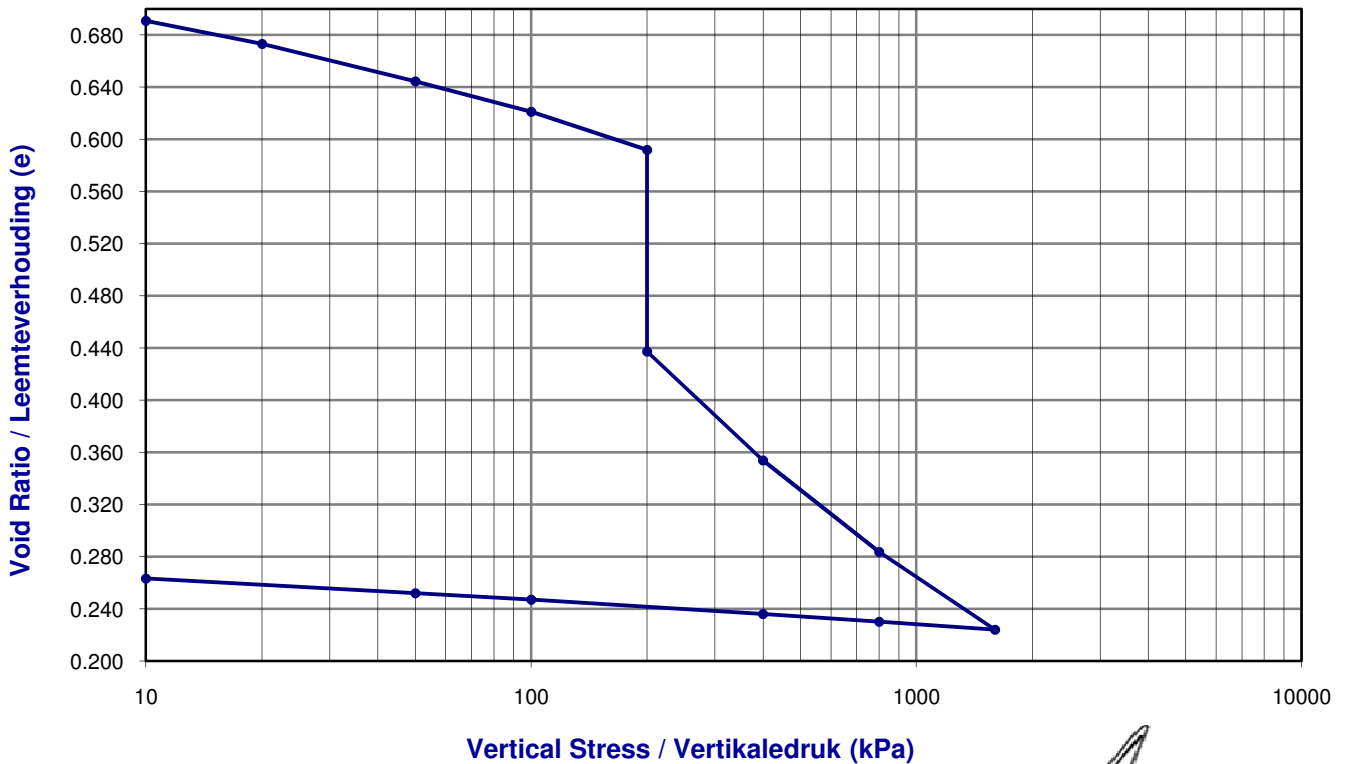
Machine	WF/E	Mass of Ring + wet sample (start of test)	259.2 g
Ring No	2	Mass of Ring + dry sample	248.8 g
Ring Ht	18.82 mm	Mass of Ring + wet sample (end of test)	262.2 g
Ring Diam.	74.72 mm	Mass of ring	115.6 g
Ring Vol.	82.52 mm <sup>3</sup>	Dry Density	1.614
M/C at Start	7.8 %	M/C at End of Test	10.1 %
Sat. at Start	30.72 %	Sat. at End	104.6 %
Initial Voids Ratio	0.695	S.G.	2.737
Initial Ht. of Voids	7.72 mm	Ht. Of Solids	11.10 mm

**TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa**

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9950	9754	9434	9174	8852	7134	6208	5430	4768	4836	4899	5022	5078	5202
Strain (%)		0.27	1.31	3.01	4.39	6.10	15.23	20.15	24.28	27.80	27.44	27.10	26.45	26.15	25.49
Void Ratio	0.695	0.691	0.673	0.644	0.621	0.592	0.437	0.354	0.284	0.224	0.230	0.236	0.247	0.252	0.263
Cc		0.005	0.059	0.072	0.078	0.096		0.277	0.233	0.198	0.020	0.019	0.018	0.017	0.016
Mv (1/Mpa)		0.295	1.041	0.567	0.276	0.171		0.246	0.103	0.044	0.005	0.008	0.022	0.060	0.165

**Collapse Potential** **9.1 %**



22-May





# FOUNDATION INDICATOR REPORT SHEET

CLIENT : JOHANN VAN DER MERWE  
 PROJECT : ERF 1131 ORMONDE JOB 3507

DATE : 15/05/19  
 PROJECT No. : JM06

## SAMPLE DETAILS

SAMPLE No.	CODES	TRIAL PIT No.	DEPTH	DESCRIPTION
0001	+ ———	ORG/1	0,5m	
0002	□ ······	ORG/2	0,8-1,1m	

## PARTICLE SIZE ANALYSIS: PERCENTAGE PASS BY MASS

SIZE (mm)	BY SIEVING										BY HYDROMETER				DIAM (um)
	75.0	37.5	19.0	9.5	4.75	2.00	0.425	0.300	0.150	0.075	60	20	6	2	
% PASS +				100	99	99	78	67	50	40	36	24	19	15	% PASS +
% PASS □			100	91	81	69	46	39	32	27	22	14	9	7	% PASS □

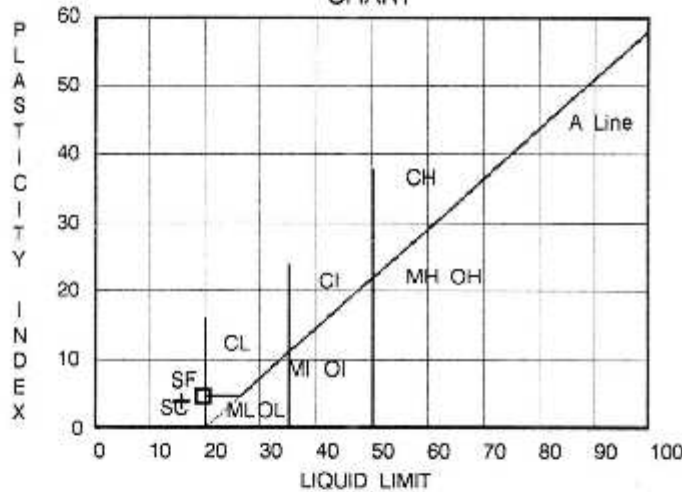
## DISTURBED SOIL PARAMETERS

ATTERBERG LIMITS				SG
LL (%)	PI (%)	LS (%)	WEIGHTED PI (%)	
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20	5	2,0	2	2,650

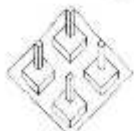
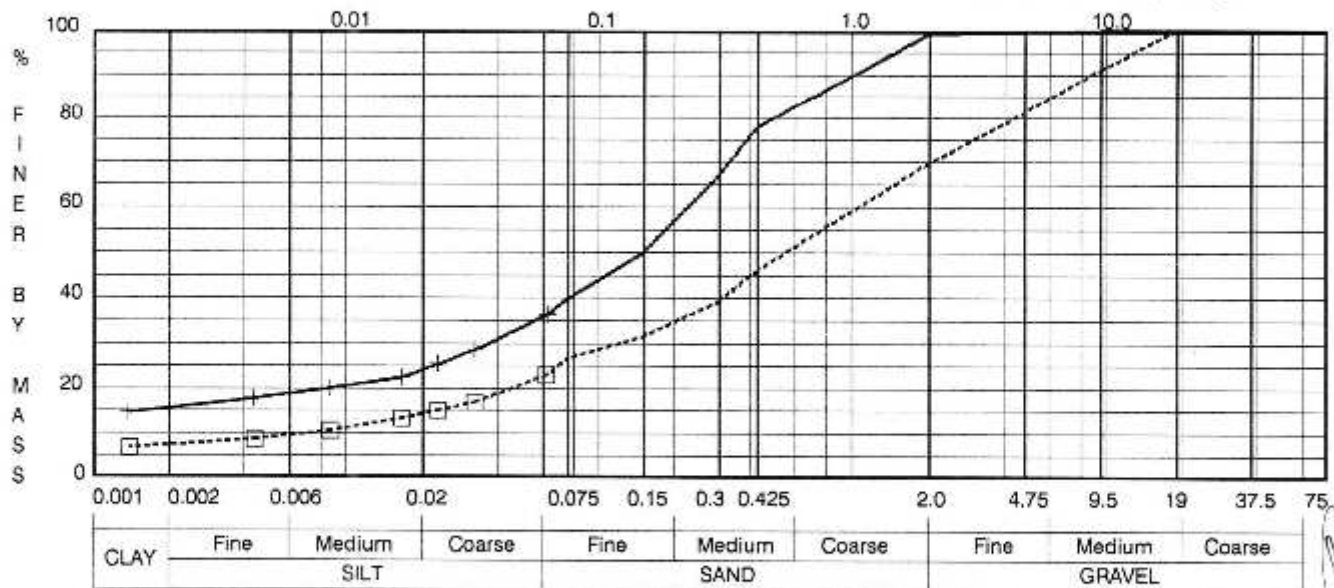
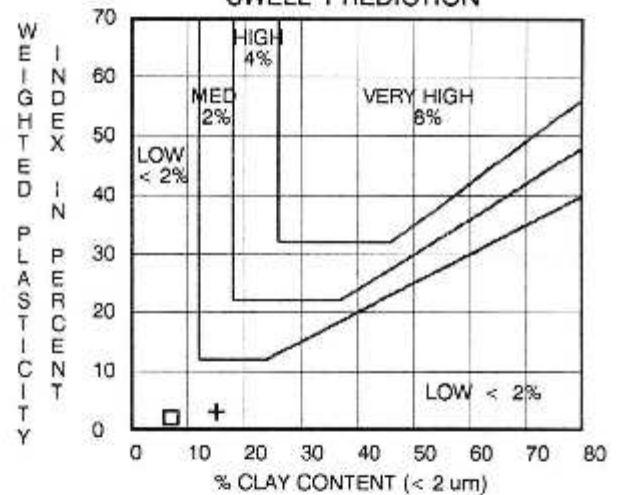
## UNDISTURBED SOIL PARAMETERS

VOIDS RATIO	SATURATION (%)	Dry Dens. (kg/m3)	NMC (%)

## CASAGRANDE PLASTICITY CLASSIFICATION CHART



## MODIFIED VAN DER MERWE SWELL PREDICTION



**GEOPLAN LABORATORIES (Pty) Ltd**

REG No. 78/00337/07

11 RICHARD Rd TEL (011) 477-1045/6 FAX (011) 673-0715  
 INDUSTRIA NORTH BOX 552, FLORIDA 1710

*Handwritten signature/initials*

# FOUNDATION INDICATOR REPORT SHEET

CLIENT : JOHANN VAN DER MERWE  
 PROJECT : ERF 1131 ORMONDE JOB 3507

DATE : 15/05/19  
 PROJECT No. : JM06

## SAMPLE DETAILS

SAMPLE No.	CODES	TRIAL PIT No.	DEPTH	DESCRIPTION
0003	+ ———	ORG/5	0,3-0,9m	
0004	□ - - - - -	ORG/7	0,8m	

## PARTICLE SIZE ANALYSIS: PERCENTAGE PASS BY MASS

SIZE (mm)	BY SIEVING										BY HYDROMETER				DIAM (um)
	75.0	37.5	19.0	9.5	4.75	2.00	0.425	0.300	0.150	0.075	60	20	6	2	
% PASS +			100	90	72	55	38	33	27	22	19	12	8	7	% PASS +
% PASS □					100	98	76	66	52	41	38	23	17	13	% PASS □

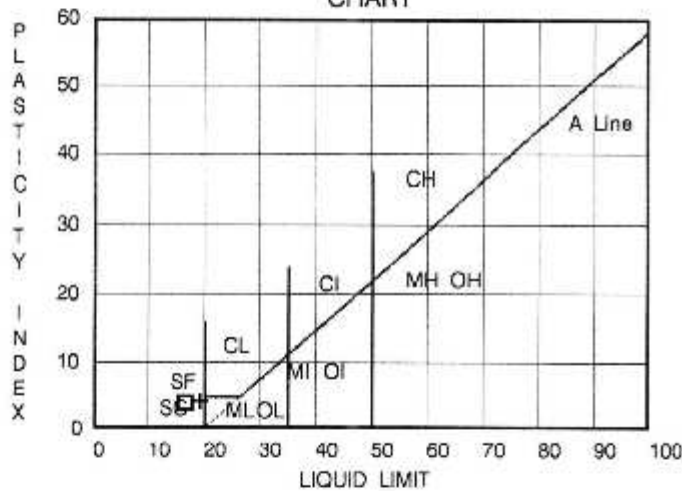
## DISTURBED SOIL PARAMETERS

ATTERBERG LIMITS				SG
LL (%)	PI (%)	LS (%)	WEIGHTED PI (%)	
19	4	1,5	2	2,650
17	4	1,5	3	2,650

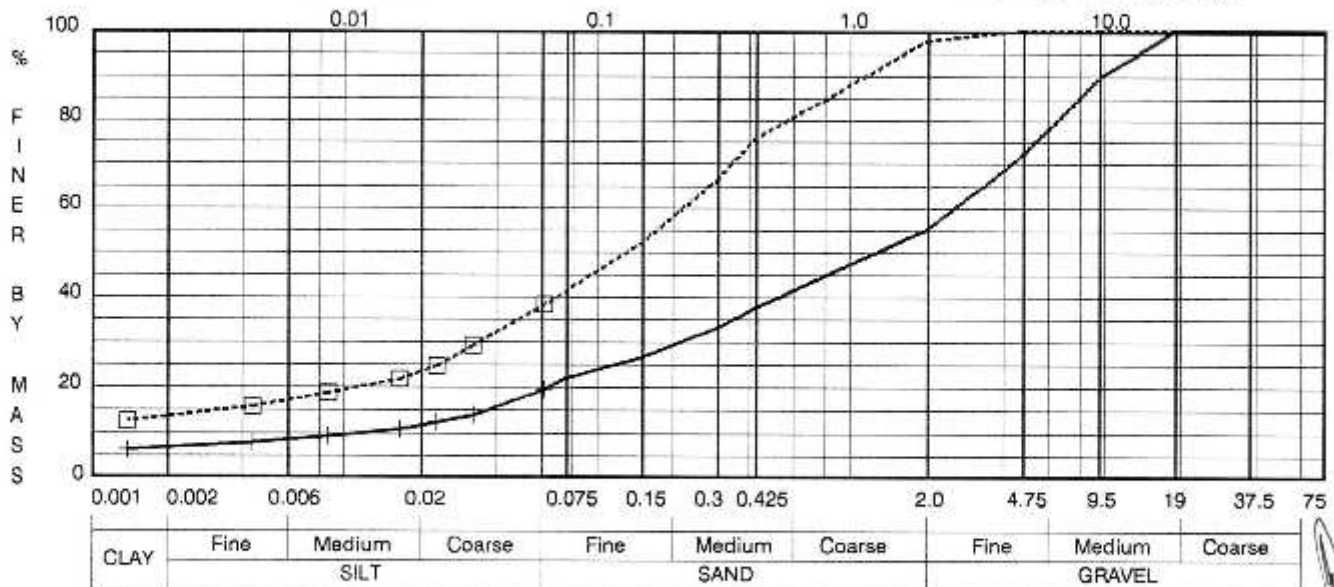
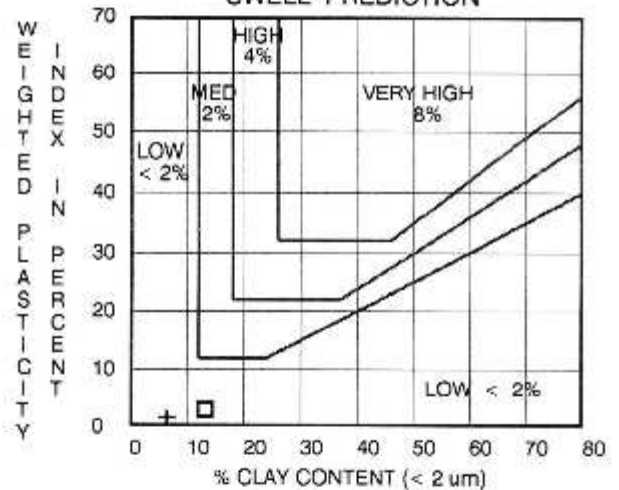
## UNDISTURBED SOIL PARAMETERS

VOIDS RATIO	SATURATION (%)	Dry Dens. (kg/m3)	NMC (%)

## CASAGRANDE PLASTICITY CLASSIFICATION CHART



## MODIFIED VAN DER MERWE SWELL PREDICTION



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289 Polaris Avenue  
Waterkloof Ridge 0181  
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P.O. Box 95562  
WATERKLOOF 0145  
Pretoria, GAUTENG  
SOUTH AFRICA

**PROJECT No: M15/3506**

**10 July 2015**

MATLA PROJECTS (Pty) Ltd  
P.O. Box 14152  
BREDELL 1623

**Attention: Mr. Erich Danzfuss**

Dear Sir,

**REPORT ON PHASE 1 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR: A PROPOSED CLUSTER HOMES DEVELOPMENT ON: *ERF NUMBER 1130, ORMONDE EXTENSION 24, JOHANNESBURG, GAUTENG PROVINCE***

## **1. INTRODUCTION**

Acting upon instruction received from Mr. Erich Danzfuss who is acting on behalf of Mr. Jacques Pienaar of Matla Projects (Pty) Ltd, a Phase 1 geotechnical investigation was carried out at the above site. The purpose of the investigation was for enrolment purposes with the NHBRC and to determine foundation conditions for the construction of a new cluster homes development comprising triple-storey units at a density of 80 units per hectare.

The purpose of the investigation is to satisfy the requirements of the National Home Builders Registration Council to assess the geological suitability of the proposed project with regards to the development of a residential township.

## **2. TERMS OF REFERENCE**

The objectives of the investigation were to: -

- Determine the engineering properties of the site soils and bedrock including potentially expansive material, low bearing capacity soils and areas difficult to excavate.
- Present appropriate recommendations for residential township design and precautionary measures in accordance with the requirements of the National Home Builders Registration Council's guidelines.

Written instructions to proceed with the investigation were obtained from Mr. Erich Danzfuss in his electronic mail dated February 2015.

## **3. INFORMATION CONSULTED**

The following information was available and was consulted: -

- The 1: 50 000 scale Topographical Map 2626AA Roodepoort.
- The 1: 250 000 scale geological Map, Sheet Number 2628 West Rand.

- A site plan, prepared by Xan Swart Land Surveyors, showing the boundaries of the site and surface contours at 0,5m intervals.
- A coloured aerial photograph of the site was obtained from Google Earth via the Internet.
- The publication “National Home Builders Registration Council’s Home Building Manual, Part 1 & 2, February 1999.

#### 4. SITE DESCRIPTION

The study area is located in the western part of Johannesburg and the site for the new development is roughly trapezoidal in shape and covers a surface area of some 10 615m<sup>2</sup>. The site is bounded to the east by a perennial drainage feature, by Milkwood Road to the west, by the onramp to the M1 Motorway to the south and by extensions of Ormonde on the northern side. The site is densely covered by large Eucalyptus, Pine and Wattle trees and the surface slopes towards the east in the direction of the drainage feature at an average gradient of some 5%.

#### 5. SITE INVESTIGATION

Nine test pits were excavated across the site using a New Holland B90B backactor supplied by Kosmos Plant Hire from Honeydew. The number of pits that could be excavated was limited over the eastern portion of the site due to the dense tree growths that are present here. The test pit was entered, inspected and profiled by a registered engineering geologist according to the methods advocated by Jennings *et al* (1973). Disturbed and undisturbed soil samples and a water sample were taken during the investigation and were submitted to Geoplan’s commercial soil laboratory for analysis. Copies of the soil profiles, the results of the laboratory soil tests and the Geotechnical Map, Drawing Number M15/3506 showing the site in relation to its surroundings are attached.

#### 6. SITE SOILS AND GEOLOGY

The proposed new residential development is located on transported sandy and gravelly soils overlying sediments (shale, quartzite and conglomerate) belonging to the Turffontein Subgroup, Central Rand Group, Witwatersrand Supergroup. The study area has been apportioned into two generalized material zones, Soil Zones “A” and “B” as shown on the attached map.

**Soil Zone “A”** materials occupy the higher-lying north-western portion of the site and a generalized description of the typical soil profile that may be encountered here is as follows: -

- 0,0 - 0,7: *Slightly moist, light brown becoming dark orange, very loose, voided, silty SAND; colluvium. Horizon extends down to depths ranging from 0,3m to 1,2m below surface.*
- 0,7 - 1,0: *Abundant coarse, FERRUGINISED FRAGMENTS and scattered medium and fine, QUARTZ GRAVELS, clast supported in a matrix as above; pebble marker. Overall consistency is loose.*
- 1,0 - 1,6: *Moist, dark orange blotched white, very dense, intact, coarse SAND; residual quartzite. Grades to light purple blotched white, moderately weathered, soft rock QUARTZITE across portions of the soil zone.*

**Soil Zone “B”** materials occupy the lower-lying south-eastern portion of the site and a generalized description of the typical soil profile that may be encountered here is as follows: -

0,0 - 2,0: *Moist, light grey, very loose, voided, silty SAND containing roots; colluvium.*

2,0 - 2,2: *Abundant coarse, soft and hard, FERRUGINISED FRAGMENTS, clast supported in a matrix of very moist, light grey, silty SAND; ferruginised residual quartzite.*

Slow excavation to gradual refusal of the New Holland B90B backactor was experienced across Soil Zone “A” in the very dense residual quartzite and soft rock quartzite bedrock at depths ranging from 1,2m to 2,2m+ below surface. No refusal of the machine was experienced across Soil Zone “B” down to a depth of at least 2,5m below surface. Moderate seepage of ground water was encountered from below 1,7m across Soil Zone “B”, elsewhere the water table, whether perched or permanent, was not encountered during the investigation that was carried out during the middle of the dry season.

## 7. GEOTECHNICAL CONSIDERATIONS

### 7.1 Compressible and Collapsible Soils

A number of undisturbed soil samples, representative of the colluvial soils that blanket the property, were tested to determine the collapse potential of the material according to the method advocated by Jennings (1974). A summary of the results of the laboratory tests appears below in Table 7.1.

**TABLE 7.1: COLLAPSE POTENTIAL TEST RESULTS**

HOLE NUMBER	DEPTH (m)	DRY DENSITY (kg/m <sup>3</sup> )	COLLAPSE POTENTIAL (%)	COMPRESSIBILITY (%)	TROUBLE RATING
ORF/2	0,80	1 580	5,80	5,84	Trouble
ORF/5	1,00	1 684	3,80	6,19	Moderate Trouble

An analysis of the above results indicate that the colluvial soils that blanket the site are potentially highly collapsible and moderately compressible with a collapse rating of “moderate trouble” to “trouble” in terms of collapse settlement, according to Jennings. The material is also potentially moderately compressible, based on the results of the consolidation tests.

### 7.2 Expansive Soils

The blanketing site soils are sandy and gravelly and are potentially “low” in the degree of expansiveness based on the results of the laboratory tests and according to the Van der Merwe (1964) method. A total surface heave value of less than 5mm is predicted across this portion of the site, depending on the locality and should the moisture condition of the soils change from a dry to a saturated state.

### 7.3 Excavation Characteristics

Very hard machine excavation and possibly the use of jackhammers will be required to remove the very dense residual quartzite and quartzite bedrock from below 1,2m to 2,2m below surface across Soil Zone “A”. No problems should be experienced to remove the blanketing transported and residual soils across this soil zone and across the remainder of the site down to a depth of at least 1,2m below surface, using conventional earth moving equipment.

Stable sidewall conditions can be expected across Soil Zone “A” during construction in the dry season, unstable sidewall conditions may occur in the upper loose unconsolidated transported soils during the rainy season and in areas where perched water table conditions prevail and shoring of deep excavations may be required in these areas. Unstable sidewall conditions can be expected from shallow depth across Soil Zone “B” due to the presence of a shallow water table and shoring of deep excavations will be required during the placement of underground wet services.

## 7.4 Foundations

**Soil Zone “A”** is covered by a moderate to prominent horizon of potentially compressible and collapsible soils and tentatively classify as NHBRC Site Class “C1/S1” and one of the following foundation solutions may be adopted for the construction of single-storey masonry residential structures: -.

### *Deep Strip Foundations*

- Normal construction with drainage precautions and with mesh reinforced floor slabs.
- Founding on the dense residual horizon below the problem soils at depths ranging from 0,5m to 1,2m below surface and adopting a safe allowable bearing pressure of at least 300 kPa.

### *Compaction of in situ soils below individual footings*

- Remove in situ material below foundations to a depth and width of 1,5 times the foundation width or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

### *Soil Raft*

- Remove in situ material to 1m beyond perimeter of building to a depth of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

### *Modified Normal Construction*

- Reinforced strip footings
- Articulation joints at some internal and all external doors
- Light reinforcement in masonry
- Site drainage and plumbing precautions to be taken
- Foundation pressure not to exceed 50 kPa.

**Soil Zone “B”** is covered by a prominent horizon of potentially compressible and collapsible soils and tentatively classify as NHBRC Site Class “C2/S2” and one of the following foundation solutions may be adopted for the construction of single-storey masonry residential structures: -.

### *Stiffened or Cellular Raft*

- Stiffened or cellular raft with articulation joints or solid lightly reinforced masonry
- Site drainage and plumbing/service precautions to be taken.
- Foundation Pressure not to exceed 50 kPa.

**Soil Raft**

- Remove in situ material to 1m beyond perimeter of building to a depth of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

**Piled or Pier Foundation**

- Reinforced concrete ground beams or solid slabs on piled or pier foundations.
- Ground slabs with fabric reinforcement
- Site drainage and plumbing/service precautions to be taken.

It is understood that the development will comprise of *triple-storey structures* only and these may safely be founded onto the very dense residual quartzite in *Soil Zone “A”*, adopting a safe allowable bearing pressure of at least 300 kPa. Conventional spread or strip footings, placed onto the very dense residual quartzite at depths ranging from 0,7m to 1,3m below surface are envisaged for the multi-storey structures.

*Soil Zone “B”* is covered by a prominent horizon of potentially collapsible soils and piled or pier foundations should be considered here for proposed triple-storey structures, the presence of a shallow water table will probably rule out another type of construction method. The presence of the water table should be taken into consideration the design and construction of the piled foundation.

Removal of the dense bush and trees that cover large portions of the site will probably result in a severe amount of ground disturbance which should be reinstated prior to construction of services and structures.

**7.5 Earthworks**

A summary of the anticipated compaction characteristics of the upper 1,0m of the site soils, based on an empirical method determined by the Plasticity Index and the Grading Modulus of the soil (the so-called Kleyn’s CBR which is comparable with the 90% Proctor CBR) appears below in Table 7.2:-

**TABLE 7.2: SUMMARY OF ANTICIPATED COMPACTION CHARACTERISTICS**

HOLE NO	DEPTH (m)	SOIL TYPE	PI	GM	Kleyn’s CBR*
ORF/2	0,5 – 1,2	Silty SAND	4	0,78	22
ORF/5	0,3 – 2,0	Silty SAND	4	0,90	25
ORF/8	0,5 – 0,8	Pebble Marker	4	2,21	60
ORF/8	0,8 – 1,5	Residual quartzite	8	1,69	32

Note : PI = Plasticity Index  
 GM = Grading Modulus  
 CBR\* = California Bearing Ration at 90% Proctor compaction

Based on an analysis of the above table, it is evident that the transported silty sand and the pebble marker gravels which blanket the site, should be suitable for use as fill underneath surface beds and as selected layers (G7/G6 quality) in the construction of parking areas and roadways. Material for the construction of selected, subbase and base-course layers in roads and paved areas will have to be imported from a commercial source. The design of roads should take the potentially collapsible and compressible nature of the site soils into consideration.

## 7.6 Ground Water and Soil Chemistry

No ground water seepage was encountered in any test pit across Soil Zone "A" during the investigation, however, damp proofing precautions should be taken underneath structures. A seasonal water table, perched along the interface between the very dense residual quartzite and the overlying permeable soils, may possibly occur during periods of excessive downpour. Moderate to strong water seepage was encountered across Soil Zone "B" from below 1,7m and cognizance should be taken of this phenomenon in the design and construction of wet services and underground structures. The site soils are expected to be potentially neutral to slightly chemically aggressive with regards to underground ferrous metal pipes (pH values ranging from 7,6 to 8,3 and electrical conductivity values ranging from 0,0041 to 0,0143 S/m) and the use of non-ferrous metal pipes or plastic pipes are recommended for wet services, the foundation soils should be treated with an environmentally friendly insecticide to combat termites.

The results of the chemical tests have shown the ground water to be potentially highly corrosive towards buried concrete and metal, the necessary precautions should therefore be taken to prevent chemical attack on these vessels.

## 8. GENERAL

While every effort has been made to ensure that representative test pitting and sampling has been undertaken to probe the soils on-site, guaranteeing that isolated zones of either poor foundation material or hard rock excavation have not been identified, is impossible under the constraints of an investigation of this nature. The investigation has sought to highlight general areas of potential foundation and excavation problems, and to provide early warning to the design engineers and town planners. In view of the variability inherent in soils, all foundation excavations should be inspected by a competent person.

The placement of the engineered fills must be controlled with suitable field tests to ensure that the required densities are achieved during compaction, and that the quality of fill material is within specification.

We trust that the above information will meet with your immediate requirements. Please do not hesitate to call for any further information.

Yours faithfully



JOHANN VAN DER MERWE (Drs. Sci. Nat.)

Engineering Geologist

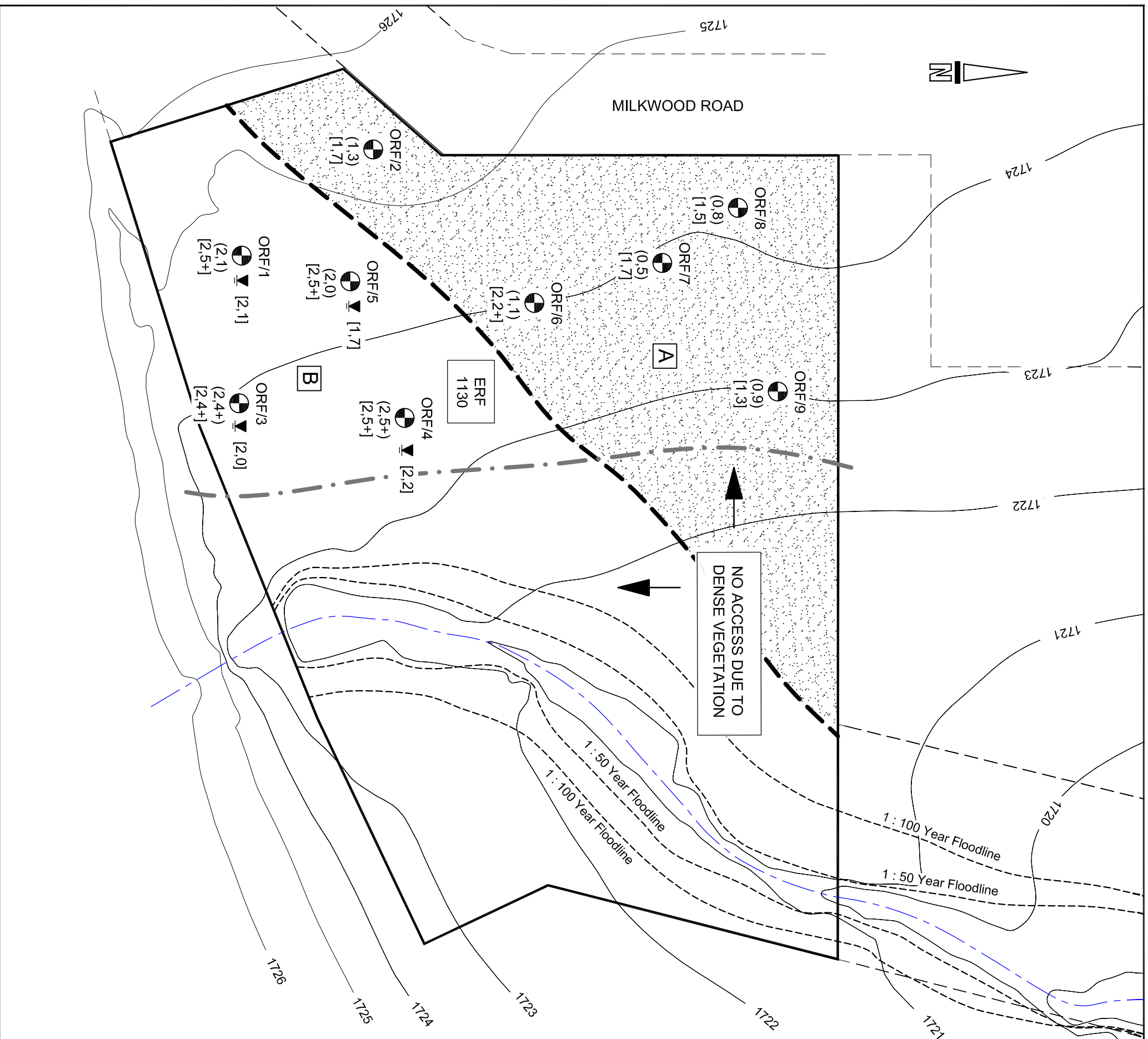
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**9. APPENDICES**

**Test Pit Profiles**

**Laboratory Test Results**

**Geotechnical Map**



**LEGEND:**

- ORF/1 TEST PIT BY BACKACTOR, APPROXIMATE POSITION AND NUMBER
- (2,1) SHOWING THICKNESS OF POTENTIALLY COMPRESSIBLE HORIZON IN METRES AND
- [2,5+] REFUSAL DEPTH OF BACKACTOR IN M.B.G.L.
- ▼ [2,1] DEPTH IN M.B.G.L. WHERE WATER SEEPAGE OCCURS
- MATERIAL BOUNDARIES\*\*

SOIL ZONE	MATERIAL DESCRIPTION GEO TECHNICAL CONSIDERATIONS & FOUNDATION RECOMMENDATIONS (Single-story structures#)	NIBRC* SITE CLASS
A	<p>Moderate horizon (0,5m to 1,3m thick) of loose colluvial silty SAND and coarse pebble marker GRAVELS over very dense residual quartzite. Colluvium is potentially moderately collapsible and compressible.</p> <ul style="list-style-type: none"> <li>→ Compaction of soil below footings</li> <li>→ Soil raft foundations</li> <li>→ Deeper than normal strip footings placed onto very dense residual quartzite</li> </ul>	C1/S1
B	<p>Hominent horizon (2,0m to &gt;2,5m thick) of loose to very loose colluvial silty SAND and coarse FERRICIFERE GRAVELS extending to more than 2,0m and presumably underlain by dense to very dense residual quartzite at depth. Colluvium is potentially moderately collapsible and compressible. Shallow ground water conditions prevail.</p> <ul style="list-style-type: none"> <li>→ Compaction of soil below footings</li> <li>→ Soil raft foundations</li> <li>→ Piled foundations</li> <li>→ Stiffened or cellular raft foundations</li> </ul>	C2/S2

**NOTE:**

- \* = National Home Builders Registration Council (NHBRC).
- \*\* - Soil boundaries are inferred and should be considered as a gradual change from one soil zone to the next, to be determined more accurately during installation of service trenches. Removal of large trees may result in surface disturbance and these areas as well as localized areas of disturbed ground should be reinstated prior to the construction of dwelling units.
- # = Double- or multi-storey structures may safely be founded onto the very dense residual quartzite or quartzite bedrock below the problem soils across Soil Zone "A" whereas piled foundations or another appropriate foundation solution applies to Soil Zone "B".

**JOHANN VAN DER MERWE (PTY) LTD**  
INGENIEURSGEOLOOG / ENGINEERING GEOLOGIST

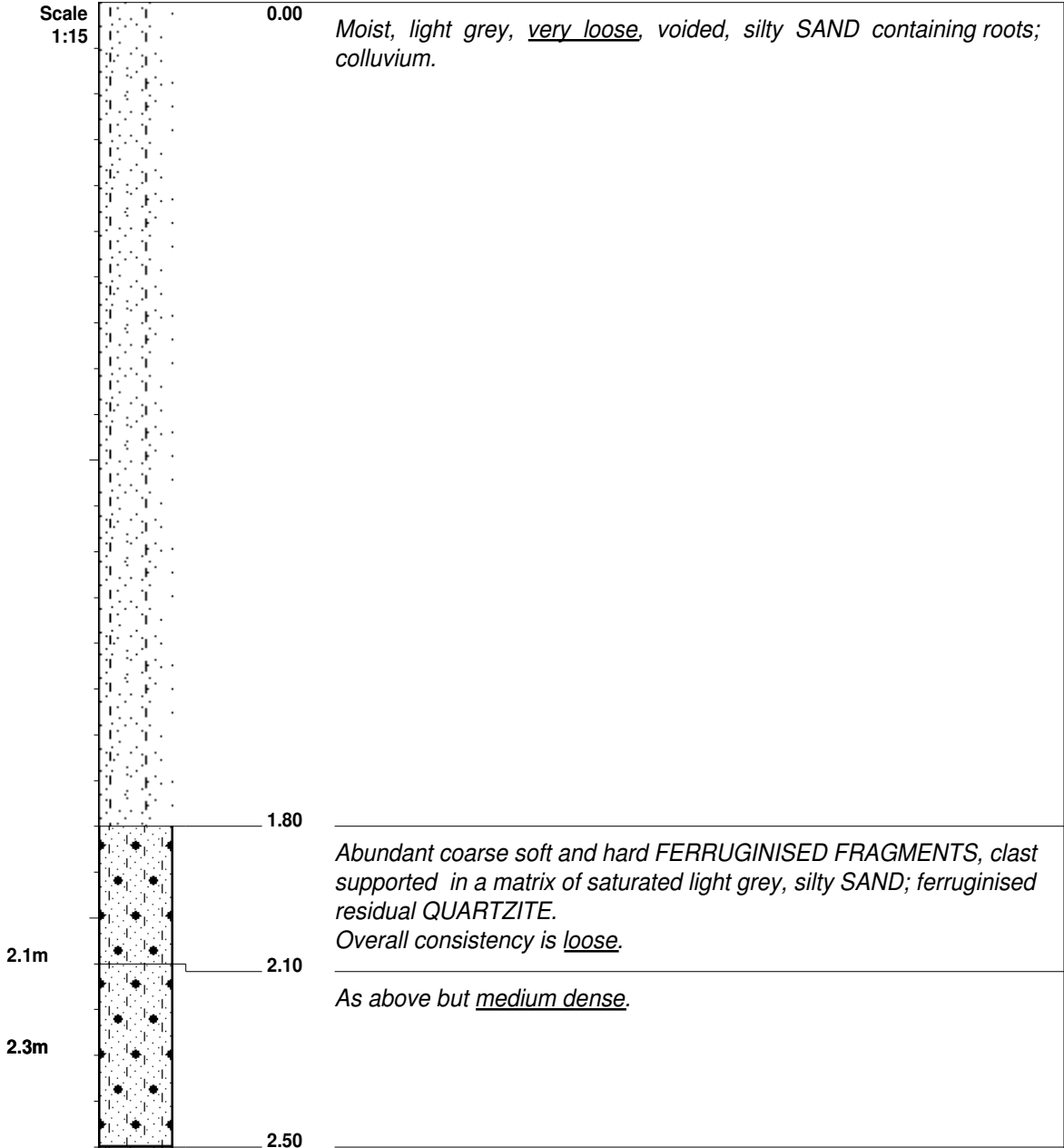
POSBUS 95562 WATERKLOOF 0145      TEL: (012) 347 8467  
P O BOX 95562 WATERKLOOF 0145      FAX: (012) 347 9064

TITLE / TITLE      TEK / DRG NO  
**GEOTECHNICAL MAP**      **M15/3506**

LIGGING / LOCALITY      DATUM / DATE  
ERF1130, ORMONDE EXTENSION 24      JULY 2015

KLIËNT / CLIENT      SKAAL / SCALE  
MATLA PROJECTS (PTY) LTD      1 : 750 ON A3





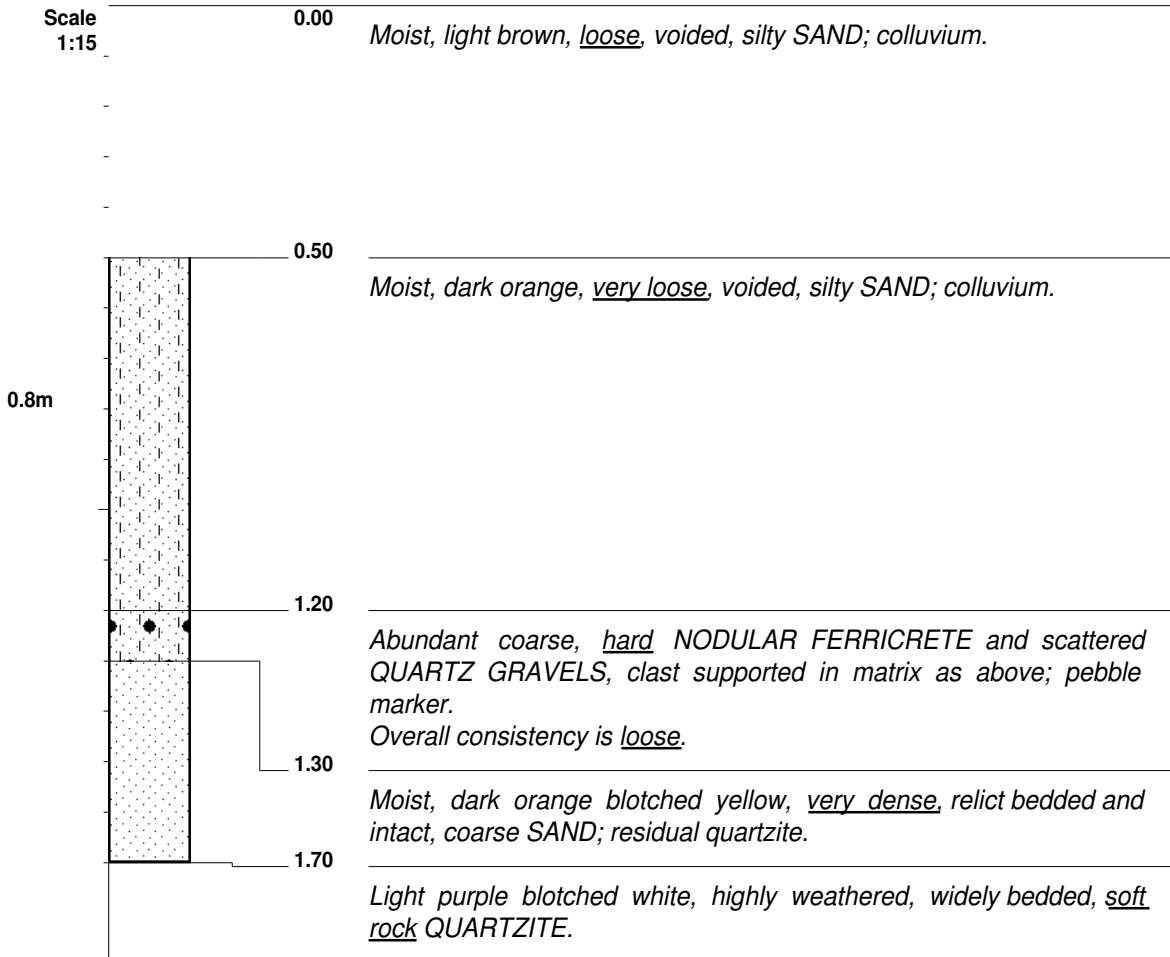
**NOTES**

- 1) No refusal of backactor at 2,5m.
- 2) Water seepage encountered from below 2,1m.
- 3) Water table standing at 2,3m after one hour.
- 4) Water sample taken for chemical analysis at 2,3m.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
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 PROFILED BY : jvdm  
 TYPE SET BY : jvdm  
 SETUP FILE : STANDARD.SET

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 Y-COORD : E27 59 15.3



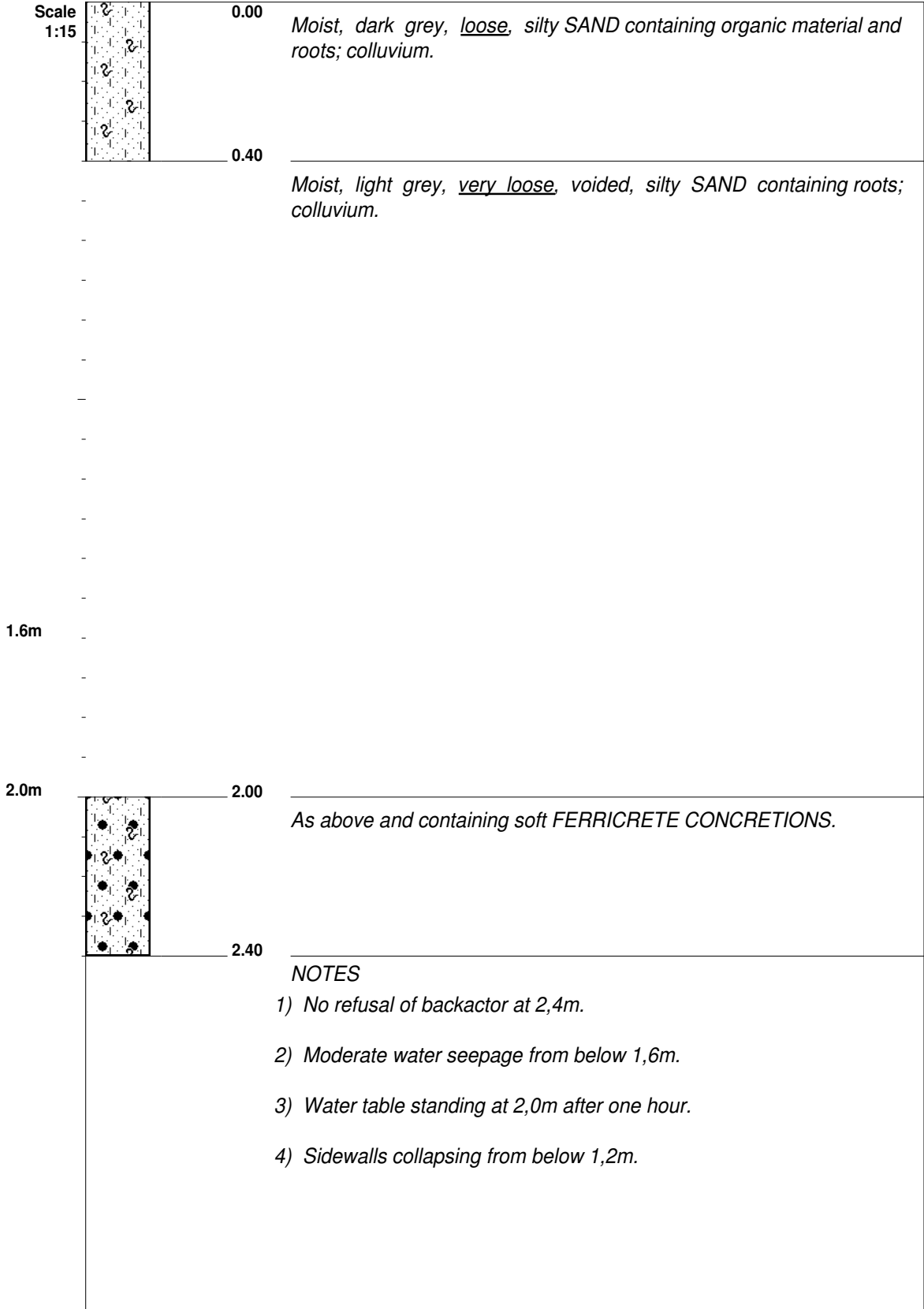
**NOTES**

- 1) Abrupt refusal of backactor at 1,7m in quartzite bedrock.
- 2) No water seepage encountered.
- 3) Undisturbed block sample taken at 0,8m.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
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 PROFILED BY : jvdm  
 TYPE SET BY : jovdm  
 SETUP FILE : STANDARD.SET

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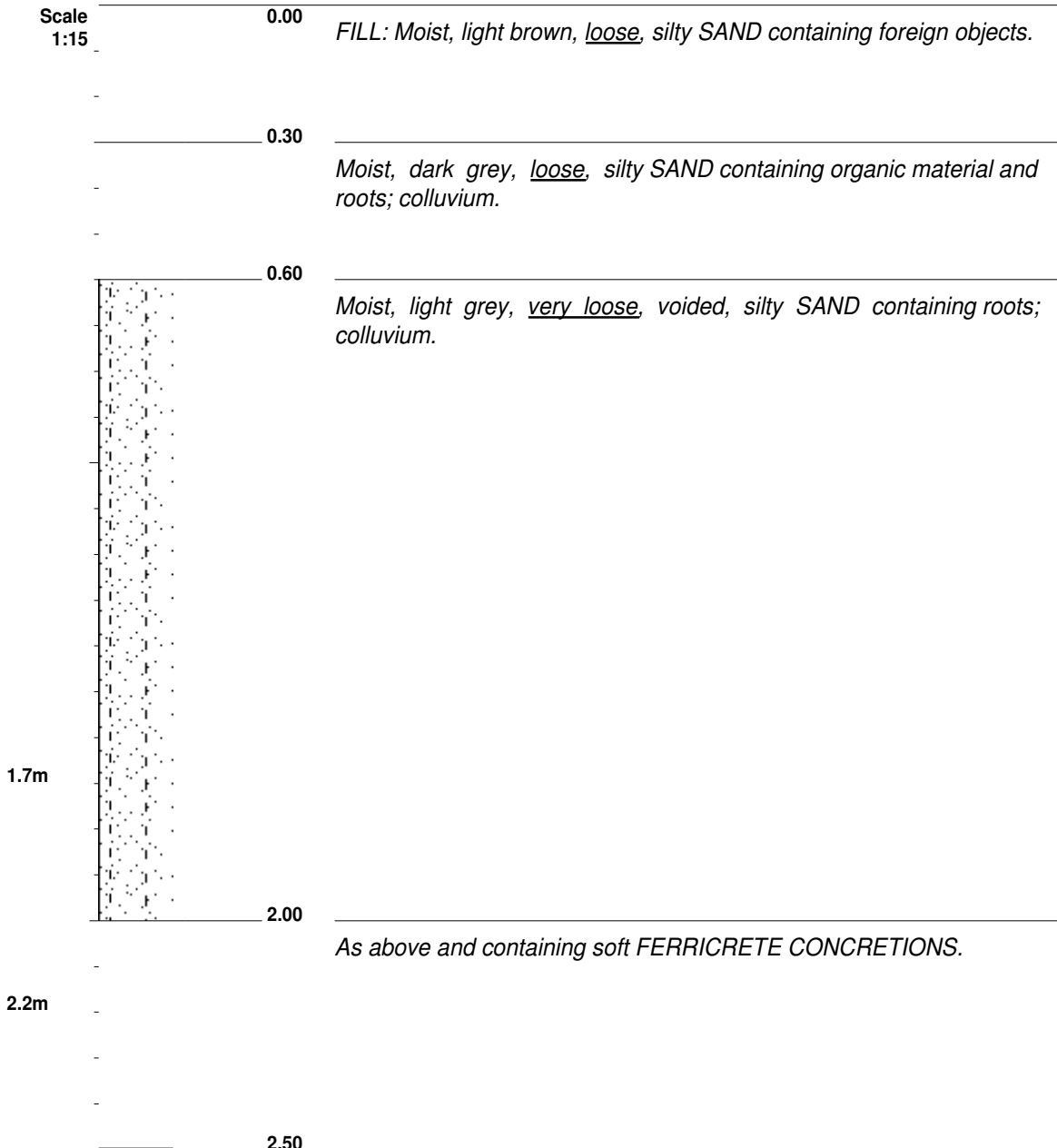
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**MACHINE :** New Holland B90B backactor  
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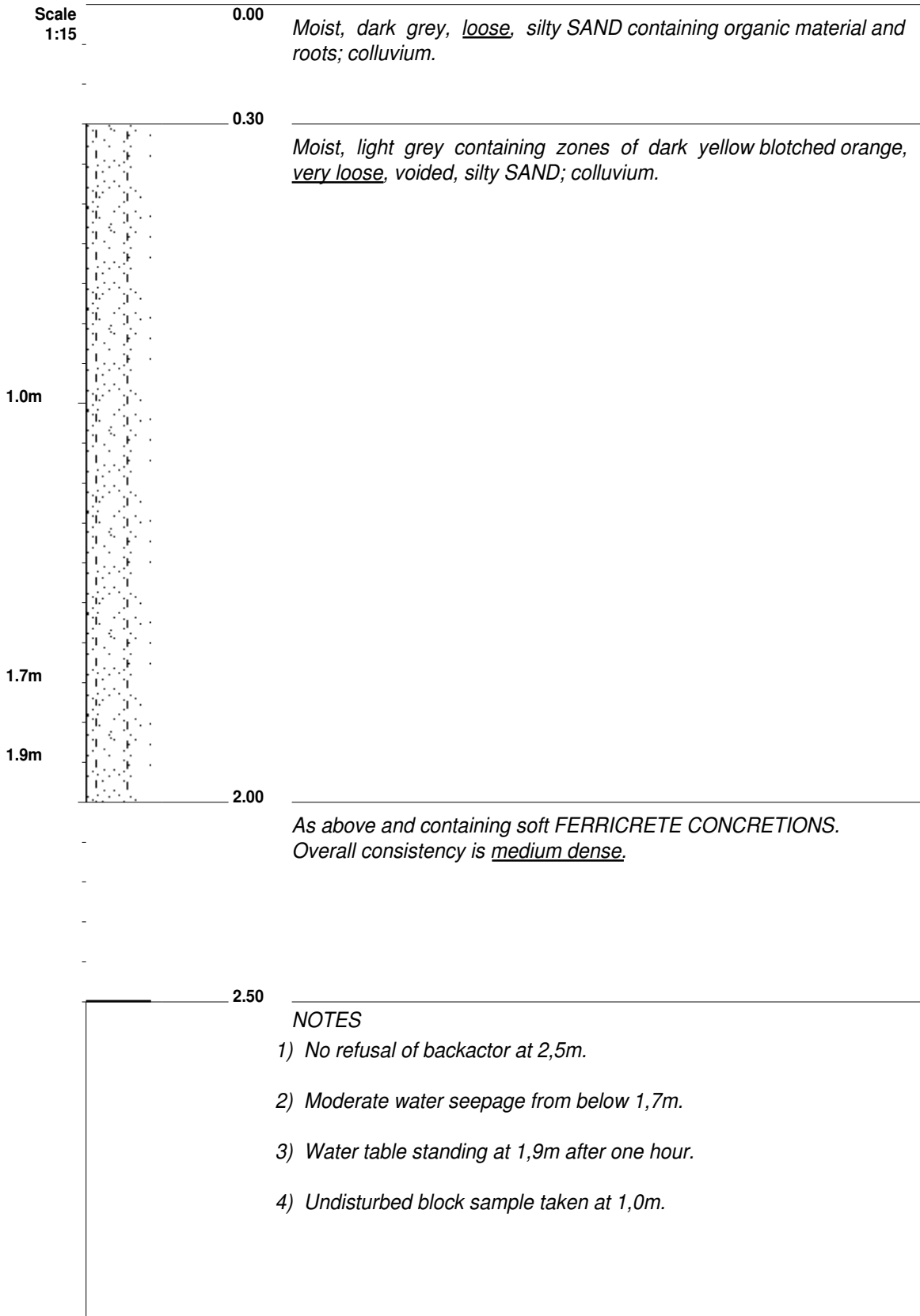
**NOTES**

- 1) No refusal of backactor at 2,5m.
- 2) Moderate water seepage from below 1,7m.
- 3) Water table standing at 2,2m after one hour.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
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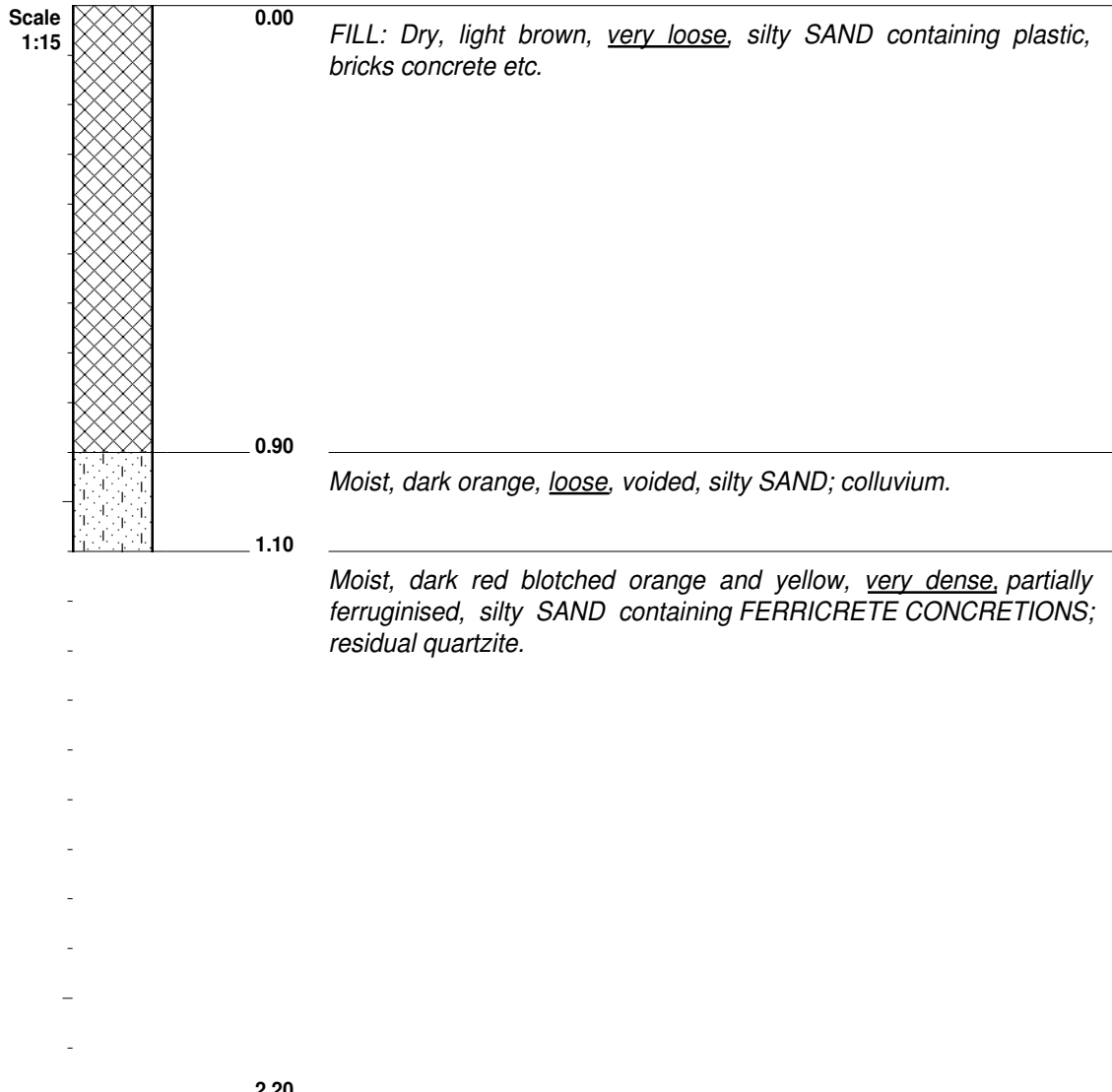
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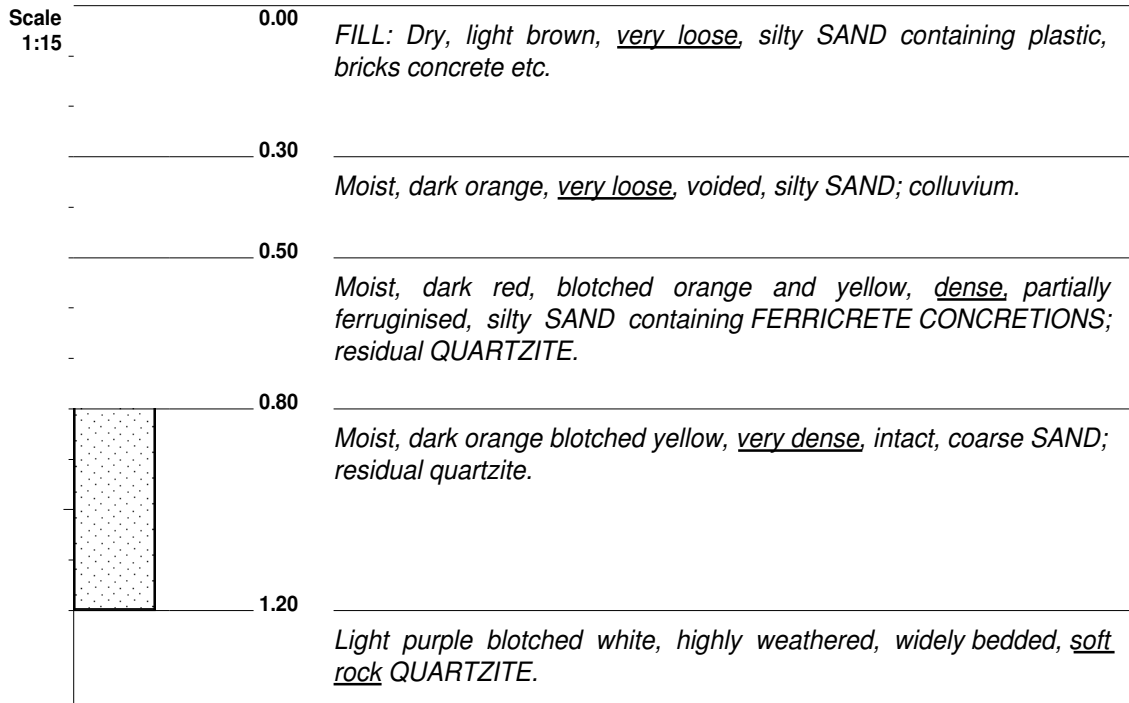
**NOTES**

- 1) Slow excavation to gradual refusal of backactor at 2,2m in very dense residual quartzite.
- 2) No water seepage encountered.

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 MACHINE : New Holland B90B backactor  
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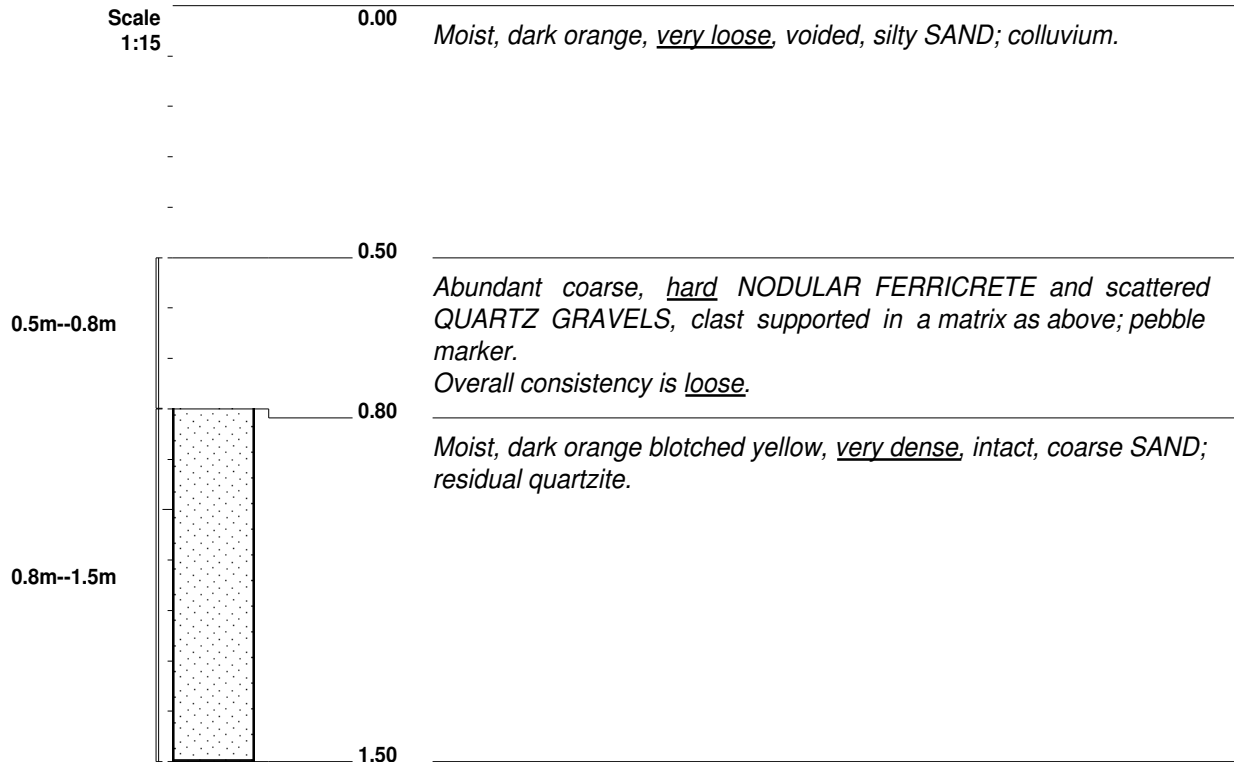
**NOTES**

- 1) Slow excavation to gradual refusal of backactor at 2,2m in very dense residual quartzite.
- 2) No water seepage encountered.

**CONTRACTOR :** Kosmos Civils  
**MACHINE :** New Holland B90B backactor  
**DRILLED BY :**  
**PROFILED BY :** jvdm  
**TYPE SET BY :** jvdm  
**SETUP FILE :** STANDARD.SET

**INCLINATION :**  
**DIAM :** Trench  
**DATE :** 29/04/2015  
**DATE :** 29/04/2015  
**DATE :** 19/07/2015 11:51  
**TEXT :** ..dotplot\ARCHIVE\3506.txt

**ELEVATION :**  
**X-COORD :** S26 15 19.5  
**Y-COORD :** E27 59 15.5



**NOTES**

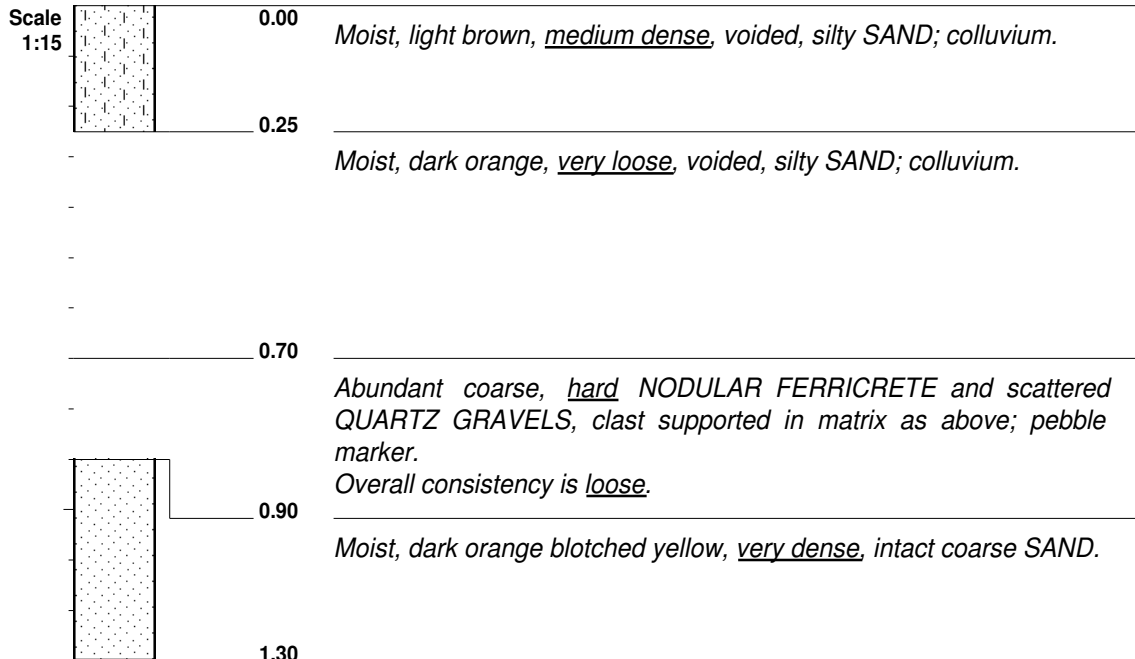
- 1) Slow excavation to gradual refusal of backactor at 1,5m in very dense residual quartzite.
- 2) No water seepage encountered.
- 3) Disturbed indicator samples taken from 0,5m--0,8m and from 0,8m--1,5m.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jovdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 29/04/2015  
 DATE : 29/04/2015  
 DATE : 19/07/2015 11:51  
 TEXT : ..dotplot\ARCHIVE\3506.txt

ELEVATION :  
 X-COORD : S26 15 19.1  
 Y-COORD : E27 59 15.1





**NOTES**

- 1) Slow excavation to gradual refusal of backactor at 1,3m in very dense residual quartzite.
- 2) No water seepage encountered.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jvdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
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 DATE : 19/07/2015 11:51  
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ELEVATION :  
 X-COORD : S26 15 19.0  
 Y-COORD : E27 59 16.2

# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 1130 ORMONDE - 3506  
 Prj. No. : JM05  
 20-May-15

Sample No. 0001  
 Test Pit ORF/2

Depth : 0.8m

### Sample Parameters

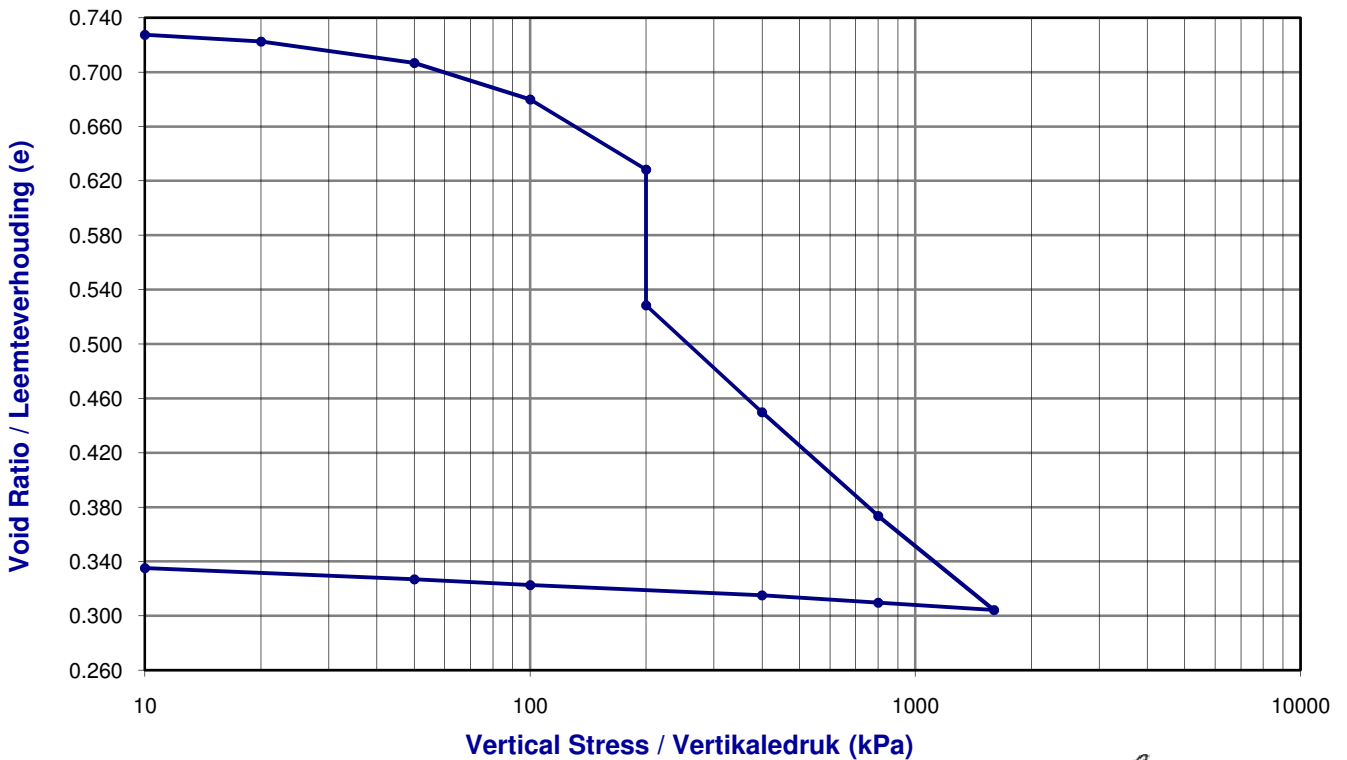
Machine	WF/C	Mass of Ring + wet sample (start of test)	208.6 g
Ring No	W2	Mass of Ring + dry sample	197.0 g
Ring Ht	18.86 mm	Mass of Ring + wet sample (end of test)	211.4 g
Ring Diam.	69.70 mm	Mass of ring	83.3 g
Ring Vol.	71.96 mm <sup>3</sup>	Dry Density	1.580
M/C at Start	10.2 %	M/C at End of Test	12.7 %
Sat. at Start	38.22 %	Sat. at End	103.2 %
Initial Voids Ratio	0.729	S.G.	2.733
Initial Ht. of Voids	7.95 mm	Ht. Of Solids	10.91 mm

*TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa*

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9980	9926	9756	9462	8900	7810	6952	6120	5364	5424	5483	5564	5610	5702
Strain (%)		0.11	0.39	1.29	2.85	5.83	11.61	16.16	20.57	24.58	24.26	23.95	23.52	23.28	22.79
Void Ratio	0.729	0.727	0.722	0.707	0.680	0.628	0.528	0.450	0.374	0.304	0.310	0.315	0.323	0.327	0.335
Cc		0.002	0.016	0.039	0.090	0.171		0.261	0.253	0.230	0.018	0.018	0.012	0.014	0.012
Mv (1/Mpa)		0.118	0.286	0.300	0.312	0.298		0.227	0.110	0.050	0.004	0.008	0.014	0.049	0.122

**Collapse Potential** 5.8 %



# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 1130 ORMONDE - 3506  
 Prj. No. : JM05  
 20-May-15

Sample No. 0002  
 Test Pit ORF/5

Depth : 1.0m

### Sample Parameters

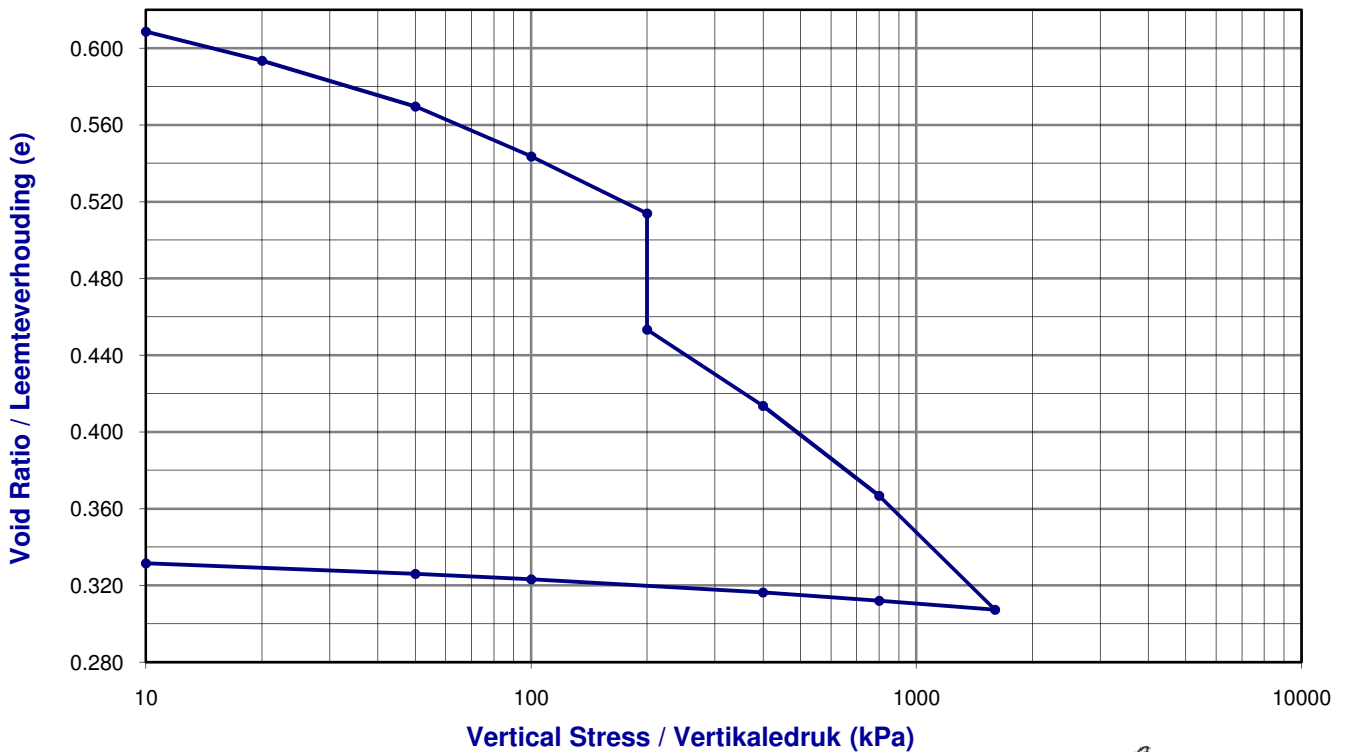
Machine	WF/C	Mass of Ring + wet sample (start of test)	219.4 g
Ring No	W2	Mass of Ring + dry sample	204.0 g
Ring Ht	18.86 mm	Mass of Ring + wet sample (end of test)	219.5 g
Ring Diam.	69.70 mm	Mass of ring	82.9 g
Ring Vol.	71.96 mm <sup>3</sup>	Dry Density	1.684
M/C at Start	12.7 %	M/C at End of Test	12.8 %
Sat. at Start	56.23 %	Sat. at End	104.9 %
Initial Voids Ratio	0.614	S.G.	2.718
Initial Ht. of Voids	7.18 mm	Ht. Of Solids	11.68 mm

**TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa**

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9932	9756	9476	9172	8826	8118	7654	7106	6412	6466	6517	6598	6630	6694
Strain (%)		0.36	1.29	2.78	4.39	6.22	9.98	12.44	15.34	19.02	18.74	18.47	18.04	17.87	17.53
Void Ratio	0.614	0.609	0.594	0.570	0.544	0.514	0.453	0.414	0.367	0.307	0.312	0.316	0.323	0.326	0.331
Cc		0.006	0.050	0.060	0.086	0.098		0.132	0.156	0.197	0.015	0.015	0.012	0.009	0.008
Mv (1/Mpa)		0.401	0.933	0.495	0.322	0.183		0.123	0.073	0.046	0.004	0.007	0.014	0.034	0.085

**Collapse Potential 3.8 %**



22-May





# FOUNDATION INDICATOR REPORT SHEET

CLIENT : JOHANN VAN DER MERWE  
 PROJECT : ERF 1130 ORMONDE JOB 3506

DATE : 15/05/20  
 PROJECT No. : JM05

## SAMPLE DETAILS

SAMPLE No.	CODES	TRIAL PIT No.	DEPTH	DESCRIPTION
0001	+ ———	ORF/2	0,8m	
0002	□ ······	ORF/5	1,0m	

## PARTICLE SIZE ANALYSIS: PERCENTAGE PASS BY MASS

SIZE (mm)	BY SIEVING										BY HYDROMETER				DIAM (um)
	75.0	37.5	19.0	9.5	4.75	2.00	0.425	0.300	0.150	0.075	60	20	6	2	
% PASS +						100	80	69	52	42	38	25	16	12	% PASS +
% PASS □				100	99	98	77	61	44	35	32	22	15	12	% PASS □

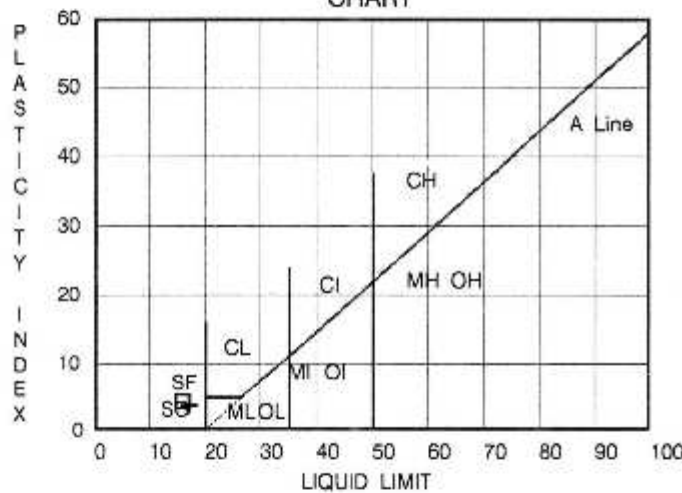
## DISTURBED SOIL PARAMETERS

ATTERBERG LIMITS				SG
LL (%)	PI (%)	LS (%)	WEIGHTED PI (%)	
17	4	1.5	3	2,650
16	4	1.5	3	2,650

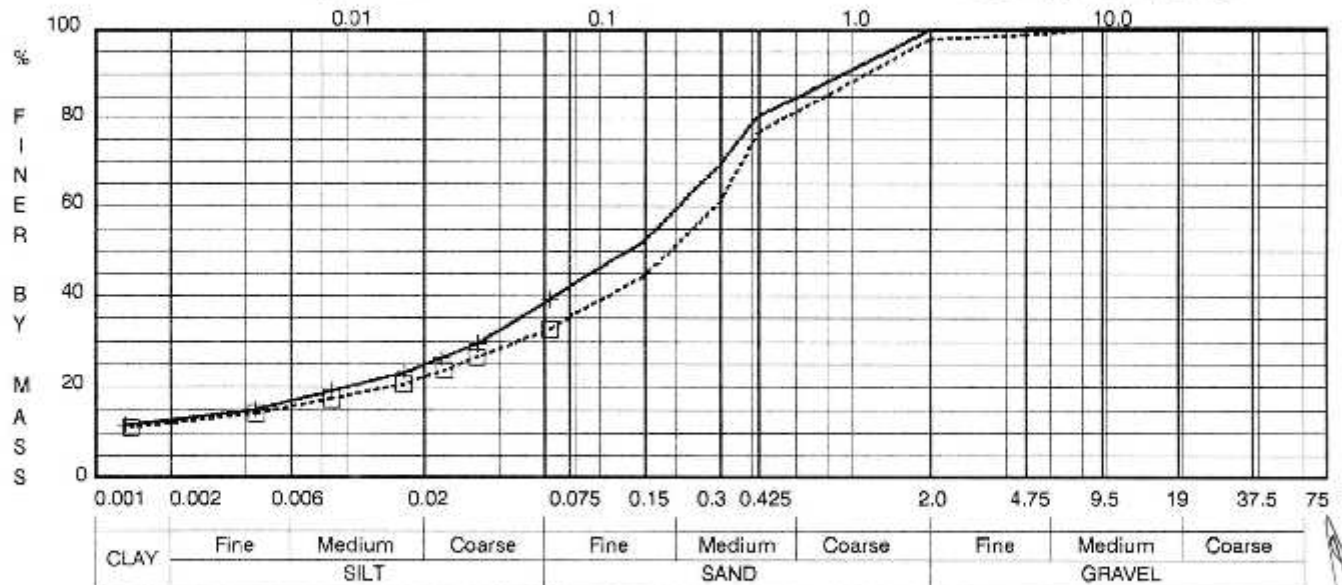
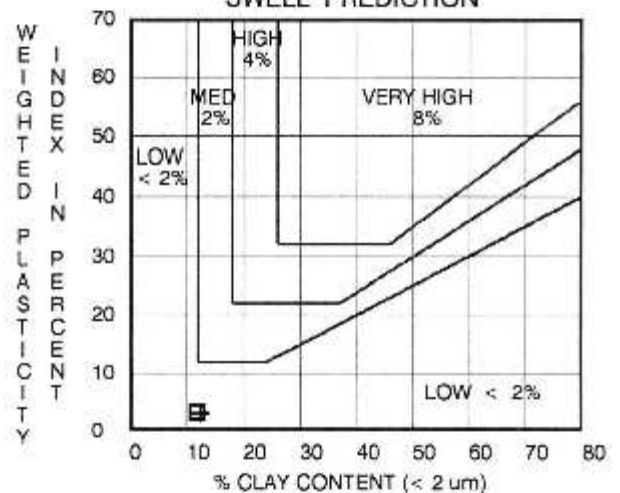
## UNDISTURBED SOIL PARAMETERS

VOIDS RATIO	SATURATION (%)	Dry Dens. (kg/m3)	NMC (%)

## CASAGRANDE PLASTICITY CLASSIFICATION CHART



## MODIFIED VAN DER MERWE SWELL PREDICTION



*Handwritten signature/initials*



## GEOPLAN LABORATORIES (Pty) Ltd

REG No. 78/00337/07  
 11 RICHARD Rd TEL (011) 477-1045/6 FAX (011) 673-0715  
 INDUSTRIA NORTH BOX 552, FLORIDA 1710

# FOUNDATION INDICATOR REPORT SHEET

CLIENT : JOHANN VAN DER MERWE  
 PROJECT : ERF 1130 ORMONDE JOB 3506

DATE : 15/05/19  
 PROJECT No. : JM05

## SAMPLE DETAILS

SAMPLE No.	CODES	TRIAL PIT No.	DEPTH	DESCRIPTION
0003	+ ————	ORF/8	0,5-0,8m	
0004	□ ······	ORF/8	0,8-1,5m	

## PARTICLE SIZE ANALYSIS: PERCENTAGE PASS BY MASS

SIZE (mm)	BY SIEVING											BY HYDROMETER				DIAM (um)
	75.0	37.5	19.0	9.5	4.75	2.00	0.425	0.300	0.150	0.075	60	20	6	2		
% PASS +	100	77	75	63	47	36	27	24	20	16	14	9	7	5	% PASS +	
% PASS □			100	90	76	62	43	37	31	26	23	17	12	9	% PASS □	

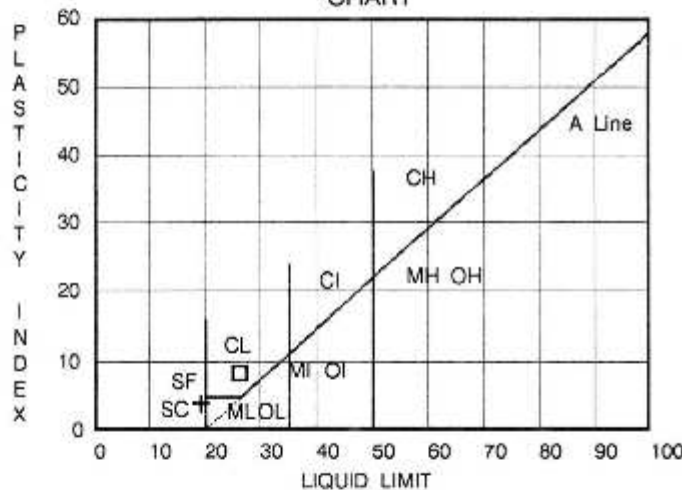
## DISTURBED SOIL PARAMETERS

ATTERBERG LIMITS				SG
LL (%)	PI (%)	LS (%)	WEIGHTED PI (%)	
19	4	1,5	1	2,650
26	8	3,5	4	2,650

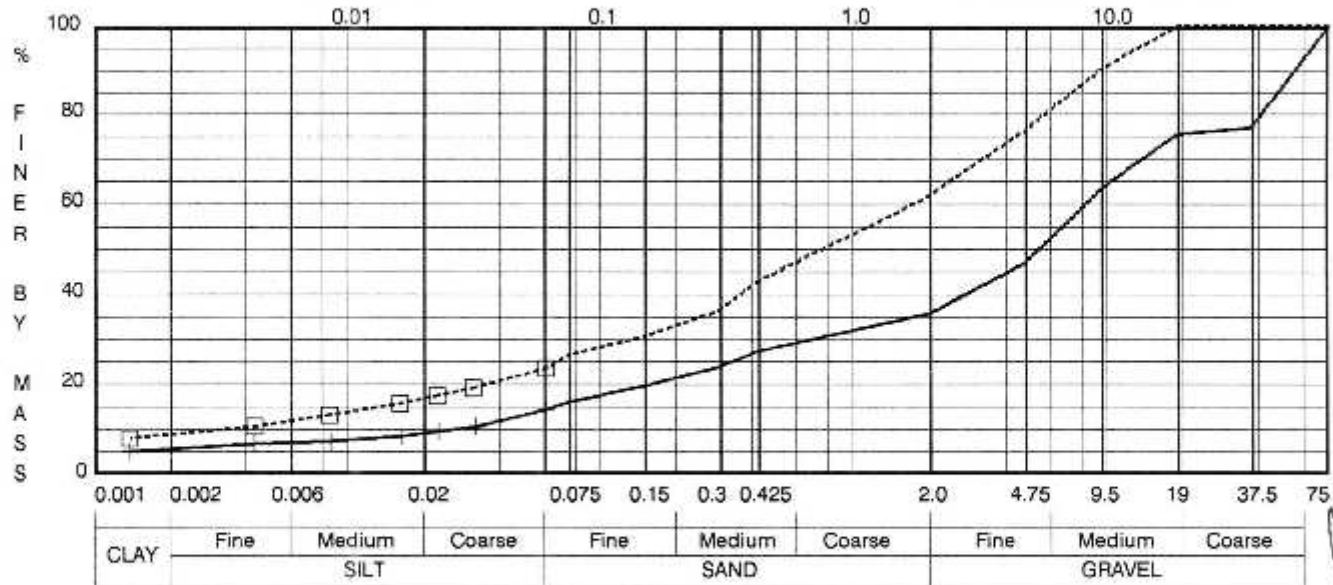
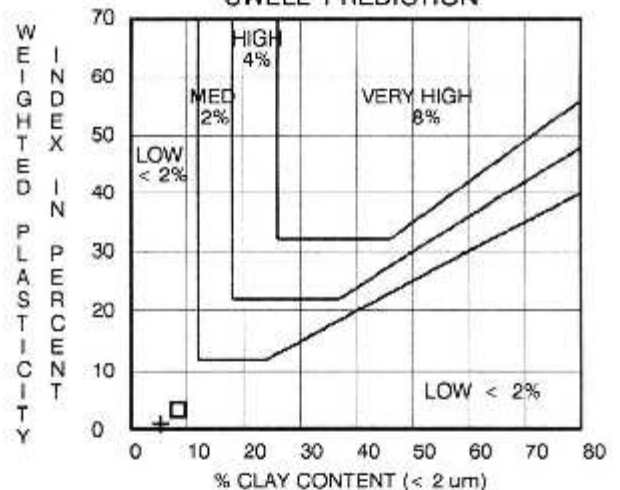
## UNDISTURBED SOIL PARAMETERS

VOIDS RATIO	SATURATION (%)	Dry Dens. (kg/m <sup>3</sup> )	NMC (%)

## CASAGRANDE PLASTICITY CLASSIFICATION CHART



## MODIFIED VAN DER MERWE SWELL PREDICTION



## GEOPLAN LABORATORIES (Pty) Ltd

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*Handwritten signature/initials*

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TEL: 012-347 8467  
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P.O. Box 95562  
WATERKLOOF 0145  
Pretoria, GAUTENG  
SOUTH AFRICA

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**PROJECT No: M15/3504**

**10 July 2015**

MATLA PROJECTS (Pty) Ltd  
P.O. Box 14152  
BREDELL 1623

**Attention: Mr. Erich Danzfuss**

Dear Sir,

**REPORT ON PHASE 1 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR: A PROPOSED CLUSTER HOMES DEVELOPMENT ON: *ERF NUMBER 962, ORMONDE EXTENSION 22, JOHANNESBURG, GAUTENG PROVINCE***

## **1. INTRODUCTION**

Acting upon instruction received from Mr. Erich Danzfuss who is acting on behalf of Mr. Jacques Pienaar of Matla Projects (Pty) Ltd, a Phase 1 geotechnical investigation was carried out at the above site. The purpose of the investigation was for enrolment purposes with the NHBRC and to determine foundation conditions for the construction of a new cluster homes development comprising of triple-storey units at a density of 80 units per hectare.

The purpose of the investigation is to satisfy the requirements of the National Home Builders Registration Council to assess the geological suitability of the proposed project with regards to the development of a residential township.

## **2. TERMS OF REFERENCE**

The objectives of the investigation were to: -

- Determine the engineering properties of the site soils and bedrock including potentially expansive material, low bearing capacity soils and areas difficult to excavate.
- Present appropriate recommendations for residential township design and precautionary measures in accordance with the requirements of the National Home Builders Registration Council's guidelines.

Written instructions to proceed with the investigation were obtained from Mr. Erich Danzfuss in his electronic mail dated February 2015.

## **3. INFORMATION CONSULTED**

The following information was available and was consulted: -

- The 1: 50 000 scale Topographical Map 2626AA Roodepoort.
- The 1: 250 000 scale geological Map, Sheet Number 2628 West Rand.

- A general plan prepared to a scale of 1: 750 by H.W.P. Brits, Professional Land Surveyor, showing the boundaries of the site and streets.
- A coloured aerial photograph of the site was obtained from Google Earth via the Internet.
- The publication “National Home Builders Registration Council’s Home Building Manual, Part 1 & 2, February 1999.

#### 4. SITE DESCRIPTION

The study area is located in the western part of Johannesburg and the site for the new development is roughly trapezoidal in shape and covers a surface area of some 5 492m<sup>2</sup>. The site is bounded to the west by a perennial drainage feature, to the east by Msasa Crescent and by extensions of Ormonde on the remaining sides. The site is densely covered by large Eucalyptus, Pine and Wattle trees and the surface slopes towards the west in the direction of the drainage feature at an average gradient of some 5%.

#### 5. SITE INVESTIGATION

Seven test pits were excavated across the site using a Case 580 backactor supplied by Kosmos Plant Hire from Honeydew. The number of pits that could be excavated was limited over the eastern portion of the site due to the dense tree growths that are present here. The test pit was entered, inspected and profiled by a registered engineering geologist according to the methods advocated by Jennings *et al* (1973). Disturbed and undisturbed soil samples were taken during the investigation and were submitted to Geoplan’s commercial soil laboratory for analysis. Copies of the soil profiles, the results of the laboratory soil tests and a Site Plan showing the site in relation to its surroundings are attached.

#### 6. SITE SOILS AND GEOLOGY

The proposed new residential development is located on transported gravelly and silty soils overlying sediments (shale, quartzite and conglomerate) belonging to the Turffontein Subgroup, Central Rand Group, Witwatersrand Supergroup. No rock outcrops were observed during the investigation and a generalized description of the typical soil profile that may be encountered over the site is as follows: -

- 0,0 - 0,7: *Slightly moist, light brown becoming dark orange, very loose, voided, silty SAND; colluvium. Horizon extends down to depths ranging from 0,3m to 1,2m below surface.*
- 0,7 - 1,0: *Abundant coarse, medium and fine, QUARTZ GRAVELS, clast supported in a matrix as above; pebble marker. Overall consistency is loose.*
- 1,0 - 1,2: *Dry, light pink speckled white, very dense, intact, coarse SAND; residual quartzite. Grades to light purple and light pink, moderately weathered, soft rock QUARTZITE across portions of the site.*

Slow excavation to gradual refusal of the Case 580 backactor was experienced in the very dense residual quartzite and soft rock quartzite bedrock at depths ranging from 1,1m to 1,7m below surface and the water table, whether perched or permanent, was not encountered during the investigation that was carried out during the middle of the dry season.



## 7. GEOTECHNICAL CONSIDERATIONS

### 7.1 Compressible and Collapsible Soils

A number of undisturbed soil samples, representative of the colluvial soils that blanket the property, were tested to determine the collapse potential of the material according to the method advocated by Jennings (1974). A summary of the results of the laboratory tests appears below in Table 7.1.

**TABLE 7.1: COLLAPSE POTENTIAL TEST RESULTS**

HOLE NUMBER	DEPTH (m)	DRY DENSITY (kg/m <sup>3</sup> )	COLLAPSE POTENTIAL (%)	COMPRESSIBILITY (%)	TROUBLE RATING
ORD/1	0,70	1 664	9,20	5,86	Trouble
ORD/2	1,20	1 692	8,20	6,07	Trouble

An analysis of the above results indicate that the colluvial soils that blanket the site are potentially highly collapsible and moderately compressible with a collapse rating of “moderate trouble” to “trouble” in terms of collapse settlement, according to Jennings.

### 7.2 Expansive Soils

The blanketing site soils are sandy and gravelly and are potentially “low” in the degree of expansiveness based on the results of the laboratory tests and according to the Van der Merwe (1964) method. A total surface heave value of less than 5mm is predicted across this portion of the site, depending on the locality and should the moisture condition of the soils change from a dry to a saturated state.

### 7.3 Excavation Characteristics

Very hard machine excavation and possibly the use of jackhammers will be required to remove the very dense residual quartzite and quartzite bedrock from below 1,1m to 1,7m below surface. No problems should be experienced to remove the transported soils across the major portion of the site down to a depth of at least 0,8m below surface, using conventional earth moving equipment.

Stable sidewall conditions can be expected during construction in the dry season, unstable sidewall conditions may occur in the upper loose unconsolidated transported soils during the rainy season and in areas where perched water table conditions prevail and shoring of deep excavations may be required in these areas.

### 7.4 Foundations

The entire site is covered by a moderate to prominent horizon of potentially slightly compressible and collapsible soils and tentatively classify as NHBRC Site Class “C1/S1” and one of the following foundation solutions may be adopted for the construction of single-storey masonry residential structures: -.

***Deep Strip Foundations***

- Normal construction with drainage precautions and with mesh reinforced floor slabs.
- Founding on the dense residual horizon below the problem soils at depths ranging from 0,5m to 1,2m below surface and adopting a safe allowable bearing pressure of at least 300 kPa.

***Compaction of in situ soils below individual footings***

- Remove in situ material below foundations to a depth and width of 1,5 times the foundation width or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

***Soil Raft***

- Remove in situ material to 1m beyond perimeter of building to a depth of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

***Modified Normal Construction***

- Reinforced strip footings
- Articulation joints at some internal and all external doors
- Light reinforcement in masonry
- Site drainage and plumbing precautions to be taken
- Foundation pressure not to exceed 50 kPa.

It is understood that the development will comprise of ***triple-storey structures*** only and these may safely be founded onto the very dense residual quartzite, adopting a safe allowable bearing pressure of at least 300 kPa. Conventional spread or strip footings, placed onto the very dense residual quartzite at depths ranging from 0,5m to 1,3m below surface are envisaged for the multi-storey structures. Removal of the dense bush and trees that cover large portions of the site will probably result in a severe amount of ground disturbance which should be reinstated prior to construction of services and structures.

**7.5 Earthworks**

A summary of the anticipated compaction characteristics of the upper 1,0m of the site soils, based on an empirical method determined by the Plasticity Index and the Grading Modulus of the soil (the so-called Kleyn’s CBR which is comparable with the 90% Proctor CBR) appears below in Table 7.2:-

**TABLE 7.2: SUMMARY OF ANTICIPATED COMPACTION CHARACTERISTICS**

HOLE NO	DEPTH (m)	SOIL TYPE	PI	GM	Kleyn’s CBR*
ORD/1	0,3 – 1,0	Silty SAND	7	0,86	20
ORD/7	0,9 – 1,3	Silty SAND	9	0,88	19

Note : PI = Plasticity Index  
GM = Grading Modulus  
CBR\* = California Bearing Ration at 90% Proctor compaction

Based on an analysis of the above table, it is evident that the transported silty sand and the pebble marker gravels which blanket the site, should be suitable for use as fill underneath surface beds and as selected layers (G7 quality) in the construction of parking areas and roadways. Material for the construction of selected, subbase and base-course layers in roads and paved areas will have to be imported from a commercial source. The design of roads should take the potentially collapsible and compressible nature of the site soils into consideration.

## 7.6 Ground Water and Soil Chemistry

Although no ground water seepage was encountered in any test pit during the investigation, damp proofing precautions should be taken underneath structures. A seasonal water table, perched along the interface between the very dense residual quartzite and the overlying permeable soils, may possibly occur during periods of excessive precipitation. The site soils are expected to be potentially neutral to slightly chemically aggressive with regards to underground ferrous metal pipes (pH values ranging from 7,9 to 8,1 and electrical conductivity values ranging from 0,0186 to 0,0263 S/m) and the use of non-ferrous metal pipes or plastic pipes are recommended for wet services, the foundation soils should be treated with an environmentally friendly insecticide to combat termites.

## 8. GENERAL

While every effort has been made to ensure that representative test pitting and sampling has been undertaken to probe the soils on-site, guaranteeing that isolated zones of either poor foundation material or hard rock excavation have not been identified, is impossible under the constraints of an investigation of this nature. The investigation has sought to highlight general areas of potential foundation and excavation problems, and to provide early warning to the design engineers and town planners. In view of the variability inherent in soils, all foundation excavations should be inspected by a competent person.

The placement of the engineered fills must be controlled with suitable field tests to ensure that the required densities are achieved during compaction, and that the quality of fill material is within specification.

We trust that the above information will meet with your immediate requirements. Please do not hesitate to call for any further information.

Yours faithfully



JOHANN VAN DER MERWE (D. Sci. Nat.)

Engineering Geologist

C:\WINDOWS\Desktop\data\reports\GEOPLAN\962ORMONDE.doc

**9. APPENDICES**

**Test Pit Profiles**

**Laboratory Test Results**

**Site Plan**



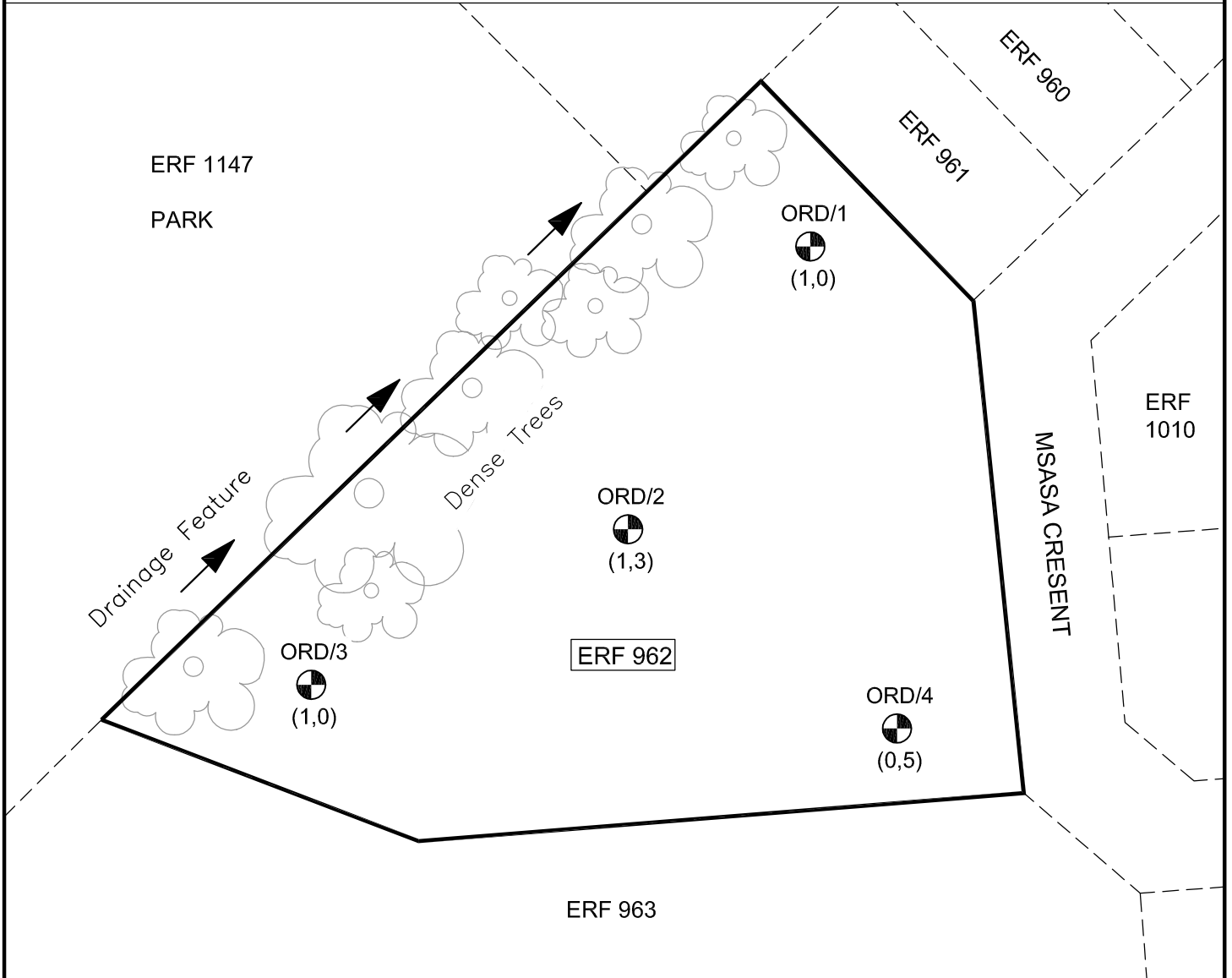
**LEGEND:**

ORD/1 TEST PIT BY BACKACTOR, POSITION AND NUMBER SHOWING



(1,0) THICKNESS OF POTENTIALLY COLLAPSIBLE AND COMPRESSIBLE HORIZON IN METRES

TENTATIVE NHBRC SITE CLASS : "C1/S1"



**JOHANN VAN DER MERWE (PTY) LTD  
INGENIEURSGEOLOG / ENGINEERING GEOLOGIST**

POSBUS 95562 WATERKLOOF 0145  
P O BOX 95562 WATERKLOOF 0145

TEL : (012) 347 8467  
FAX : (012) 347 9064

TITLE / TITLE

**SITE PLAN**

TEK / DRG NO

**M15/3504**

LIGGING / LOCALITY

**ERF 962, ORMONDE EXTENSION 22**

DATUM / DATE

**JULY 2015**

KLIËNT / CLIENT

**MATLA PROJECTS (PTY) LTD**

SKAAL / SCALE

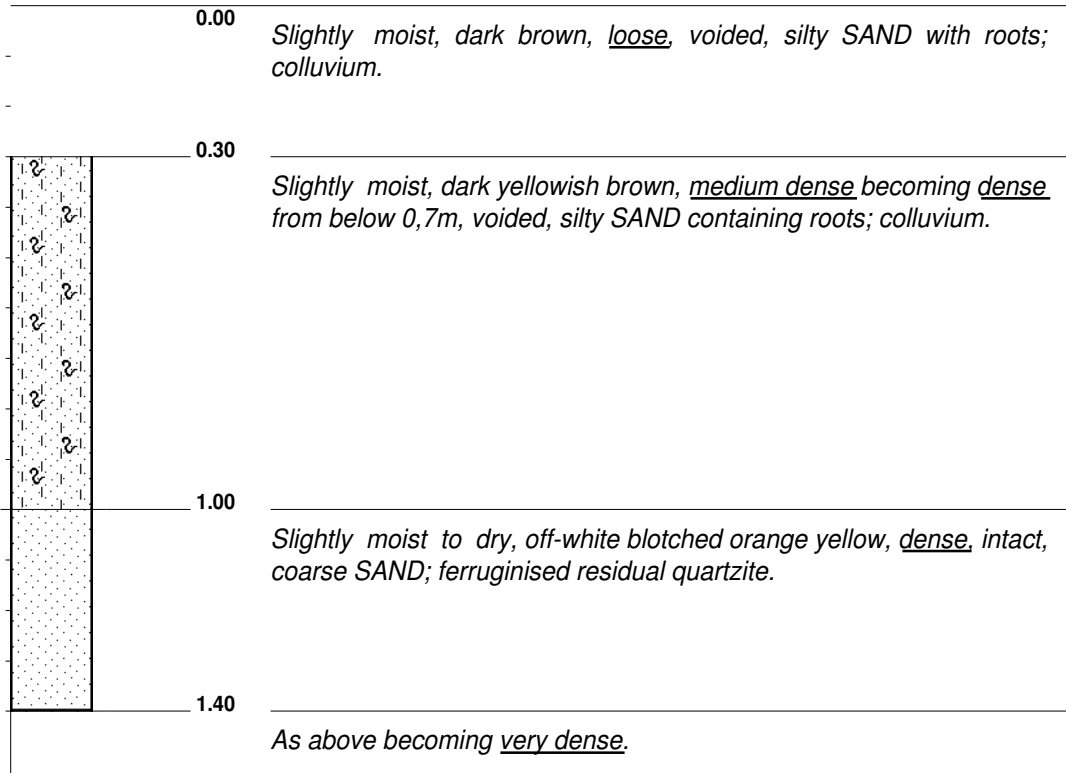
**~1 : 750 ON A4**

MATLA PROJECTS (Pty) Ltd  
 Erf Number 962, Ormonde Extension 22, Johannesburg, Gauteng Province  
 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR:  
**PROPOSED NEW CLUSTER HOMES DEVELOPMENT**

**HOLE No: ORD/1**  
**Sheet 1 of 1**

**JOB NUMBER: M15/3504**

Scale  
 1:15



**NOTES**

- 1) Refusal of backactor in very dense ferruginised residual quartzite.
- 2) No water seepage encountered.
- 3) Undisturbed sample taken at 0,7m.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B  
 DRILLED BY :  
 PROFILED BY : avdm/jvdm

INCLINATION : Vertical  
 DIAM : Trench  
 DATE : 09/05/2015  
 DATE : 09/05/2015

ELEVATION :  
 X-COORD : S26 15 14.3  
 Y-COORD : E27 59 20.0

TYPE SET BY : jovdm  
 SETUP FILE : STANDARD.SET

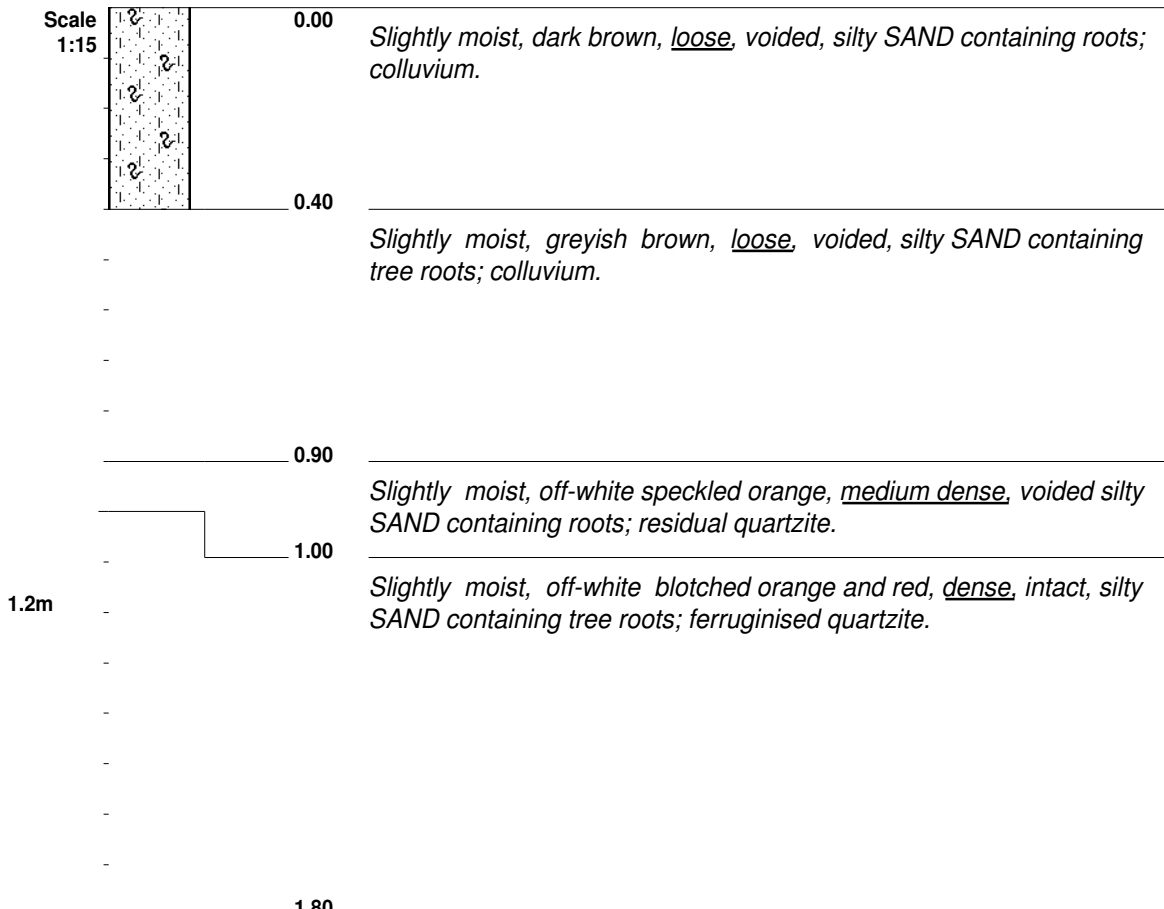
DATE : 01/07/2015 19:19  
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**HOLE No: ORD/1**

MATLA PROJECTS (Pty) Ltd  
 Erf Number 962, Ormonde Extension 22, Johannesburg, Gauteng Province  
 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR:  
**PROPOSED NEW CLUSTER HOMES DEVELOPMENT**

**HOLE No: ORD/2**  
**Sheet 1 of 1**

**JOB NUMBER: M15/3504**



**NOTES**

- 1) No refusal of backactor at 1,8m.
- 2) No water seepage encountered.
- 3) Undisturbed sample taken at 1,2m.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B  
 DRILLED BY :  
 PROFILED BY : avdm/jvdm  
 TYPE SET BY : jovdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 09/05/2015  
 DATE : 09/05/2015  
 DATE : 01/07/2015 19:19  
 TEXT : ..dotplot\ARCHIVE\3504.txt

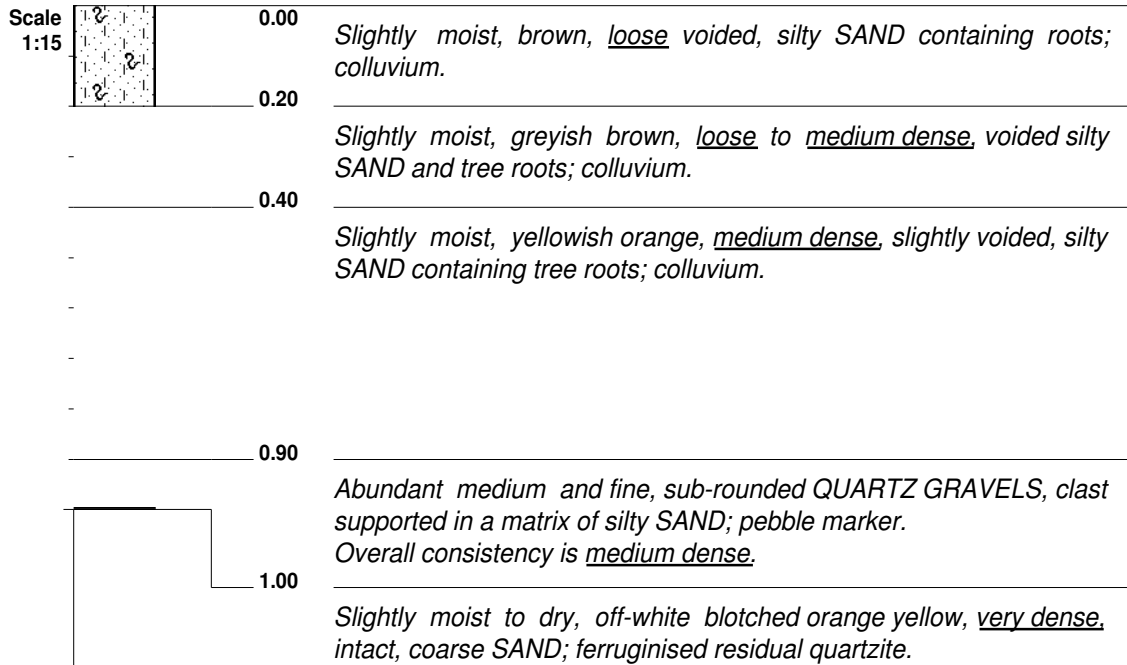
ELEVATION :  
 X-COORD : S26 15 16.5  
 Y-COORD : E27 59 20.3

**HOLE No: ORD/2**

MATLA PROJECTS (Pty) Ltd  
 Erf Number 962, Ormonde Extension 22, Johannesburg, Gauteng Province  
 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR:  
**PROPOSED NEW CLUSTER HOMES DEVELOPMENT**

**HOLE No: ORD/3**  
**Sheet 1 of 1**

**JOB NUMBER: M15/3504**



**NOTES**

- 1) Gradual refusal of backactor at 1,0m in very dense ferruginised residual quartzite.
- 2) No water seepage encountered.

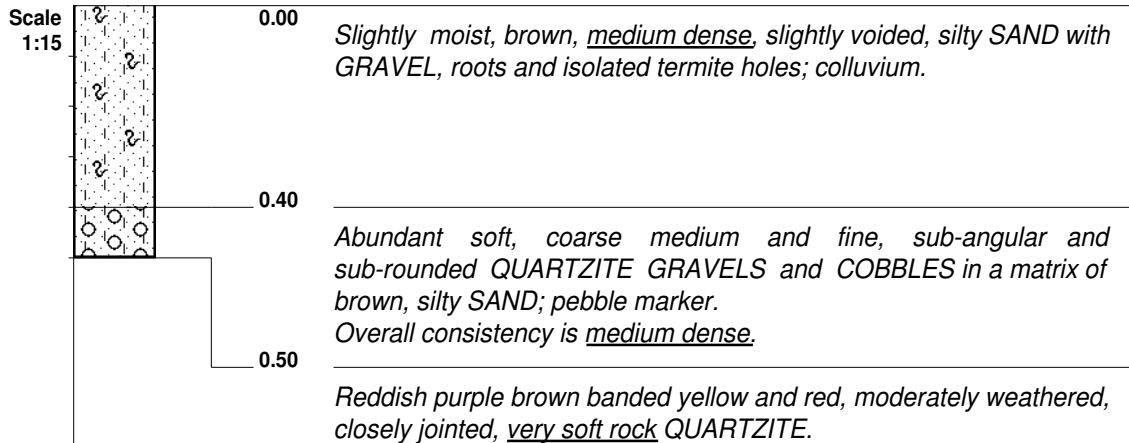
CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B  
 DRILLED BY :  
 PROFILED BY : avdm/jvdm  
 TYPE SET BY : jovdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 09/05/2015  
 DATE : 09/05/2015  
 DATE : 01/07/2015 19:19  
 TEXT : ..dotplot\ARCHIVE\3504.txt

ELEVATION :  
 X-COORD : S26 15 17.8  
 Y-COORD : E27 59 19.6

**HOLE No: ORD/3**





**NOTES**

- 1) Abrupt refusal of backactor at 0,5m in very soft rock quartzite.
- 2) No water seepage encountered.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B  
 DRILLED BY :  
 PROFILED BY : avdm/jvdm

INCLINATION :  
 DIAM : Trench  
 DATE : 09/05/2015  
 DATE : 09/05/2015  
 DATE : 01/07/2015 19:19  
 TEXT : ..dotplot\ARCHIVE\3504.txt

ELEVATION :  
 X-COORD : S26 15 17.6  
 Y-COORD : E27 59 23.9

# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 962 ORMONDE - 3504  
 Prj. No. : JM08  
 01-Jun-15

Sample No. 0001  
 Test Pit ORD/1

Depth : 0.7m

### Sample Parameters

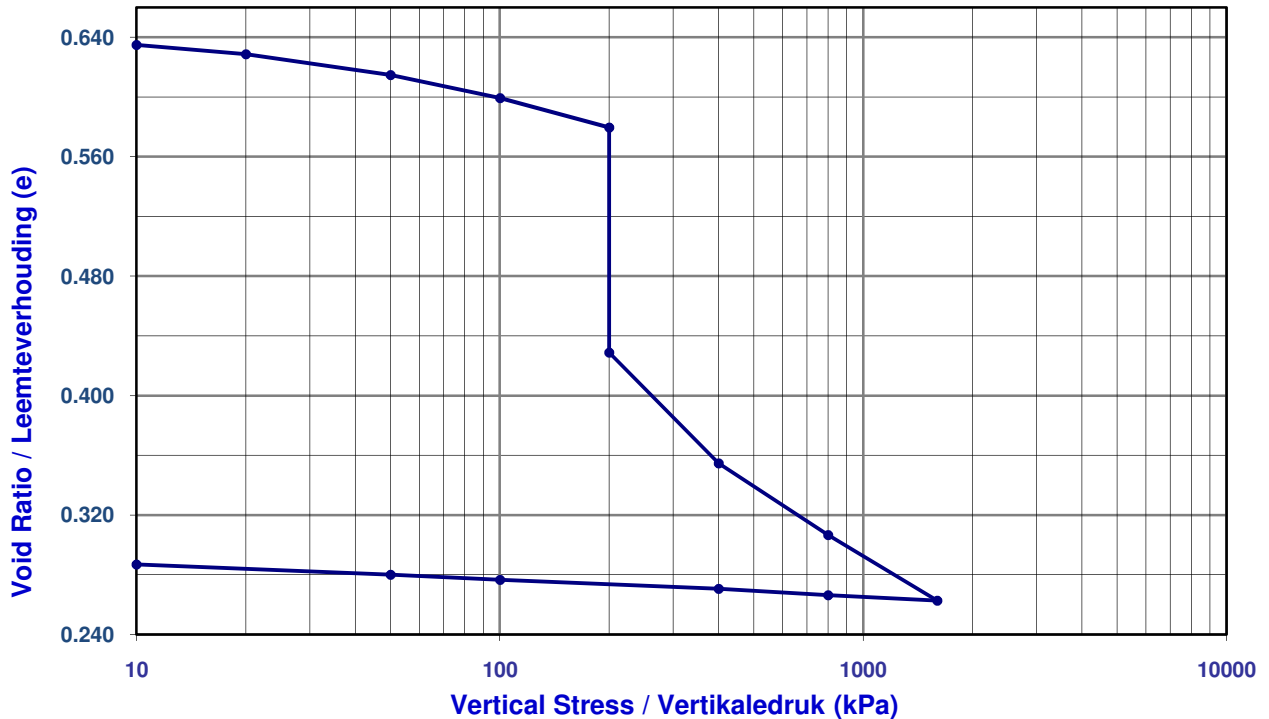
Machine	WF/D	Mass of Ring + wet sample (start of test)	208.2 g
Ring No	W1	Mass of Ring + dry sample	200.1 g
Ring Ht	18.92 mm	Mass of Ring + wet sample (end of test)	213.4 g
Ring Diam.	69.52 mm	Mass of ring	80.6 g
Ring Vol.	71.82 mm <sup>3</sup>	Dry Density	1.664
M/C at Start	6.8 %	M/C at End of Test	11.1 %
Sat. at Start	28.92 %	Sat. at End	105.8 %
Initial Voids Ratio	0.639	S.G.	2.728
Initial Ht. of Voids	7.38 mm	Ht. Of Solids	11.54 mm

TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9952	9878	9718	9540	9312	7572	6716	6162	5654	5696	5745	5814	5854	5934
Strain (%)		0.25	0.64	1.49	2.43	3.64	12.83	17.36	20.29	22.97	22.75	22.49	22.12	21.91	21.49
Void Ratio	0.639	0.635	0.629	0.615	0.599	0.580	0.429	0.355	0.307	0.263	0.266	0.271	0.277	0.280	0.287
Cc		0.004	0.021	0.035	0.051	0.066		0.246	0.159	0.146	0.012	0.014	0.010	0.012	0.010
Mv (1/Mpa)		0.282	0.391	0.282	0.188	0.121		0.226	0.073	0.034	0.003	0.006	0.012	0.042	0.106

**Collapse Potential**                      **9.2 %**



02-Jun

# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 962 ORMONDE - 3504  
 Prj. No. : JM08  
 01-Jun-15

Sample No. 0002  
 Test Pit ORD/2

Depth : 1.2m

### Sample Parameters

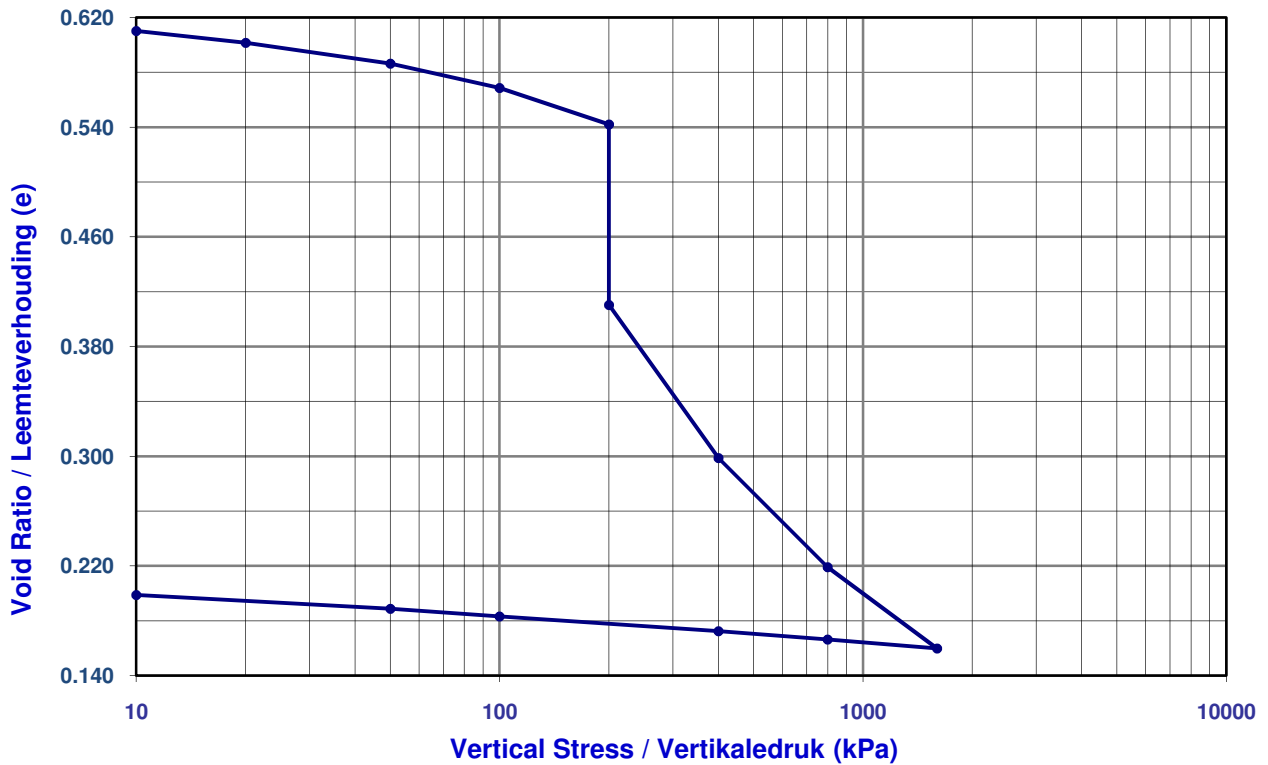
Machine	WF/F	Mass of Ring + wet sample (start of test)	216.0 g
Ring No	0	Mass of Ring + dry sample	207.7 g
Ring Ht	19.18 mm	Mass of Ring + wet sample (end of test)	217.5 g
Ring Diam.	69.88 mm	Mass of ring	83.2 g
Ring Vol.	73.56 mm <sup>3</sup>	Dry Density	1.692
M/C at Start	6.7 %	M/C at End of Test	7.9 %
Sat. at Start	29.60 %	Sat. at End	108.2 %
Initial Voids Ratio	0.616	S.G.	2.735
Initial Ht. of Voids	7.31 mm	Ht. Of Solids	11.87 mm

TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9932	9830	9648	9440	9124	7560	6236	5292	4588	4666	4737	4864	4930	5050
Strain (%)		0.35	0.89	1.84	2.92	4.57	12.72	19.62	24.55	28.22	27.81	27.44	26.78	26.43	25.81
Void Ratio	0.616	0.610	0.602	0.586	0.569	0.542	0.410	0.299	0.219	0.160	0.167	0.173	0.183	0.189	0.199
Cc		0.006	0.029	0.039	0.058	0.088		0.371	0.264	0.197	0.022	0.020	0.018	0.018	0.014
Mv (1/Mpa)		0.394	0.532	0.316	0.217	0.165		0.345	0.123	0.046	0.005	0.009	0.022	0.069	0.156

**Collapse Potential**                      **8.2 %**



02-Jun





# FOUNDATION INDICATOR REPORT SHEET

CLIENT : JOHANN VAN DER MERWE  
 PROJECT : ERF 962 ORMONDE JOB: 3504

DATE : 15/05/28  
 PROJECT No. : JM08

## SAMPLE DETAILS

SAMPLE No.	CODES	TRIAL PIT No.	DEPTH	DESCRIPTION
0001	+ ———	ORD/1	0,7m	
0002	□ - - - - -	ORD/2	1,2m	

## PARTICLE SIZE ANALYSIS: PERCENTAGE PASS BY MASS

SIZE (mm)	BY SIEVING										BY HYDROMETER				DIAM (um)
	75.0	37.5	19.0	9.5	4.75	2.00	0.425	0.300	0.150	0.075	60	20	6	2	
% PASS +					100	97	79	65	49	38	32	18	11	9	% PASS +
% PASS □				100	99	97	78	61	46	37	34	22	15	11	% PASS □

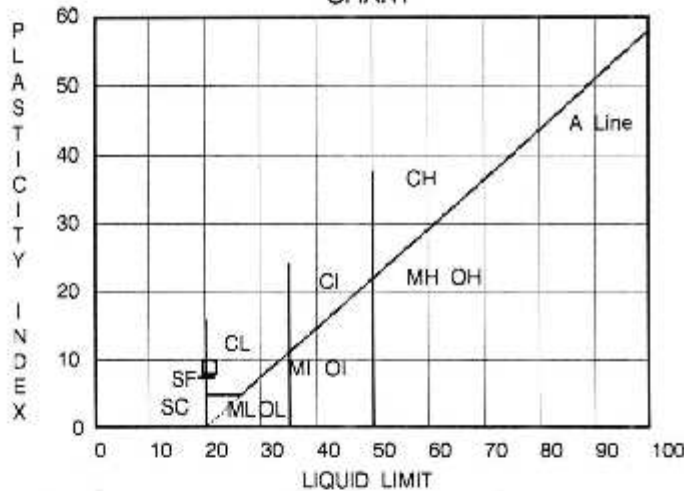
## DISTURBED SOIL PARAMETERS

ATTERBERG LIMITS				SG
LL (%)	PI (%)	LS (%)	WEIGHTED PI (%)	
20	7	3.0	6	2,650
21	9	4.0	7	2,650

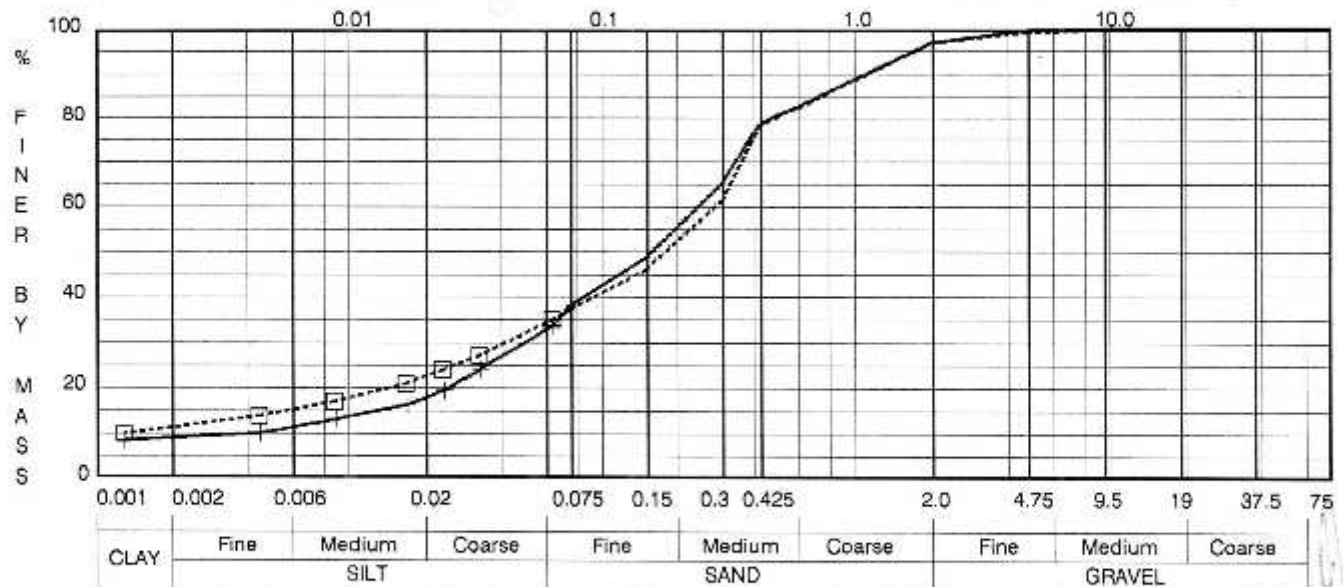
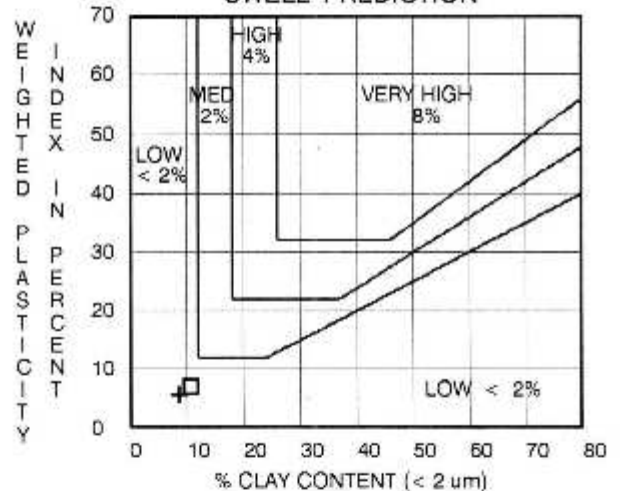
## UNDISTURBED SOIL PARAMETERS

VOIDS RATIO	SATURATION (%)	Dry Dens. (kg/m3)	NMC (%)

## CASAGRANDE PLASTICITY CLASSIFICATION CHART



## MODIFIED VAN DER MERWE SWELL PREDICTION



**GEOPLAN LABORATORIES (Pty) Ltd**

REG No. 78/00337/07  
 11 RICHARD Rd TEL (011) 477-1045/6 FAX (011) 673-0715  
 INDUSTRIA NORTH BOX 552, FLORIDA 1710

*Handwritten signature/initials*

289 Polaris Avenue  
Waterkloof Ridge 0181  
Pretoria GAUTENG  
SOUTH AFRICA

TEL: 012-347 8467  
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FAX: 0866 858 369  
Email: [jovdm@iafrica.com](mailto:jovdm@iafrica.com)

P.O. Box 95562  
WATERKLOOF 0145  
Pretoria, GAUTENG  
SOUTH AFRICA

**PROJECT No: M15/3505**

**18 July 2015**

MATLA PROJECTS (Pty) Ltd  
P.O. Box 14152  
BREDELL 1623

**Attention: Mr. Erich Danzfuss**

Dear Sir,

**REPORT ON PHASE 1 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR: A PROPOSED CLUSTER HOMES DEVELOPMENT ON: *ERF NUMBER 963, ORMONDE EXTENSION 22, JOHANNESBURG, GAUTENG PROVINCE***

## **1. INTRODUCTION**

Acting upon instruction received from Mr. Erich Danzfuss who is acting on behalf of Mr. Jacques Pienaar of Matla Projects (Pty) Ltd, a Phase 1 geotechnical investigation was carried out at the above site. The purpose of the investigation was for enrolment purposes with the NHBRC and to determine foundation conditions for the construction of a new cluster homes development comprising triple-storey units at a density of 80 units per hectare.

The purpose of the investigation is to satisfy the requirements of the National Home Builders Registration Council to assess the geological suitability of the proposed project with regards to the development of a residential township.

## **2. TERMS OF REFERENCE**

The objectives of the investigation were to: -

- Determine the engineering properties of the site soils and bedrock including potentially expansive material, low bearing capacity soils and areas difficult to excavate.
- Present appropriate recommendations for residential township design and precautionary measures in accordance with the requirements of the National Home Builders Registration Council's guidelines.

Written instructions to proceed with the investigation were obtained from Mr. Erich Danzfuss in his electronic mail dated February 2015.

## **3. INFORMATION CONSULTED**

The following information was available and was consulted: -

- The 1: 50 000 scale Topographical Map 2626AA Roodepoort.
- The 1: 250 000 scale geological Map, Sheet Number 2628 West Rand.

- A site plan, prepared by Xan Swart Land Surveyors, showing the boundaries of the site and surface contours at 0,5m intervals.
- A coloured aerial photograph of the site was obtained from Google Earth via the Internet.
- The publication “National Home Builders Registration Council’s Home Building Manual, Part 1 & 2, February 1999.

#### 4. SITE DESCRIPTION

The study area is located in the western part of Johannesburg and the site for the new development is roughly trapezoidal in shape and covers a surface area of some 10 274m<sup>2</sup>. The site is bounded to the west by a perennial drainage feature, by Massa Crescent to the east, by the onramp to the M1 Motorway to the south and by extensions of Ormonde on the northern side. The site is densely covered by large Eucalyptus, Pine and Wattle trees and the surface slopes towards the west in the direction of the drainage feature at an average gradient of some 5%.

#### 5. SITE INVESTIGATION

Six test pits were excavated across the site using a New Holland B90B backactor supplied by Kosmos Plant Hire from Honeydew. The number of pits that could be excavated across the site was limited over the north-western portion of the site due to the dense tree growths that are present here. The test pit was entered, inspected and profiled by a registered engineering geologist according to the methods advocated by Jennings *et al* (1973). Disturbed and undisturbed soil samples and a water sample were taken during the investigation and were submitted to Geoplan’s commercial soil laboratory for analysis. Copies of the soil profiles, the results of the laboratory soil tests and a Geotechnical Map, Drawing Number M15/3505 showing the location of exploratory works are attached.

#### 6. SITE SOILS AND GEOLOGY

The proposed new residential development is located on transported sandy and gravelly soils overlying sediments (shale, quartzite and conglomerate) belonging to the Turffontein Subgroup, Central Rand Group, Witwatersrand Supergroup. The study area has been apportioned into two generalized material zones, Soil Zones “A” and “B” as shown on the attached map.

**Soil Zone “A”** materials occupy the higher-lying *central and northern portions* of the site and a generalized description of the typical soil profile that may be encountered here is as follows: -

- 0,0 - 0,6: *Slightly moist, light brown becoming dark yellow, medium dense, voided, silty SAND; colluvium. Horizon extends down to depths ranging from 0,3m to 1,2m below surface.*
- 0,6 - 0,7: *Abundant coarse, medium and fine, QUARTZ and QUARTZITE GRAVELS, clast supported in a matrix as above; pebble marker. Overall consistency is dense.*
- 0,7 - 1,1: *Slightly moist, pink banded yellow, very dense, intact, coarse SAND; residual quartzite. Becomes reddish purple banded yellow and red, highly weathered, very soft rock QUARTZITE from below 0,7m across portions of the soil zone.*

**Soil Zone “B”** materials occupy the lower-lying *western portion* of the site and a generalized description of the typical soil profile that may be encountered here is as follows: -

0,0 - 0,3: *Slightly moist, dark brown and black, medium dense, intact, silty SAND containing roots; colluvium.*

0,3 - 1,0: *Very moist, light grey, loose, voided, silty SAND containing roots; alluvium.*

1,0 - 2,1: *Very moist, light grey blotched orange, medium dense, voided, clayey SAND containing roots; alluvium.*

Slow excavation to gradual refusal of the New Holland B90B backactor was experienced across Soil Zone “A” in the very dense residual quartzite and soft rock quartzite bedrock at depths ranging from 0,9m to 1,1m below surface. No refusal of the machine was experienced across Soil Zone “B” down to a depth of at least 2,1m below surface. Moderate seepage of ground water was encountered from below 2,1m across Soil Zone “B”, elsewhere the water table, whether perched or permanent, was not encountered during the investigation.

## 7. GEOTECHNICAL CONSIDERATIONS

### 7.1 Compressible and Collapsible Soils

A number of undisturbed soil samples, representative of the colluvial soils that blanket the property, were tested to determine the collapse potential of the material according to the method advocated by Jennings (1974). A summary of the results of the laboratory tests appears below in Table 7.1.

**TABLE 7.1: COLLAPSE POTENTIAL TEST RESULTS**

HOLE NUMBER	DEPTH (m)	DRY DENSITY (kg/m <sup>3</sup> )	COLLAPSE POTENTIAL (%)	COMPRESSIBILITY (%)	TROUBLE RATING
ORE/1	1,30	1 777	0,80	6,75	No Trouble
ORE/3	0,80	1 705	3,80	4,18	Moderate Trouble
ORE/3	1,60	1 903	0,40	3,34	No Trouble

An analysis of the above results indicate that the colluvial and alluvial soils that blanket the site are potentially highly collapsible and moderately compressible with a collapse rating of “no trouble” to “moderate trouble” in terms of collapse settlement, according to Jennings. The material is also potentially moderately compressible, based on the results of the consolidation tests.

### 7.2 Expansive Soils

The blanketing site soils are sandy and gravelly and are potentially “low” in the degree of expansiveness based on the results of the laboratory tests and according to the Van der Merwe (1964) method. A total surface heave value of less than 5mm is predicted across this portion of the site, depending on the locality and should the moisture condition of the soils change from a dry to a saturated state.

### 7.3 Excavation Characteristics

Very hard machine excavation and possibly the use of jackhammers will be required to remove the very dense residual quartzite and quartzite bedrock from below 0,9m to 1,1m below surface across Soil Zone “A”. No problems should be experienced to remove the overlying blanketing transported and residual soils across this soil zone and across the remainder of the site, using conventional earth moving equipment.



Stable sidewall conditions can be expected across Soil Zone “A” during construction in the dry season, unstable sidewall conditions may occur in the upper loose unconsolidated transported soils during the rainy season and in areas where perched water table conditions prevail and shoring of deep excavations may be required in these areas. Unstable sidewall conditions can be expected from shallow depth across Soil Zone “B” due to the presence of a shallow water table and shoring of deep excavations will be required during the placement of underground wet services.

## 7.4 Foundations

**Soil Zone “A”** is covered by a moderate to prominent horizon of potentially compressible and collapsible soils and tentatively classify as NHBRC Site Class “C1/S1” and one of the following foundation solutions may be adopted for the construction of single-storey masonry residential structures: -.

### *Deep Strip Foundations*

- Normal construction with drainage precautions and with mesh reinforced floor slabs.
- Founding on the dense residual horizon below the problem soils at depths ranging from 0,5m to 1,2m below surface and adopting a safe allowable bearing pressure of at least 300 kPa.

### *Compaction of in situ soils below individual footings*

- Remove in situ material below foundations to a depth and width of 1,5 times the foundation width or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

### *Soil Raft*

- Remove in situ material to 1m beyond perimeter of building to a depth of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

### *Modified Normal Construction*

- Reinforced strip footings
- Articulation joints at some internal and all external doors
- Light reinforcement in masonry
- Site drainage and plumbing precautions to be taken
- Foundation pressure not to exceed 50 kPa.

**Soil Zone “B”** is covered by a prominent horizon of potentially compressible and collapsible soils and tentatively classify as NHBRC Site Class “C2/S2” and one of the following foundation solutions may be adopted for the construction of single-storey masonry residential structures: -.

### *Stiffened or Cellular Raft*

- Stiffened or cellular raft with articulation joints or solid lightly reinforced masonry
- Site drainage and plumbing/service precautions to be taken.
- Foundation Pressure not to exceed 50 kPa.

**Soil Raft**

- Remove in situ material to 1m beyond perimeter of building to a depth of 1,5 times the widest foundation or to a competent horizon and replace with material compacted to 93% Mod AASHTO density at -1% to +2% of optimum moisture content.
- Normal construction with lightly reinforced strip footings.
- Light reinforcement in masonry.
- Site drainage and plumbing/service precautions to be taken.

**Piled or Pier Foundation**

- Reinforced concrete ground beams or solid slabs on piled or pier foundations.
- Ground slabs with fabric reinforcement
- Site drainage and plumbing/service precautions to be taken.

It is understood that the development will comprise of *triple-storey structures* only and these may safely be founded onto the very dense residual quartzite in *Soil Zone “A”*, adopting a safe allowable bearing pressure of at least 300 kPa. Conventional spread or strip footings, placed onto the very dense residual quartzite at depths ranging from 0,5m to 0,7m below surface are envisaged for the multi-storey structures.

*Soil Zone “B”* is covered by a prominent horizon of potentially collapsible soils and piled or pier foundations should be considered here for proposed triple-storey structures, the presence of a shallow water table will probably rule out another type of construction method. The presence of the water table should be taken into consideration the design and construction of the piled foundation.

Removal of the dense bush and trees that cover large portions of the site will probably result in a severe amount of ground disturbance which should be reinstated prior to construction of services and structures.

**7.5 Earthworks**

A summary of the anticipated compaction characteristics of the upper 1,0m of the site soils, based on an empirical method determined by the Plasticity Index and the Grading Modulus of the soil (the so-called Kleyn’s CBR which is comparable with the 90% Proctor CBR) appears below in Table 7.2:-

**TABLE 7.2: SUMMARY OF ANTICIPATED COMPACTION CHARACTERISTICS**

HOLE NO	DEPTH (m)	SOIL TYPE	PI	GM	Kleyn’s CBR*
ORE/1	0,3 – 1,0	Silty SAND	8	1,19	24
ORE/3	0,2 – 0,9	Silty SAND	6	0,83	20
ORE/5	0,4 – 0,7	Silty SAND	6	1,08	25

Note : PI = Plasticity Index  
 GM = Grading Modulus  
 CBR\* = California Bearing Ration at 90% Proctor compaction

Based on an analysis of the above table, it is evident that the transported silty sand and the pebble marker gravels which blanket the site, should be suitable for use as fill underneath surface beds and as selected layers (G7/G6 quality) in the construction of parking areas and roadways.

Material for the construction of selected, subbase and base-course layers in roads and paved areas will have to be imported from a commercial source. The design of roads should take the potentially collapsible and compressible nature of the site soils into consideration.

## 7.6 Ground Water and Soil Chemistry

No ground water seepage was encountered in any test pit across Soil Zone "A" during the investigation, however, damp proofing precautions should be taken underneath structures. A seasonal water table, perched along the interface between the very dense residual quartzite and the overlying permeable soils, may possibly occur during periods of excessive downpour. Moderate water seepage was encountered across Soil Zone "B" from below 2,1m and cognizance should be taken of this phenomenon in the design and construction of wet services and underground structures. The site soils are expected to be potentially neutral to slightly chemically aggressive with regards to underground ferrous metal pipes (pH values ranging from 7,6 to 8,6 and electrical conductivity values ranging from 0,0073 to 0,0450 S/m) and the use of non-ferrous metal pipes or plastic pipes are recommended for wet services, the foundation soils should be treated with an environmentally friendly insecticide to combat termites.

The results of the chemical tests have shown the ground water to be potentially highly corrosive towards buried concrete and metal, the necessary precautions should therefore be taken to prevent chemical attack on these vessels.

## 8. GENERAL

While every effort has been made to ensure that representative test pitting and sampling has been undertaken to probe the soils on-site, guaranteeing that isolated zones of either poor foundation material or hard rock excavation have not been identified, is impossible under the constraints of an investigation of this nature. The investigation has sought to highlight general areas of potential foundation and excavation problems, and to provide early warning to the design engineers and town planners. In view of the variability inherent in soils, all foundation excavations should be inspected by a competent person.

The placement of the engineered fills must be controlled with suitable field tests to ensure that the required densities are achieved during compaction, and that the quality of fill material is within specification.

We trust that the above information will meet with your immediate requirements. Please do not hesitate to call for any further information.

Yours faithfully



JOHANN VAN DER MERWE (Drs. Sci. Nat.)

Engineering Geologist

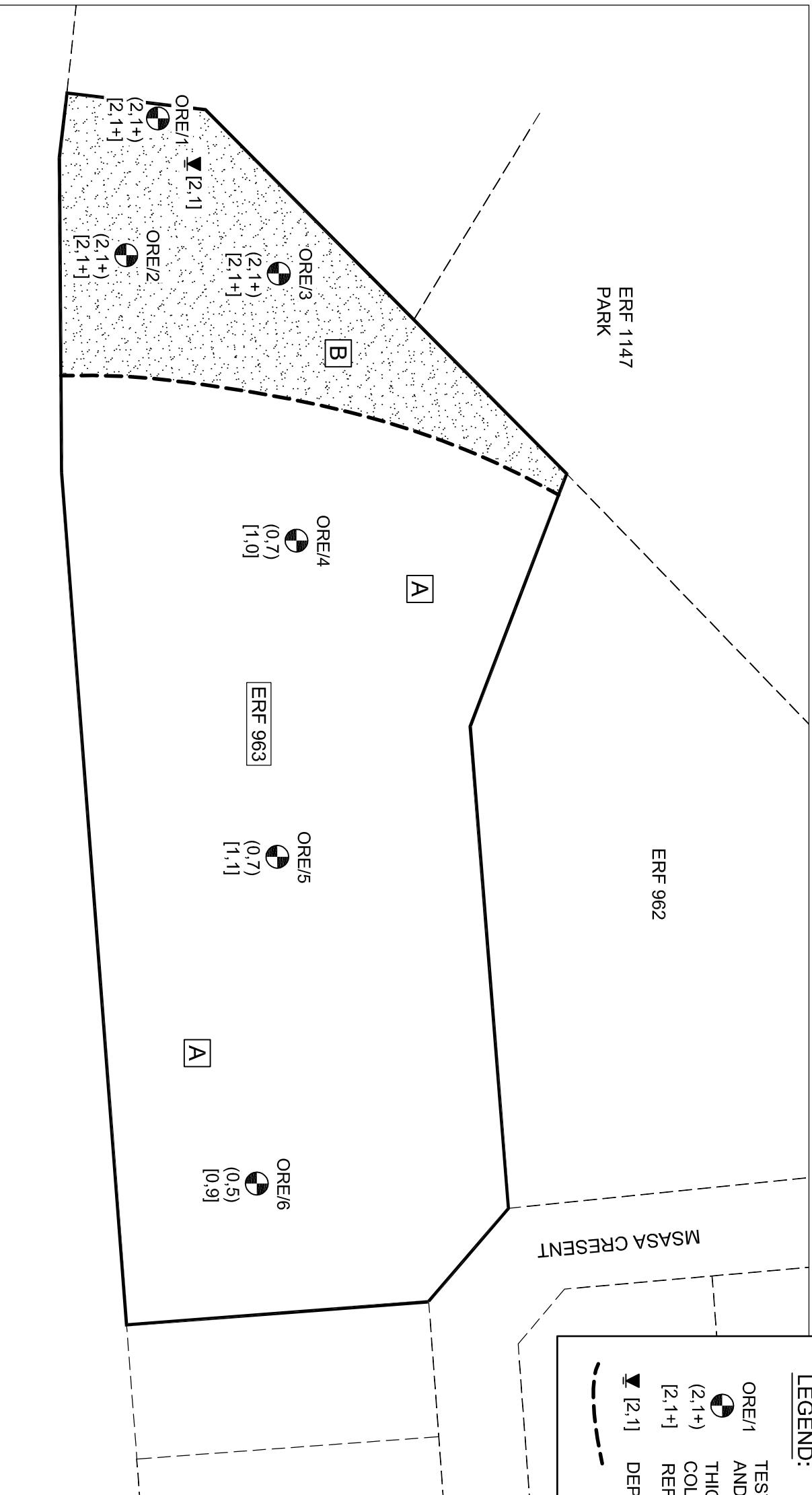
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**9. APPENDICES**

**Test Pit Profiles**

**Laboratory Test Results**

**Geotechnical Map**



**LEGEND:**

- ORE/1 AND NUMBER, SHOWING THICKNESS OF POTENTIALLY COMPRESSIBLE AND COLLAPSIBLE HORIZON IN METRES AND REFUSAL DEPTH OF BACKACTOR IN M.B.G.L.
- ▼ [2,1] DEPTH WHERE WATER SEEPAGE OCCURS
- - - MATERIAL BOUNDARY\*\*

SOIL ZONE	MATERIAL DESCRIPTION GEOTECHNICAL CONSIDERATIONS & FOUNDATION RECOMMENDATIONS (Single-storey structures#)	NHBRC* SITE CLASS
<b>A</b>	Thin to moderate horizon (0,5m to 0,7m thick) of <i>loose</i> , colluvial silty SAND and coarse pebble marker (GRA VII: 8 over very dense residual quartzite. Colluvium is potentially moderately collapsible and compressible. ⇒ <i>Compaction of soil below footings</i> ⇒ <i>Soil rft/f foundations</i> ⇒ <i>Deeper than normal stryp footings placed onto very dense residual quartzite</i>	C1/S1
<b>B</b>	Prominent horizon (>2,1m thick) of <i>loose</i> to <i>very loose</i> , colluvial and alluvial silty SAND presumably underlain by <i>dense</i> to <i>very dense</i> residual quartzite at depth. Colluvium and alluvium are potentially moderately collapsible and compressible. Shallow ground water conditions prevail. → <i>Compaction of soil below footings</i> ⇒ <i>Soil rft/f foundations</i> ⇒ <i>Piled foundations</i> ⇒ <i>Sufficed or cellular rft/f foundations</i>	C2/S2

**NOTE:**

\* National Home Builders Registration Council (NHBRC).  
\*\* Soil boundaries are inferred and should be considered as a gradual change from one soil zone to the next, to be determined more accurately during installation of service trenches. Removal of large trees may result in surface disturbance and these areas as well as localized areas of disturbed ground should be reinstated prior to the construction of dwelling units.  
# Double- or multi-storey structures may safely be founded onto the very dense residual quartzite or quartzite bedrock below the problem soils across Soil Zone "A" whereas piled foundations or another appropriate foundation solution applies to Soil Zone "B".

**JOHANN VAN DER MERWE (PTY) LTD**  
**INGENIEURSGEOLOOG / ENGINEERING GEOLOGIST**

POSBUS 95562 WATERKLOOF 0145 TEL: (012) 347 8467  
P O BOX 95562 WATERKLOOF 0145 FAX: (012) 347 9064

TITLE / TITLE **TEK / DRG NO**  
**GEOTECHNICAL MAP** **M15/3505**

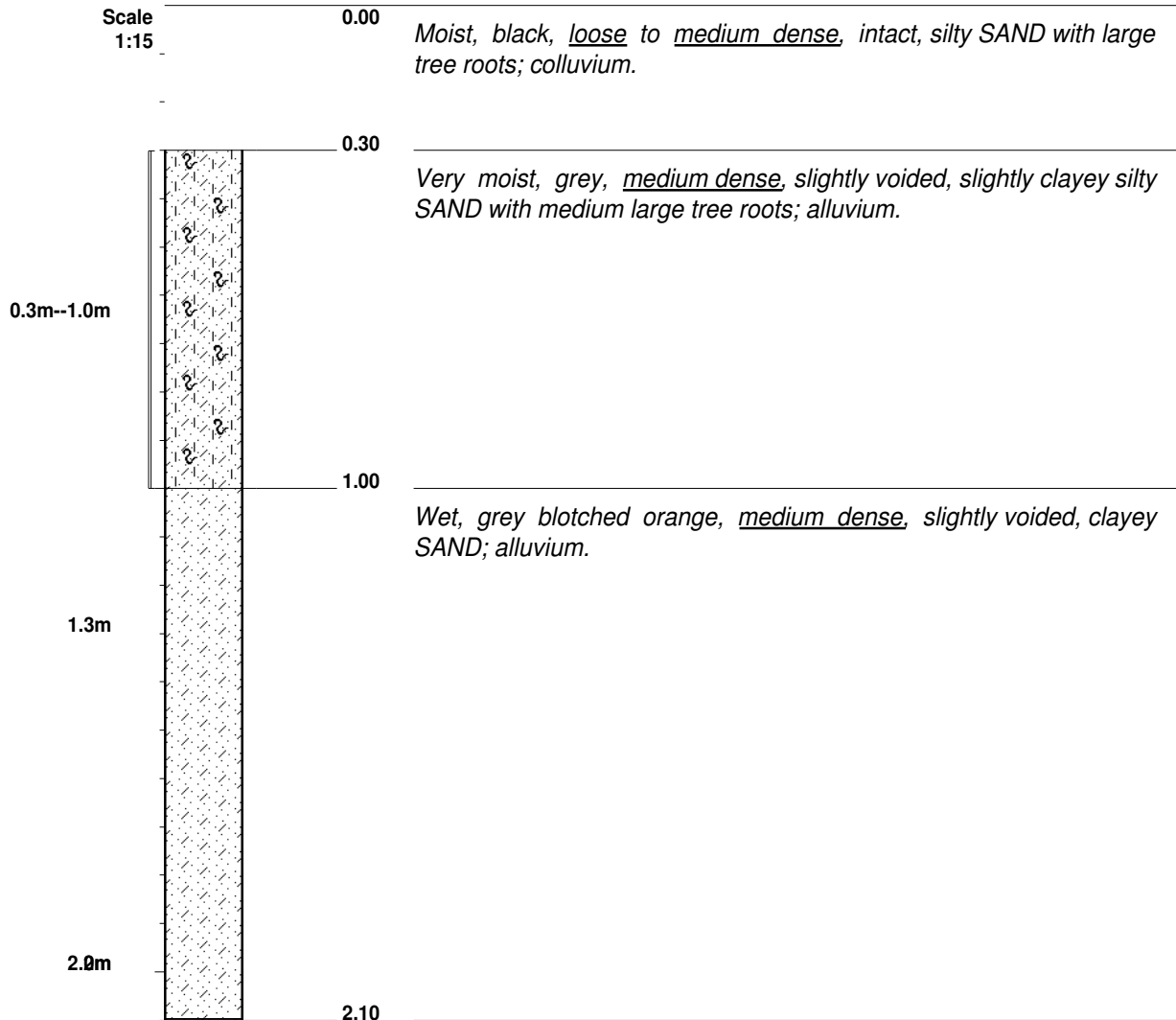
LIGGING / LOCALITY **DATUM / DATE**  
**ERF 963, ORMONDE EXTENSION 22** **JULY 2015**

KLIËNT / CLIENT **SKAAL / SCALE**  
**MATLA PROJECTS (PTY) LTD** **~1 : 750 ON A3**

MATLA PROJECTS (Pty) Ltd  
 Erf Number 963, Ormonde Extension 22, Johannesburg, Gauteng Province  
 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR:  
**PROPOSED NEW CLUSTER HOMES DEVELOPMENT**

**HOLE No: ORE/1**  
**Sheet 1 of 1**

**JOB NUMBER: M15/3505**



**NOTES**

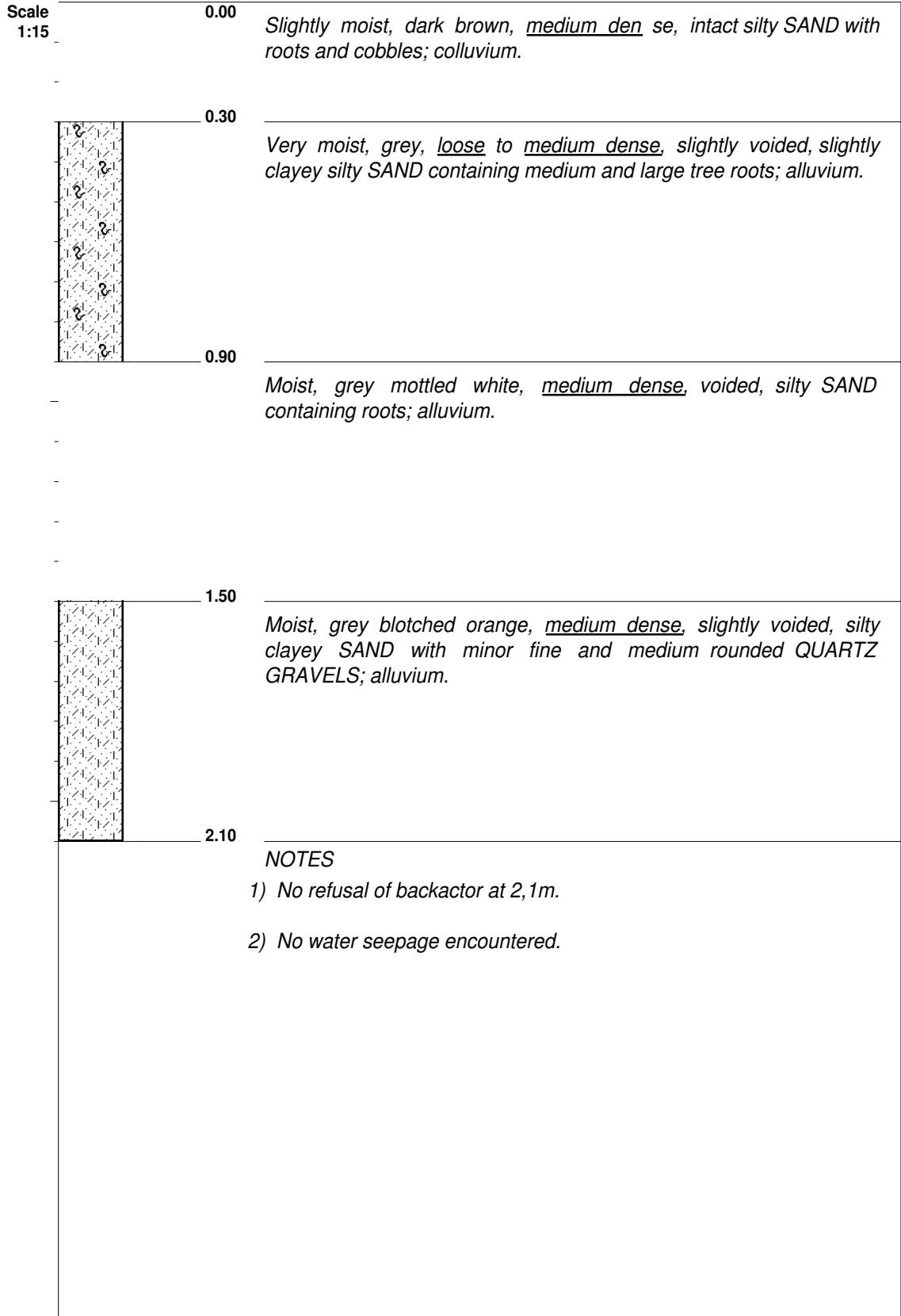
- 1) No refusal of backactor at 2,1m.
- 2) Slow water seepage encountered at 2,0m.
- 3) Disturbed sample taken from 0,3m--1,0m.
- 4) Undisturbed sample taken at 1,3m.
- 5) Water sample taken for chemical analysis at 2m.

**CONTRACTOR :** Kosmos Civils  
**MACHINE :** New Holland B90B backactor  
**DRILLED BY :**  
**PROFILED BY :** jvdm  
**TYPE SET BY :** jovdm  
**SETUP FILE :** STANDARD.SET

**INCLINATION :** Vertical  
**DIAM :** Trench  
**DATE :** 29/04/2015  
**DATE :** 29/04/2015  
**DATE :** 19/07/2015 22:24  
**TEXT :** ..dotplot\ARCHIVE\3505.txt

**ELEVATION :**  
**X-COORD :** S26 15 21.5  
**Y-COORD :** E27 59 15.3

**HOLE No: ORE/1**



**CONTRACTOR :** Kosmos Civils  
**MACHINE :** New Holland B90B backactor  
**DRILLED BY :**  
**PROFILED BY :** jvdm  
**TYPE SET BY :** jovdm  
**SETUP FILE :** STANDARD.SET


**INCLINATION :**  
**DIAM :** Trench  
**DATE :** 29/04/2015  
**DATE :** 29/04/2015  
**DATE :** 19/07/2015 22:24  
**TEXT :** ..dotplot\ARCHIVE\3505.txt

**ELEVATION :**  
**X-COORD :** S26 15 20.8  
**Y-COORD :** E27 59 18.9

MATLA PROJECTS (Pty) Ltd  
 Erf Number 963, Ormonde Extension 22, Johannesburg, Gauteng Province  
 GEOTECHNICAL INVESTIGATION CARRIED OUT FOR:  
**PROPOSED NEW CLUSTER HOMES DEVELOPMENT**

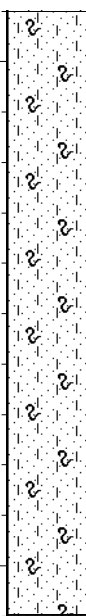
**HOLE No: ORE/3**  
**Sheet 1 of 1**

**JOB NUMBER: M15/3505**

Scale 1:15  0.00  
 0.20  
 Slightly moist, dark brown, medium dense, intact silty SAND with roots and cobbles; colluvium.

Very moist, grey, loose to medium dense, slightly voided, slightly clayey silty SAND with medium large tree roots; alluvium.

0.8m



0.90

Moist, grey mottled white, medium dense, voided, silty SAND containing roots; alluvium.

1.6m

2.10

**NOTES**

- 1) No refusal of backactor at 2,1m.
- 2) No water seepage encountered.
- 3) Undisturbed block samples taken at 0,8m and 1,6m.

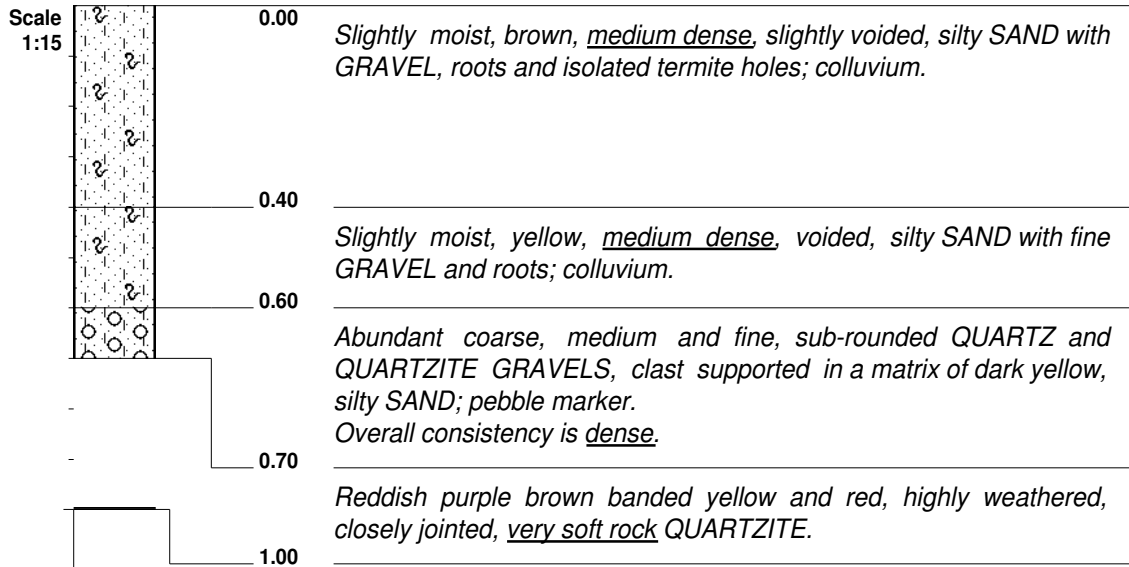
CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jvdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 29/04/2015  
 DATE : 29/04/2015  
 DATE : 19/07/2015 22:24  
 TEXT : ..dotplot\ARCHIVE\3505.txt

ELEVATION :  
 X-COORD : S26 15 19.7  
 Y-COORD : E27 59 19.1

**HOLE No: ORE/3**





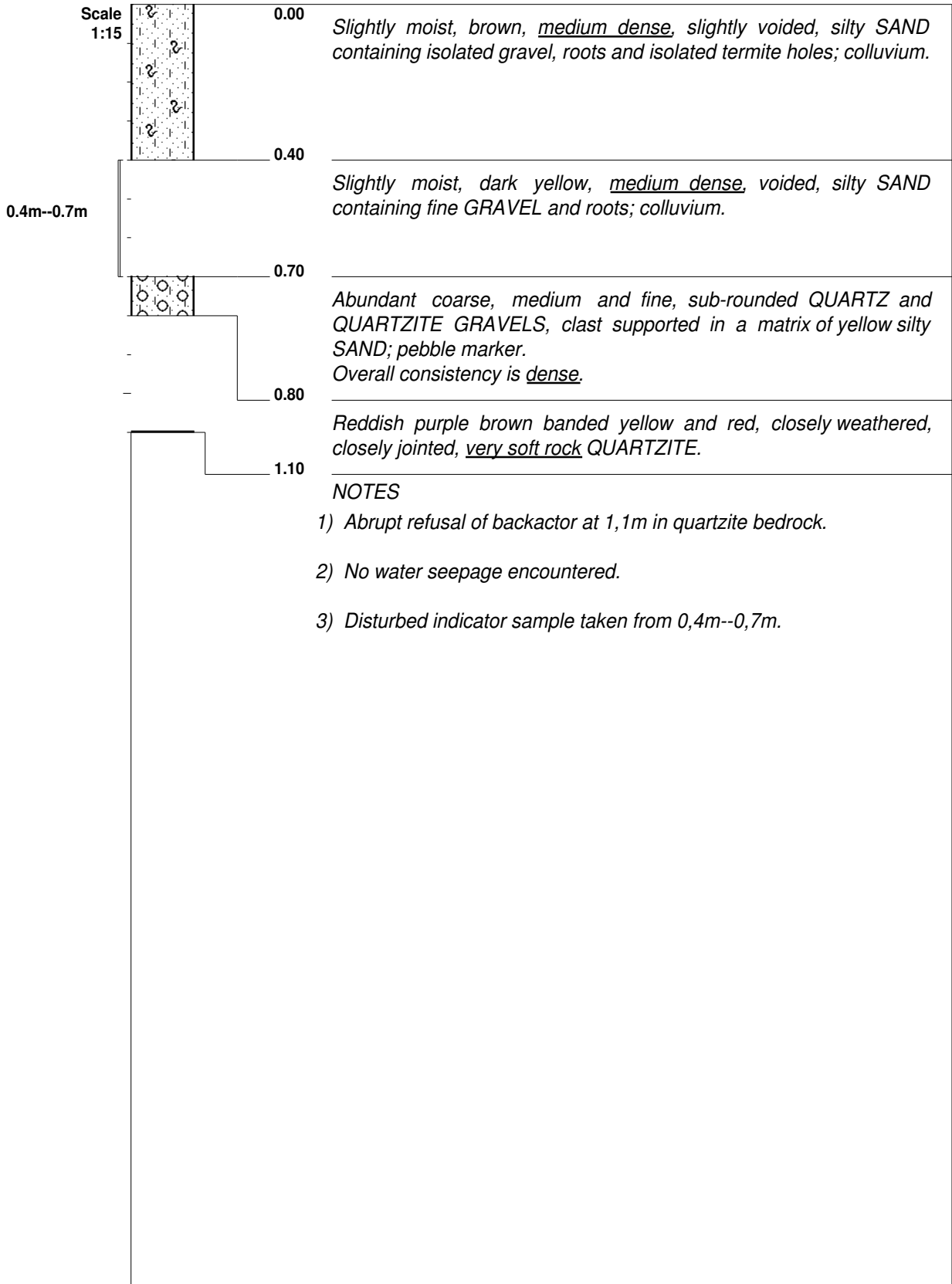
**NOTES**

- 1) Abrupt refusal of backactor at 1,0m in quartzite bedrock.
- 2) No water seepage encountered.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jvdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 29/04/2015  
 DATE : 29/04/2015  
 DATE : 19/07/2015 22:24  
 TEXT : ..dotplot\ARCHIVE\3505.txt

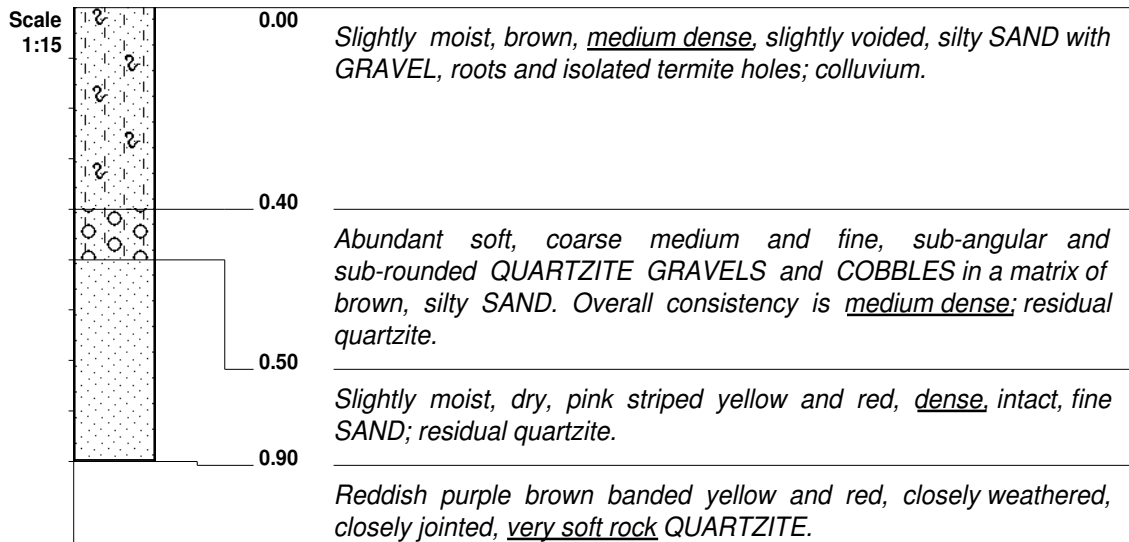
ELEVATION :  
 X-COORD : S26 15 19.0  
 Y-COORD : E27 59 20.5



CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jvdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 29/04/2015  
 DATE : 29/04/2015  
 DATE : 19/07/2015 22:24  
 TEXT : ..dotplot\ARCHIVE\3505.txt

ELEVATION :  
 X-COORD : S26 15 18.1  
 Y-COORD : E27 59 22.3



**NOTES**

- 1) Abrupt refusal of backactor at 0,9m in very soft rock quartzite.
- 2) No water seepage encountered.

CONTRACTOR : Kosmos Civils  
 MACHINE : New Holland B90B backactor  
 DRILLED BY :  
 PROFILED BY : jvdm  
 TYPE SET BY : jovdm  
 SETUP FILE : STANDARD.SET

INCLINATION :  
 DIAM : Trench  
 DATE : 29/04/2015  
 DATE : 29/04/2015  
 DATE : 19/07/2015 22:24  
 TEXT : ..dotplot\ARCHIVE\3505.txt

ELEVATION :  
 X-COORD : S26 15 17.6  
 Y-COORD : E27 59 23.9

# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 963 ORMONDE - 3505  
 Prj. No. : JM09  
 04-Jun-15

Sample No. 0002  
 Test Pit ORE/1

Depth : 1.3m

### Sample Parameters

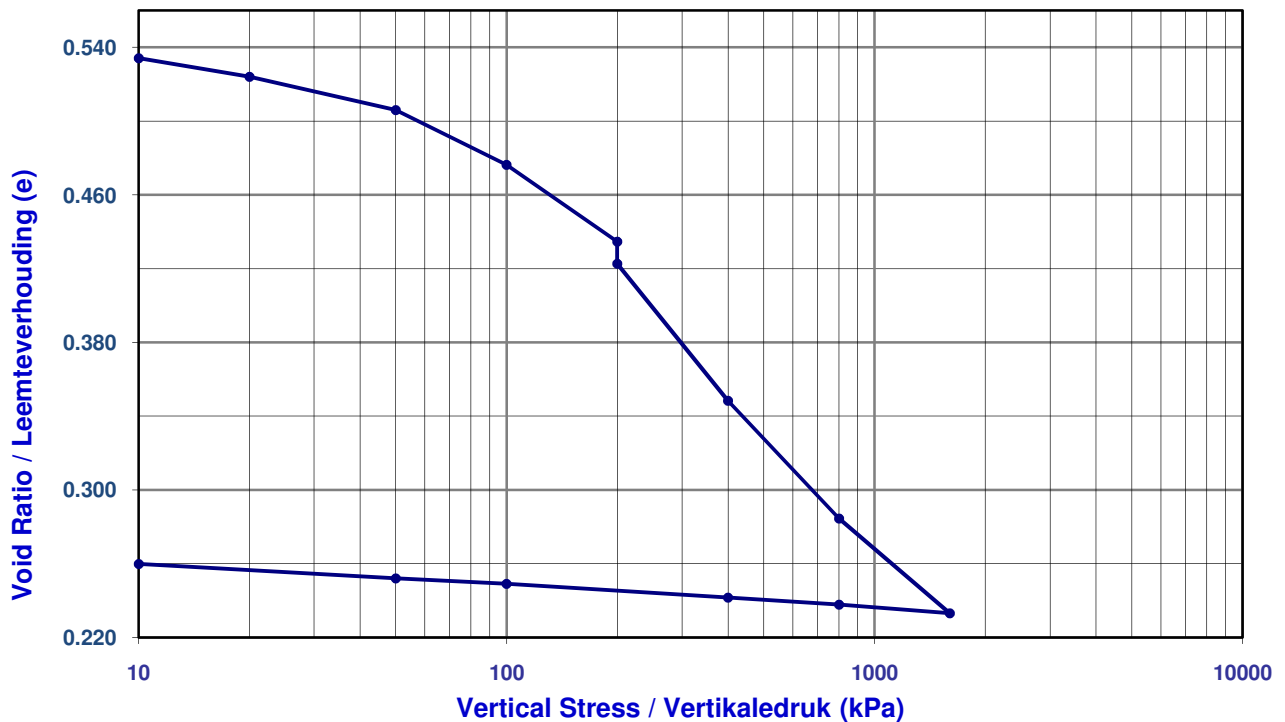
Machine	WF/E	Mass of Ring + wet sample (start of test)	285.6 g
Ring No	2	Mass of Ring + dry sample	262.2 g
Ring Ht	18.82 mm	Mass of Ring + wet sample (end of test)	277.0 g
Ring Diam.	74.72 mm	Mass of ring	115.6 g
Ring Vol.	82.52 mm <sup>3</sup>	Dry Density	1.777
M/C at Start	16.0 %	M/C at End of Test	10.1 %
Sat. at Start	80.92 %	Sat. at End	106.3 %
Initial Voids Ratio	0.539	S.G.	2.735
Initial Ht. of Voids	6.59 mm	Ht. Of Solids	12.23 mm

TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9936	9814	9592	9230	8720	8574	7664	6884	6256	6312	6359	6450	6486	6582
Strain (%)		0.34	0.99	2.17	4.09	6.80	7.58	12.41	16.56	19.89	19.60	19.35	18.86	18.67	18.16
Void Ratio	0.539	0.534	0.524	0.506	0.476	0.435	0.423	0.348	0.285	0.233	0.238	0.242	0.249	0.252	0.260
Cc		0.005	0.033	0.046	0.098	0.139		0.247	0.212	0.171	0.015	0.013	0.012	0.010	0.011
Mv (1/Mpa)		0.378	0.648	0.393	0.385	0.271		0.242	0.104	0.042	0.004	0.006	0.016	0.038	0.128

**Collapse Potential**                      **0.8 %**



08-Jun

# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 963 ORMONDE - 3505  
 Prj. No. : JM09  
 04-Jun-15

Sample No. 0003  
 Test Pit ORE/3

Depth : 0.8m

### Sample Parameters

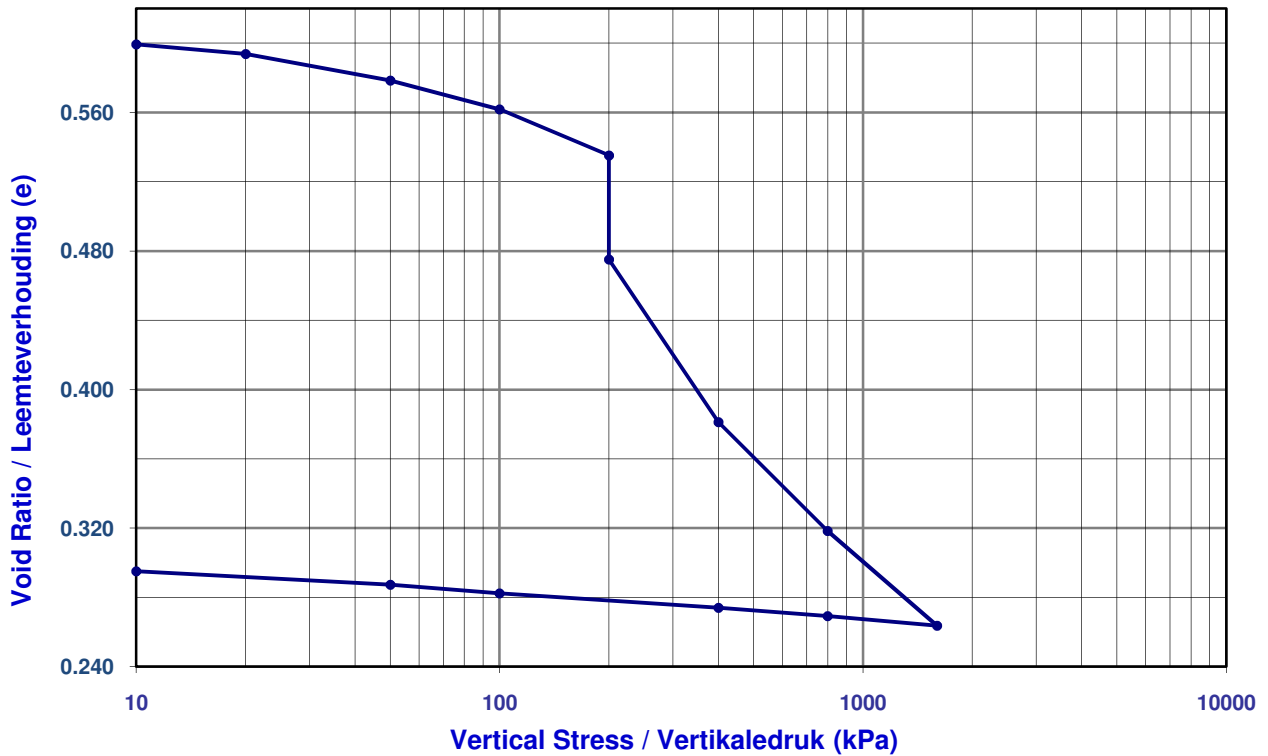
Machine	WF/G	Mass of Ring + wet sample (start of test)	276.9 g
Ring No	W4	Mass of Ring + dry sample	260.0 g
Ring Ht	18.88 mm	Mass of Ring + wet sample (end of test)	275.5 g
Ring Diam.	74.54 mm	Mass of ring	119.6 g
Ring Vol.	82.39 mm <sup>3</sup>	Dry Density	1.705
M/C at Start	12.0 %	M/C at End of Test	11.0 %
Sat. at Start	54.58 %	Sat. at End	102.1 %
Initial Voids Ratio	0.602	S.G.	2.731
Initial Ht. of Voids	7.10 mm	Ht. Of Solids	11.78 mm

TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9966	9902	9720	9524	9212	8504	7396	6656	6012	6078	6133	6232	6290	6382
Strain (%)		0.18	0.52	1.48	2.52	4.17	7.92	13.79	17.71	21.12	20.77	20.48	19.96	19.65	19.16
Void Ratio	0.602	0.599	0.594	0.578	0.562	0.535	0.475	0.381	0.318	0.264	0.269	0.274	0.282	0.287	0.295
Cc		0.003	0.018	0.039	0.055	0.088		0.312	0.209	0.182	0.019	0.016	0.014	0.016	0.011
Mv (1/Mpa)		0.200	0.339	0.321	0.208	0.165		0.293	0.098	0.043	0.004	0.007	0.017	0.061	0.122

**Collapse Potential**                      **3.8 %**



08-Jun

# Consolidation Test / Konsolidasie Toets

Client : JOHANN VAN DER MERWE (Pty) Ltd.  
 Project : ERF 963 ORMONDE - 3505  
 Prj. No. : JM09  
 04-Jun-15

Sample No. 0004  
 Test Pit ORE/3

Depth : 1.6m

### Sample Parameters

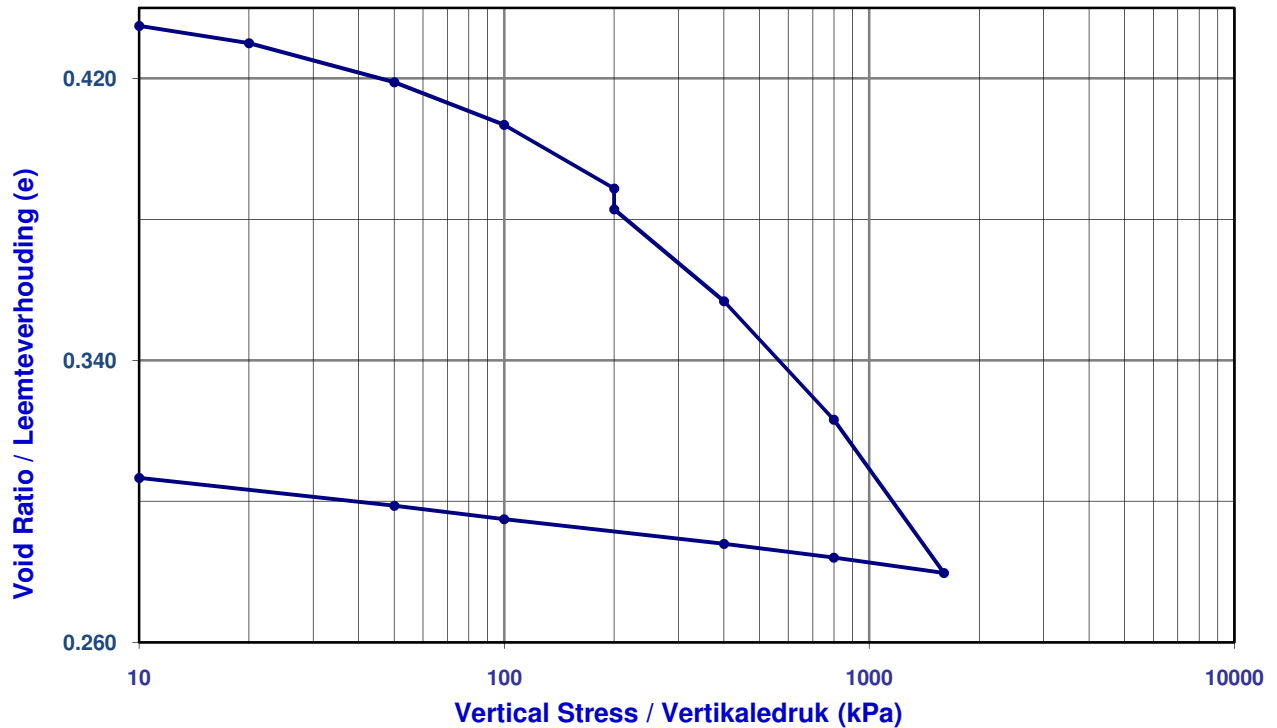
Machine	WF/H	Mass of Ring + wet sample (start of test)	291.9 g
Ring No	4	Mass of Ring + dry sample	274.0 g
Ring Ht	18.96 mm	Mass of Ring + wet sample (end of test)	292.7 g
Ring Diam.	74.38 mm	Mass of ring	117.2 g
Ring Vol.	82.38 mm <sup>3</sup>	Dry Density	1.903
M/C at Start	11.4 %	M/C at End of Test	11.9 %
Sat. at Start	71.43 %	Sat. at End	106.4 %
Initial Voids Ratio	0.437	S.G.	2.735
Initial Ht. of Voids	5.77 mm	Ht. Of Solids	13.19 mm

TEST WAS DONE ON A SPECIMEN PREPARED FROM AN UNDISTURBED SAMPLE AND SATURATED @ 200 kPa

### Test Parameters

V.Strs (kPa)	1	10	20	50	100	200	200	400	800	1600	800	400	100	50	10
Dial (u)	10000	9970	9906	9760	9600	9362	9284	8940	8496	7922	7980	8031	8124	8174	8278
Strain (%)		0.16	0.50	1.27	2.11	3.36	3.78	5.59	7.93	10.96	10.65	10.39	9.89	9.63	9.08
Void Ratio	0.437	0.435	0.430	0.419	0.407	0.389	0.383	0.357	0.323	0.280	0.284	0.288	0.295	0.299	0.307
Cc		0.002	0.016	0.028	0.040	0.060		0.087	0.112	0.145	0.015	0.013	0.012	0.013	0.011
Mv (1/Mpa)		0.176	0.338	0.257	0.169	0.126		0.091	0.059	0.038	0.004	0.007	0.016	0.053	0.137

**Collapse Potential**                      **0.4 %**



08-Jun



# FOUNDATION INDICATOR REPORT SHEET

CLIENT : JOHANN VAN DER MERWE  
 PROJECT : ERF 963 ORMONDE JOB: 3505

DATE : 15/05/27  
 PROJECT No. : JM09

## SAMPLE DETAILS

SAMPLE No.	CODES	TRIAL PIT No.	DEPTH	DESCRIPTION
0001	+ ———	ORE/1	0,3-1,0m	
0002	□ ······	ORE/1	1,3m	

## PARTICLE SIZE ANALYSIS: PERCENTAGE PASS BY MASS

SIZE (mm)	BY SIEVING										BY HYDROMETER				DIAM (µm)
	75.0	37.5	19.0	9.5	4.75	2.00	0.425	0.300	0.150	0.075	60	20	6	2	
% PASS +						100	55	39	30	26	24	17	13	11	% PASS +
% PASS □						100	61	48	42	39	37	29	24	22	% PASS □

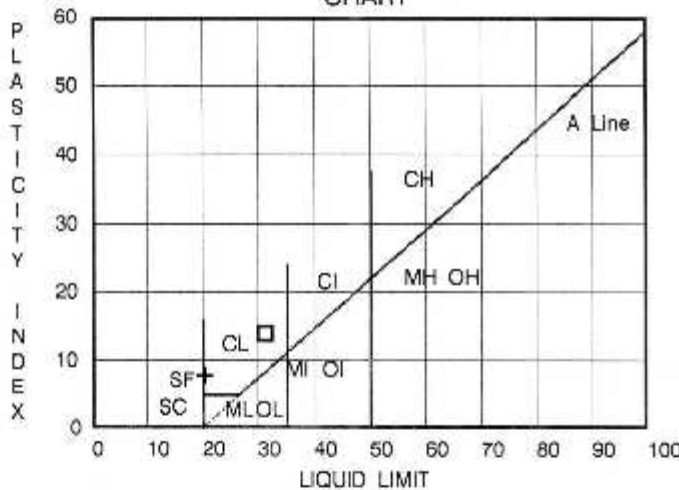
## DISTURBED SOIL PARAMETERS

ATTERBERG LIMITS				SG
LL (%)	PI (%)	LS (%)	WEIGHTED PI (%)	
20	8	3,5	4	2,650
31	14	6,0	8	2,650

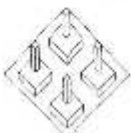
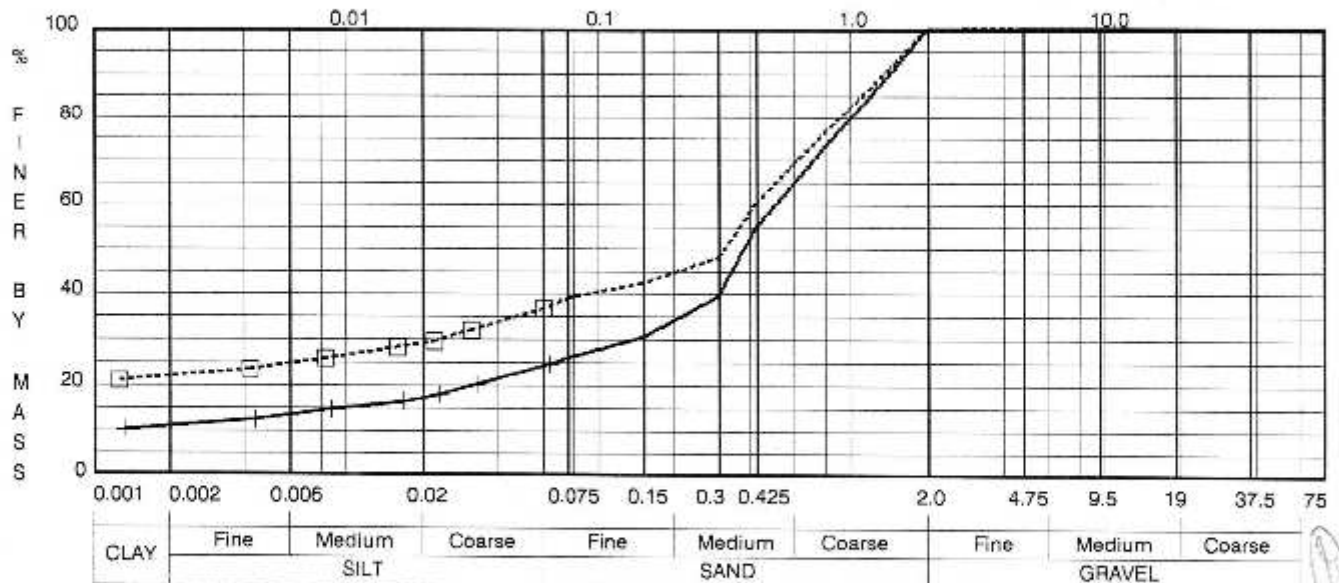
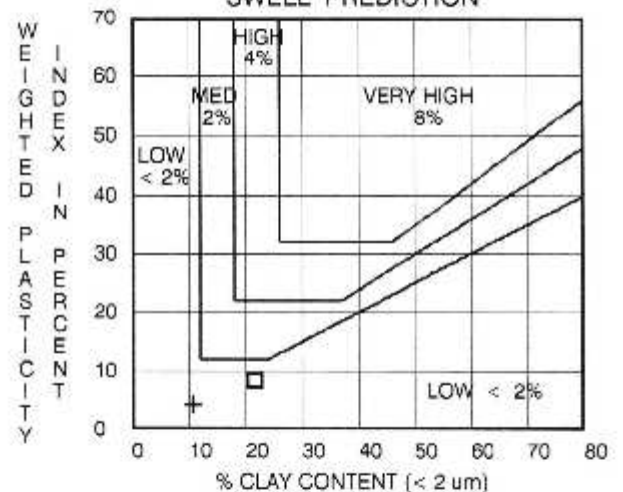
## UNDISTURBED SOIL PARAMETERS

VOIDS RATIO	SATURATION (%)	Dry Dens. (kg/m <sup>3</sup> )	NMC (%)

## CASAGRANDE PLASTICITY CLASSIFICATION CHART



## MODIFIED VAN DER MERWE SWELL PREDICTION



## GEOPLAN LABORATORIES (Pty) Ltd

REG No. 78/00337/07  
 11 RICHARD Rd TEL (011) 477-1045/6 FAX (011) 673-0715  
 INDUSTRIA NORTH BOX 552, FLORIDA 1710

*Handwritten signature/initials*



# FOUNDATION INDICATOR REPORT SHEET

CLIENT : JOHANN VAN DER MERWE  
 PROJECT : ERF 963 ORMONDE JOB: 3505

DATE : 15/05/28  
 PROJECT No. : JM09

## SAMPLE DETAILS

SAMPLE No.	CODES	TRIAL PIT No.	DEPTH	DESCRIPTION
0003	+ ———	ORE/3	0,8m	
0004	□ ······	ORE/3	1,6m	

## PARTICLE SIZE ANALYSIS: PERCENTAGE PASS BY MASS

SIZE (mm)	BY SIEVING										BY HYDROMETER				DIAM (µm)
	75.0	37.5	19.0	9.5	4.75	2.00	0.425	0.300	0.150	0.075	60	20	6	2	
% PASS +					100	99	80	67	48	38	35	23	16	12	% PASS +
% PASS □		100	94	94	91	86	65	53	41	33	29	19	13	10	% PASS □

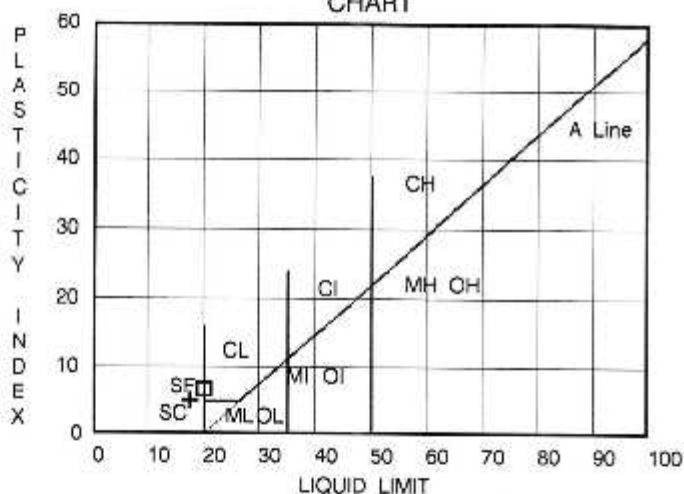
## DISTURBED SOIL PARAMETERS

ATTERBERG LIMITS				SG
LL (%)	PI (%)	LS (%)	WEIGHTED PI (%)	
18	5	2.0	4	2,650
20	7	3.0	4	2,650

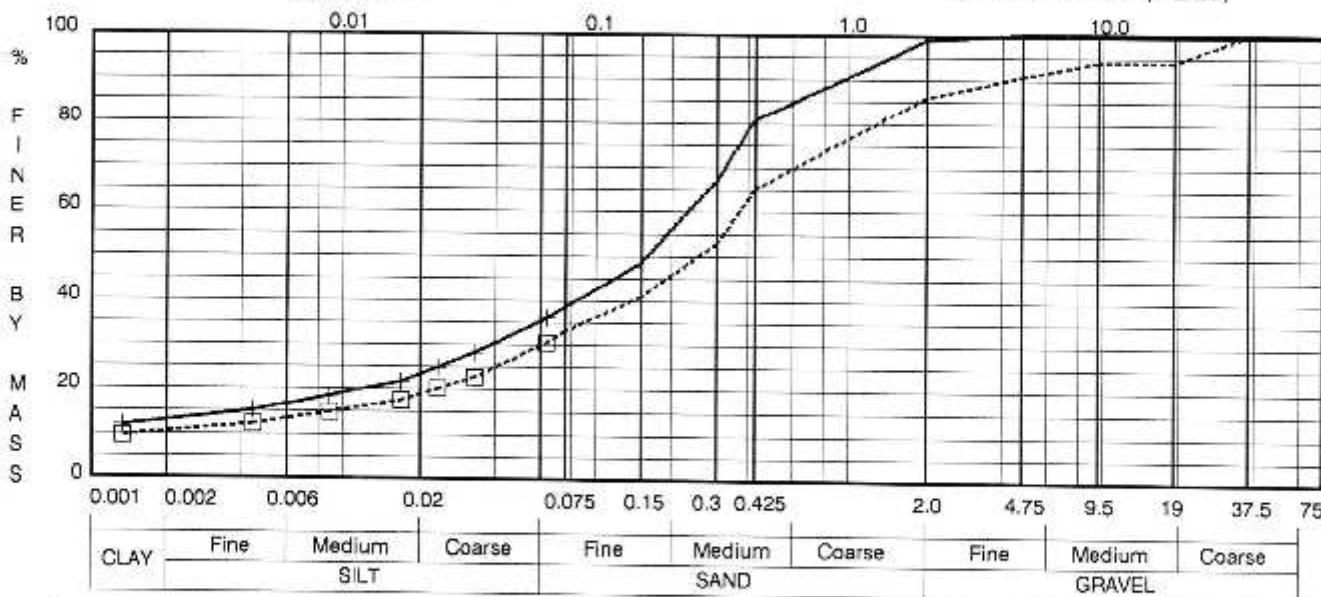
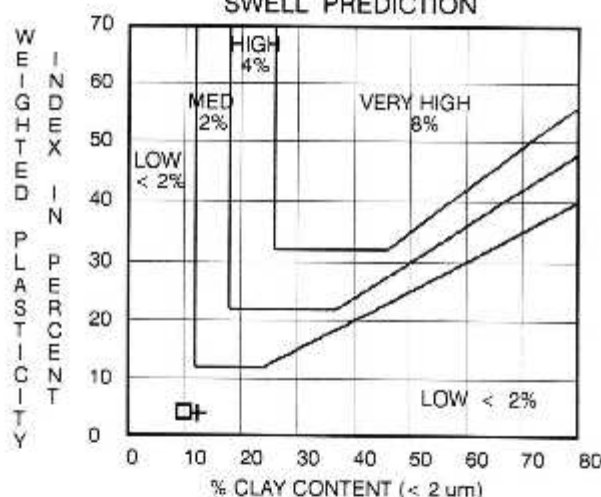
## UNDISTURBED SOIL PARAMETERS

VOIDS RATIO	SATURATION (%)	Dry Dens. (kg/m3)	NMC (%)

## CASAGRANDE PLASTICITY CLASSIFICATION CHART



## MODIFIED VAN DER MERWE SWELL PREDICTION



## GEOPLAN LABORATORIES (Pty) Ltd

REG No. 78/00337/07  
 11 RICHARD Rd TEL (011) 477-1045/6 FAX (011) 673-0715  
 INDUSTRIA NORTH BOX 552, FLORIDA 1710

*Handwritten signature/initials*

# FOUNDATION INDICATOR REPORT SHEET

CLIENT : JOHANN VAN DER MERWE  
 PROJECT : ERF 963 ORMONDE JOB: 3505

DATE : 15/05/28  
 PROJECT No. : JM09

## SAMPLE DETAILS

SAMPLE No.	CODES	TRIAL PIT No.	DEPTH	DESCRIPTION
0005	+ ———	ORE/5	0,4-0,7m	
	□ .....			

## PARTICLE SIZE ANALYSIS: PERCENTAGE PASS BY MASS

SIZE (mm)	BY SIEVING										BY HYDROMETER				DIAM (µm)
	75.0	37.5	19.0	9.5	4.75	2.00	0.425	0.300	0.150	0.075	60	20	6	2	
% PASS +			100	98	97	93	72	57	37	27	24	18	12	8	% PASS +
% PASS □															% PASS □

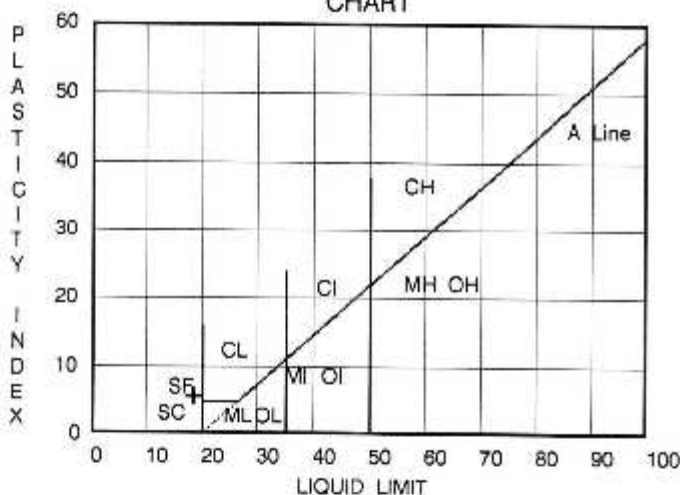
## DISTURBED SOIL PARAMETERS

ATTERBERG LIMITS				SG
LL (%)	PI (%)	LS (%)	WEIGHTED PI (%)	
19	6	2,5	4	2,650
				+ □

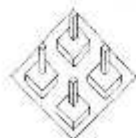
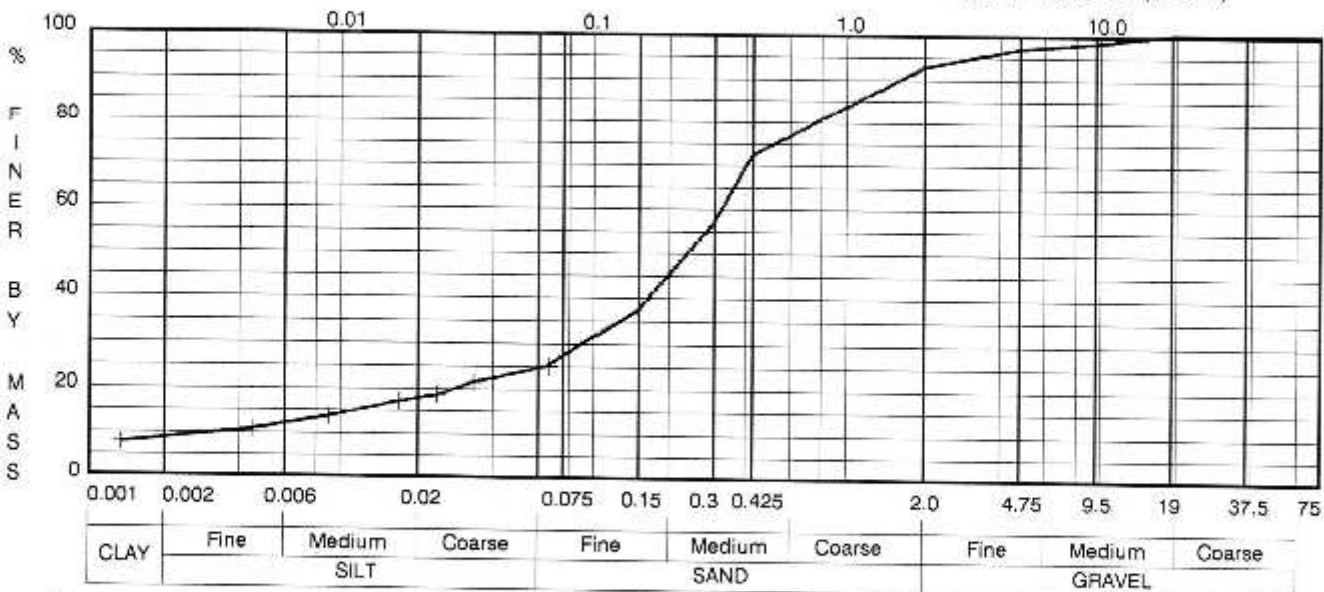
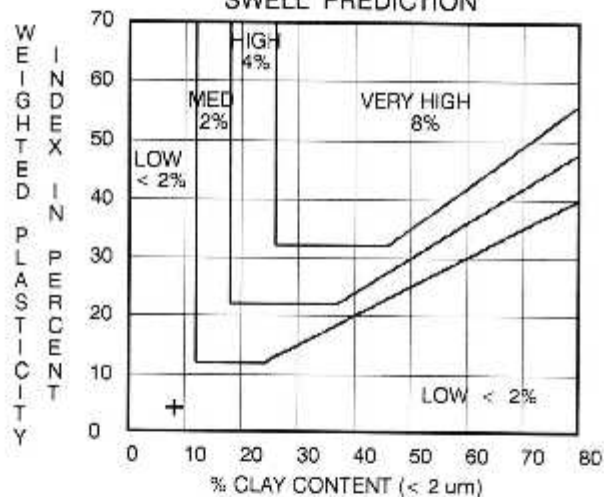
## UNDISTURBED SOIL PARAMETERS

VOIDS RATIO	SATURATION (%)	Dry Dens. (kg/m <sup>3</sup> )	NMC (%)

## CASAGRANDE PLASTICITY CLASSIFICATION CHART



## MODIFIED VAN DER MERWE SWELL PREDICTION



**GEOPLAN LABORATORIES (Pty) Ltd**  
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*Handwritten signature/initials*



# Appendix G2

## Wetland Delineation

## Ormonde watercourse

A field study was conducted on 5 July 2016. The brief wetland assessment was based on the Department of Water Affairs and Forestry "A practical field procedure for identification and delineation of wetlands and riparian areas" (DWAF, 2005). In brief, the method uses a combination of indicators to delineate the wetland:

- Terrain unit and topographical maps to determine where wetlands are most likely to occur using GIS software
- Identification of hydromorphic (wetland) soils
- Soil form and wetness indicators to establish permanent, seasonal, and temporary wetland zones. Assessed with the use of a soil auger, GPS, soil classification manual, and information available about the area.
- Identification of hydrophytes (wetland plants)
- Historic and current satellite imagery (e.g. Google Earth)

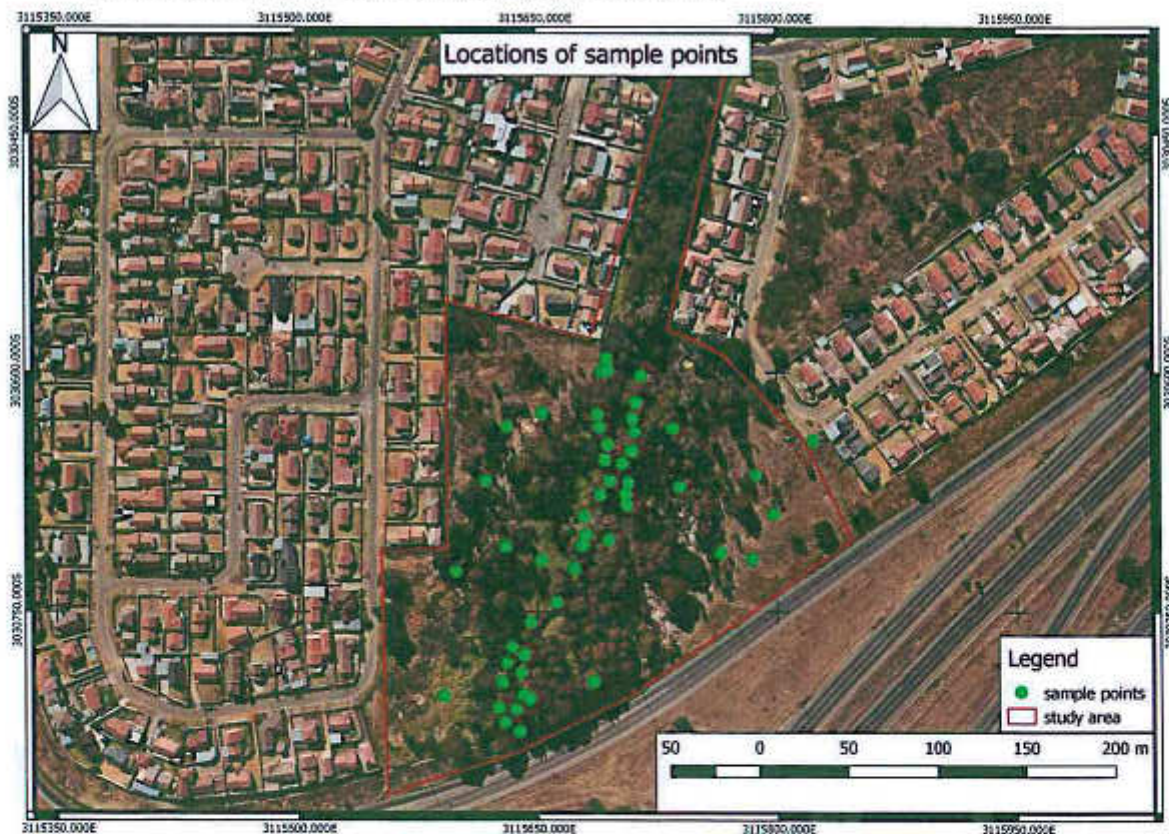


Figure 1: Location of sample points

### Historical imagery

The accessible historical imagery (google earth) from 2000 is illustrated below in figure 2. This image illustrates the condition of the wetland before the adjacent estates were built. Historical imagery from the 1950s will be obtained from the NGI during the full study. The wetland has been created as a result of stormwater runoff from the adjacent M1 (de Villiers Graaf Motorway). A wetland was most likely always present (to be confirmed through older historical imagery) and the anthropogenic influence to the influx of water has created a highly eroded channel which flows south to north.



Figure 2: Satellite imagery from 2000

Figure 3 illustrates the current state of the watercourse. It is clear that the development surrounding the watercourse has influenced the state of the wetland. The wetland has been altered into a deep cut erosion channel rather than a natural valley bottom wetland.



Figure 3: Satellite imagery from 2016

### Flow direction

The direction of flow is from A to B, and from C to D. This tells us that the two rivers are not connected and flow in opposite directions. This also tells us that the river system that is within the study site starts at point A and flows to point B, meaning that the source of the water is from stormwater runoff and effluent discharge from the M1 motorway and the surrounding developments.

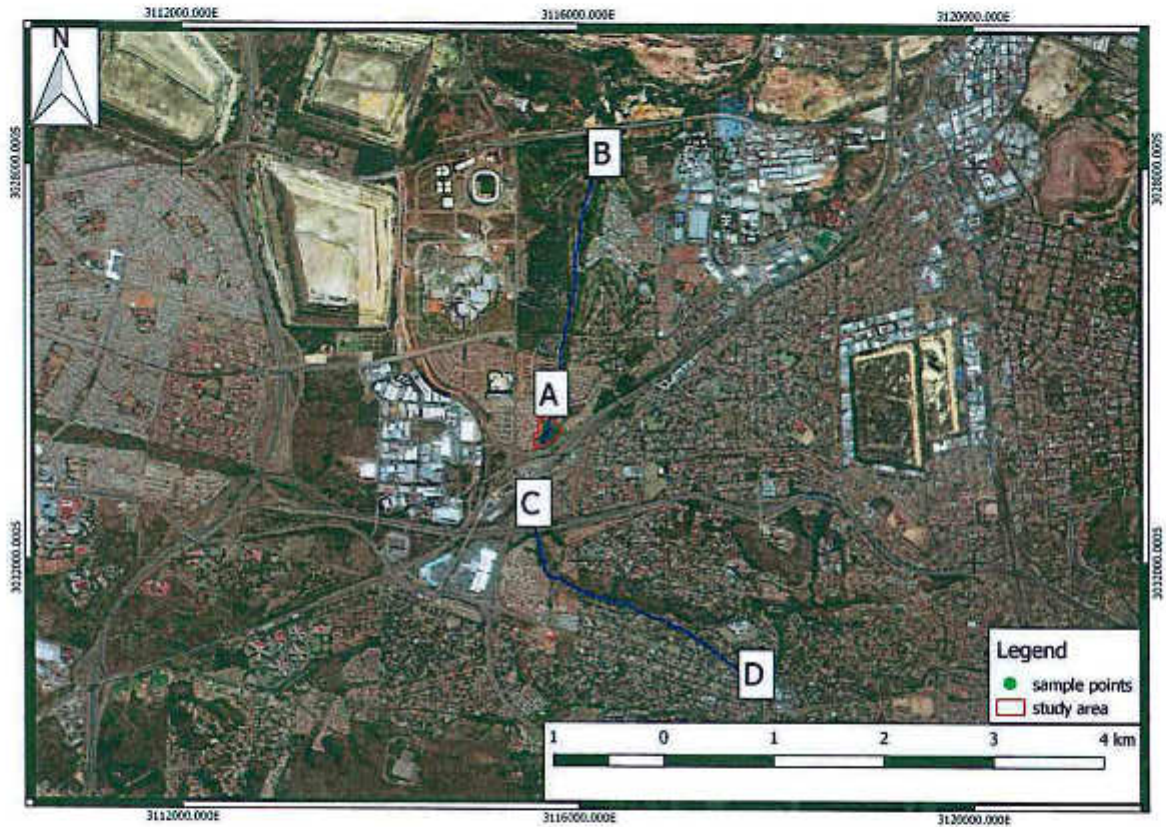


Figure 4: Flow direction and elevation profile

**Geology:**

The site is located within the Turffontein subgroup of the Central Rand group. The Central Rand group belongs to the larger Witwatersrand supergroup. The Turffontein group contains quartzite and conglomerates.

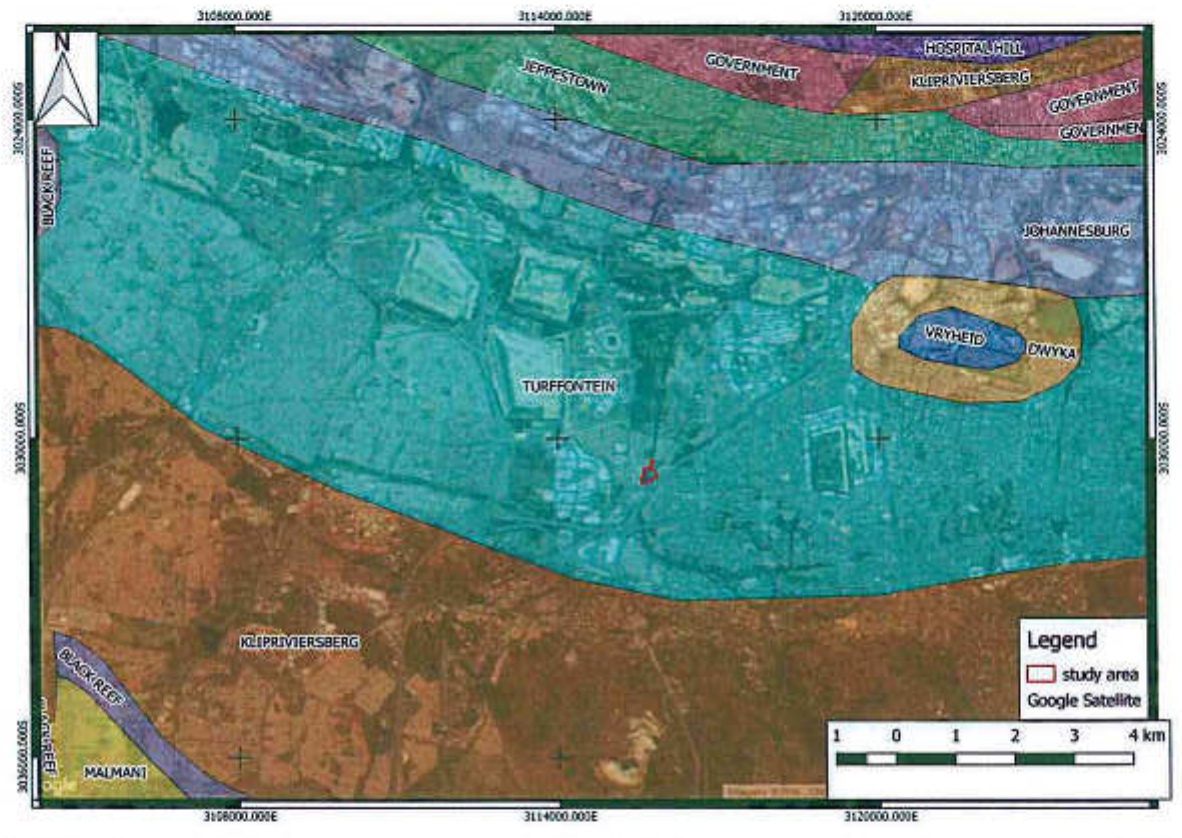


Figure 5: Geology map



## Wetland delineation

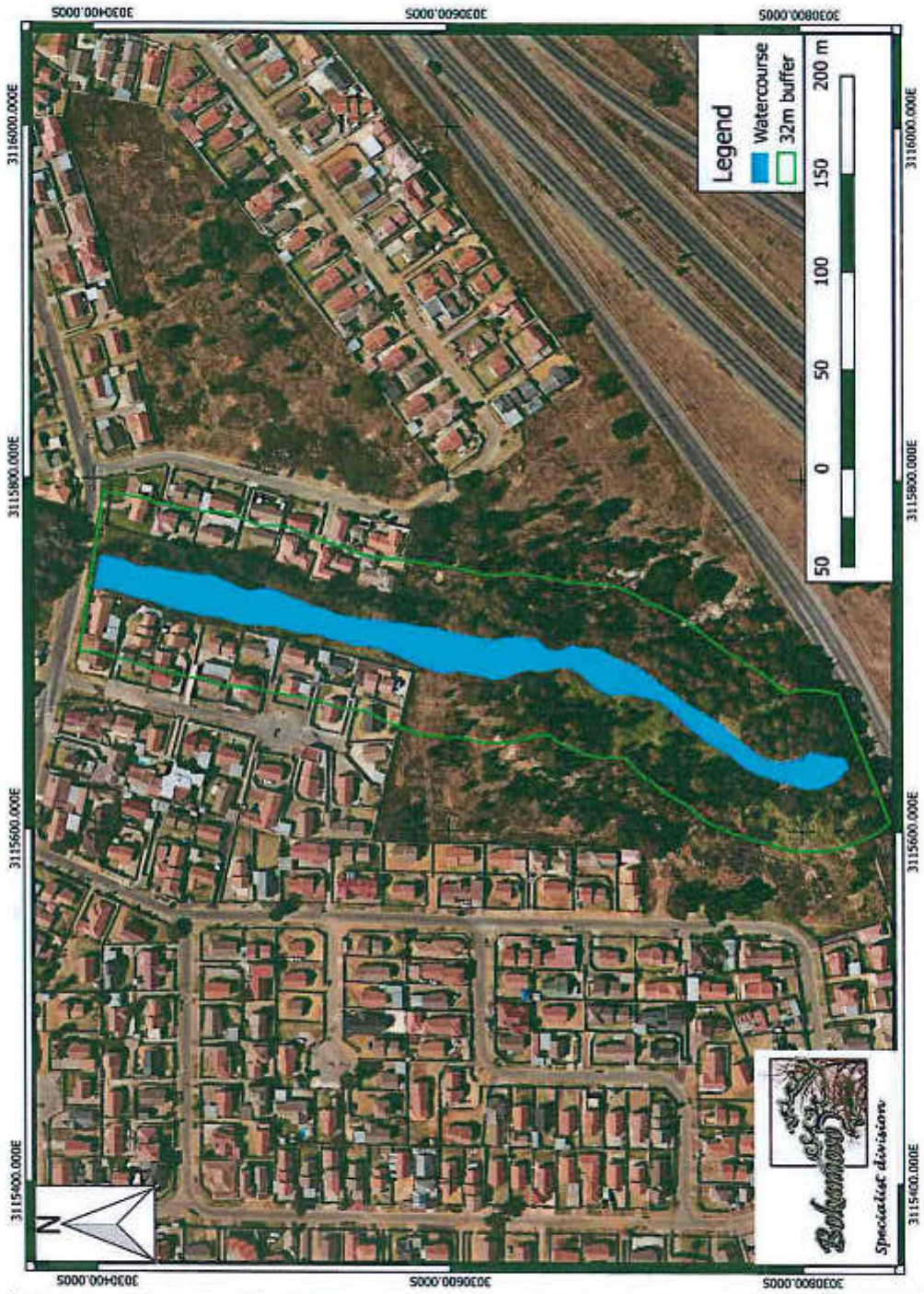


Figure 6: Wetland delineation

### Present ecological status (PES)

A full PES assessment was not done at the time of writing. During the site visit and brief assessment, The PES category is expected to be a category E to F. Category F is the worst category for a wetland according to the method setup by Kleynhans, which is the most widely used method. The wetland has been transformed into a large erosion channel and the wetland functions have been lost.

**Table 1: Interpretation of scores for determining present ecological status (Kleynhans 1999)**

<b>Interpretation of Mean* of Scores for all Attributes: Rating of Present Ecological Status Category (PES Category)</b>
WITHIN GENERALLY ACCEPTABLE RANGE
<b>CATEGORY A</b> >4; Unmodified, or approximates natural condition.
<b>CATEGORY B</b> >3 and <=4; Largely natural with few modifications, but with some loss of natural habitats.
<b>CATEGORY C</b> >2 and <=3; moderately modified, but with some loss of natural habitats.
<b>CATEGORY D</b> =2; largely modified. A large loss of natural habitats and basic ecosystem functions has occurred.
OUTSIDE GENERAL ACCEPTABLE RANGE
<b>CATEGORY E</b> >0 and <2; seriously modified. The losses of natural habitats and basic ecosystem functions are extensive.
<b>CATEGORY F</b> 0; critically modified. Modifications have reached a critical level and the system has been modified completely with an almost complete loss of natural habitat.

Extent of degradation

Illegal dumping







## Soils

The main soil type identified was the Fernwood soil form. This soil form consists of an orthic A horizon overlying an E horizon. An E horizon is a horizon of very sandy material that has undergone marked *in situ* net removal of colloidal matter (iron oxides, silicate clay and organic matter). These soil horizons also have a very weakly developed structure. E. Horizons are also loose and friable in the moist state due to the lack of cohesive clay particles. Because of these conditions, any development within the area will take place on highly erodible material. The erosion is evident where the stormwater concrete platform stops. The stormwater flows through box culverts under the M1 highway and out onto a concrete platform where it then flows into the watercourse. It is expected in the past, before the M1 motorway, the site had an undisturbed valley bottom wetland which did not have a deep cut channel. With the introduction of water into the wetland in the form of box culverts, the soil was eroded away due to the sandy horizons (sandy horizons have no cohesion and are extremely susceptible to erosion). The image below shows how the soil has eroded away from where the stormwater concrete platform stops (where it once used to be on the same level). This erosion has continued all the way throughout the stream channel and terrace cutting takes place due to the fluxes in water levels (seasonal variation)



The following images are basic illustrations of how the soil has been eroded due to the introduction of the stormwater channels present on the site.

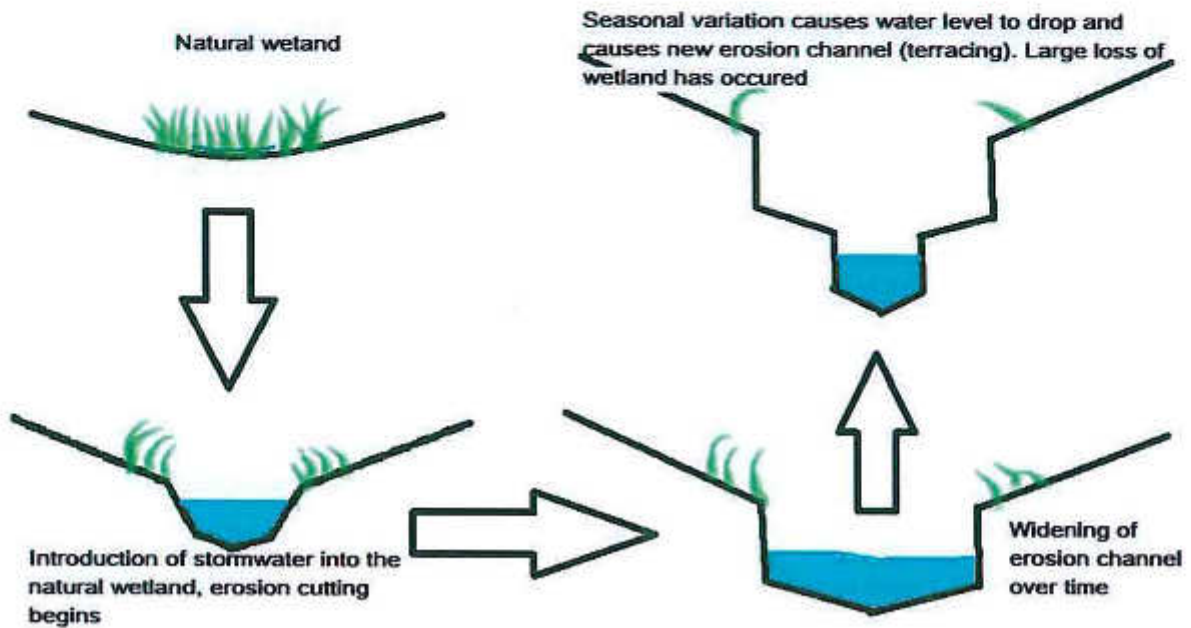
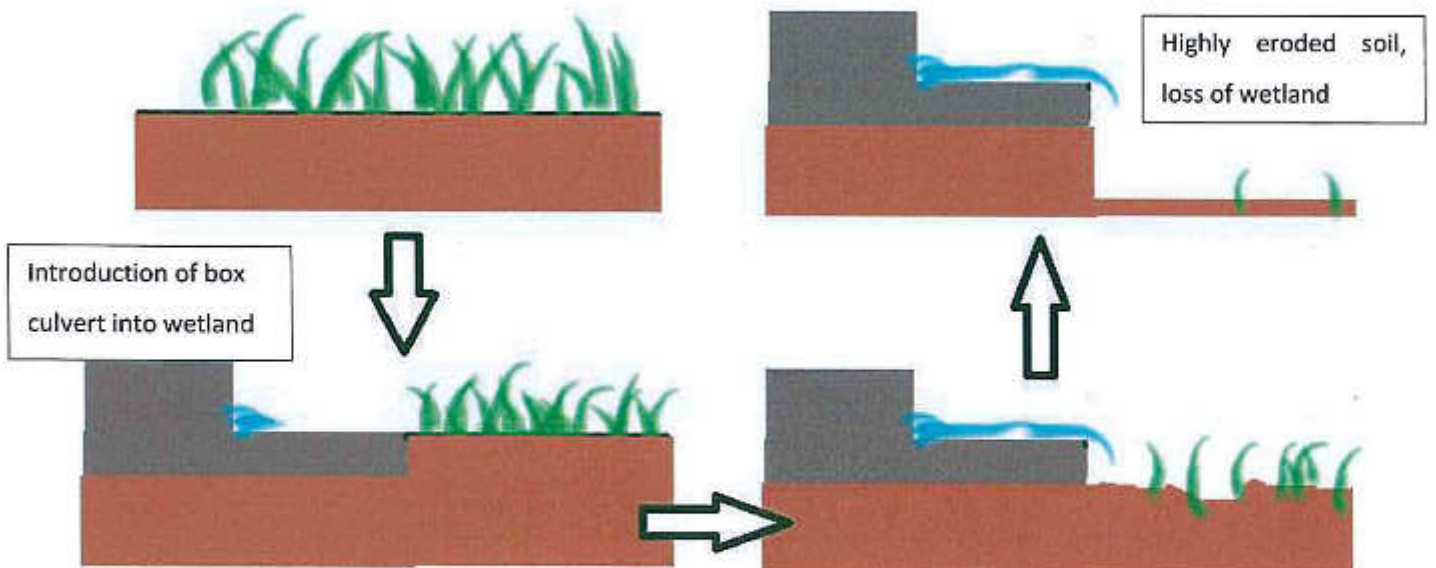
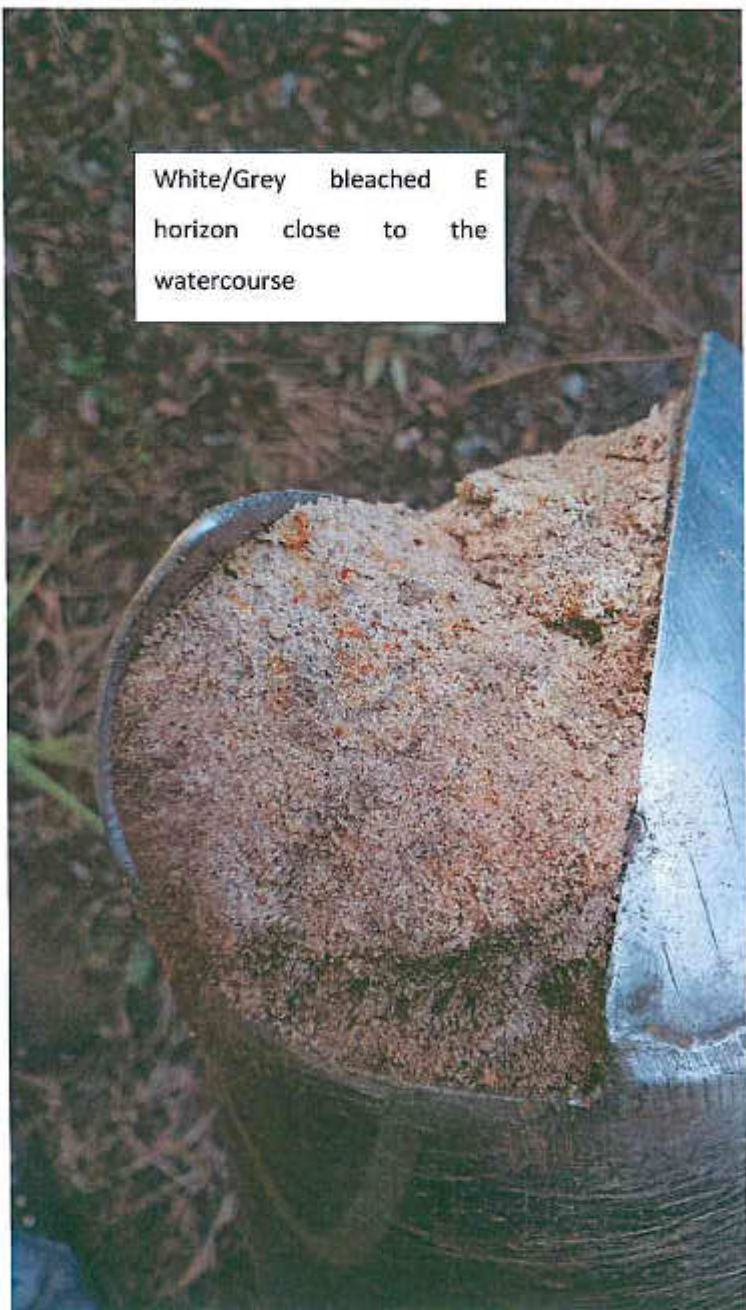


Figure 6: Cross section through channel



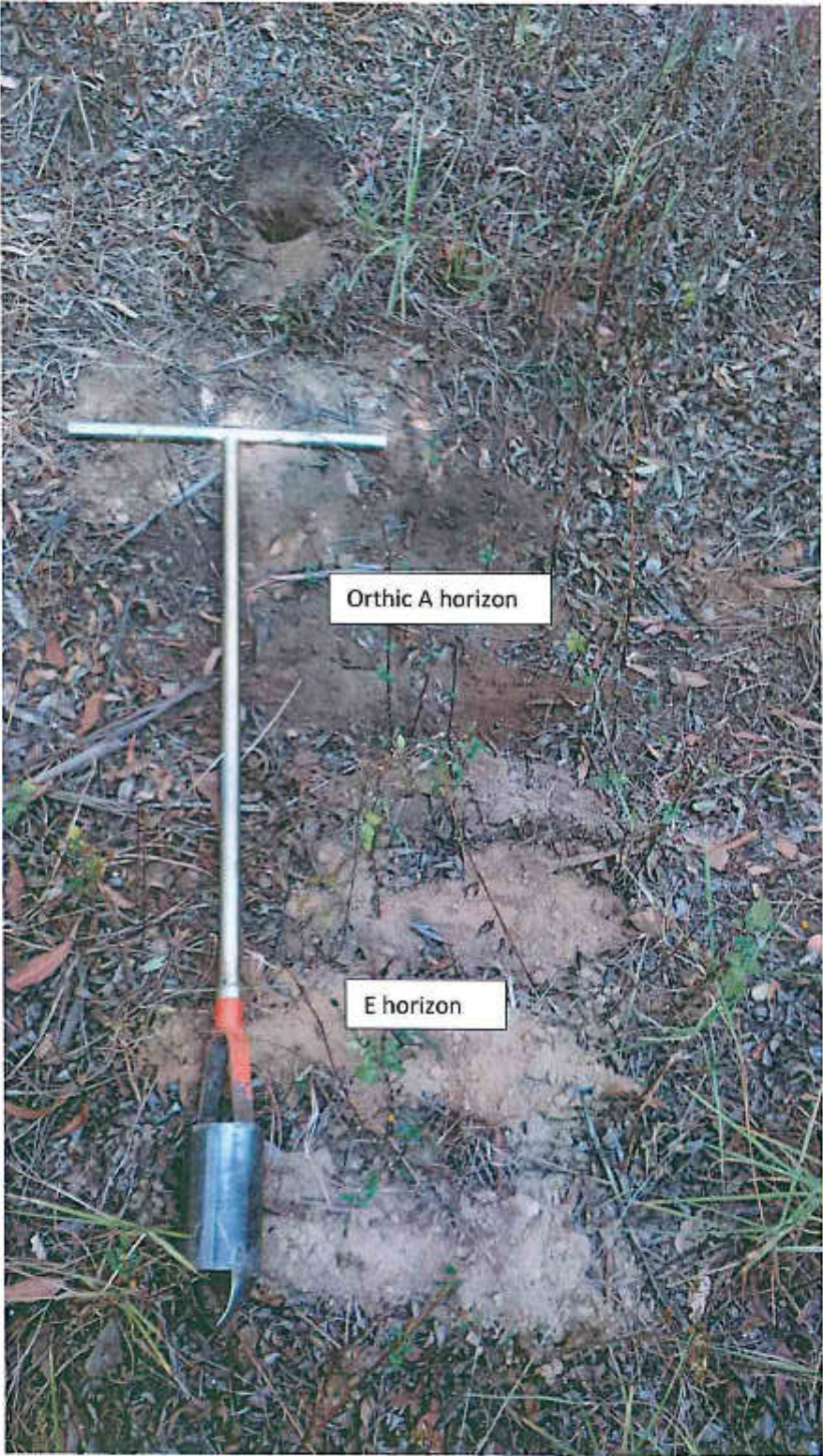
White/Grey bleached E horizon close to the watercourse



Yellow E horizon on the upper slopes of the site (terrain unit 4)







Orthic A horizon

E horizon

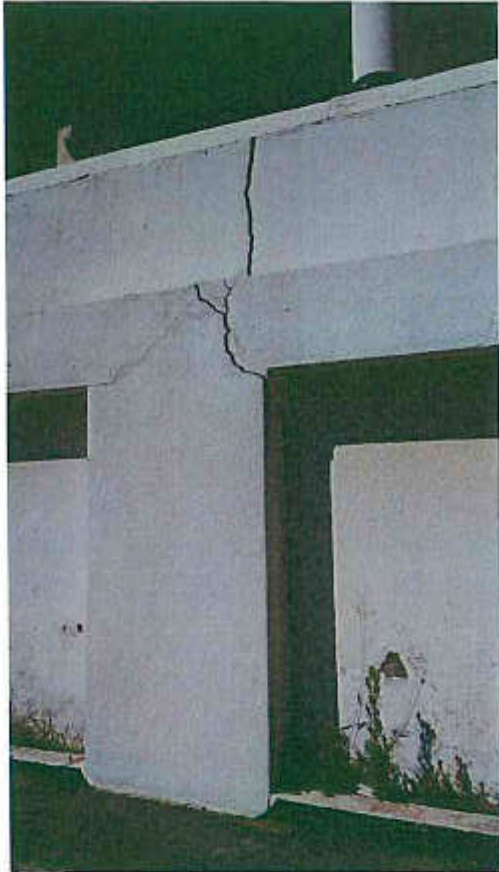
**Photographs of site**





### Adjacent houses

Upon site visit, the house adjacent to the site was visited. The lady had been complaining about the unstable soils that her house was built on. It was claimed that the mining in the area has caused unstable soil conditions which has led to the subsidence (sinking) of the soil. Her house has been cracking as a result and severe dampening has occurred.



### Conclusions and recommendations

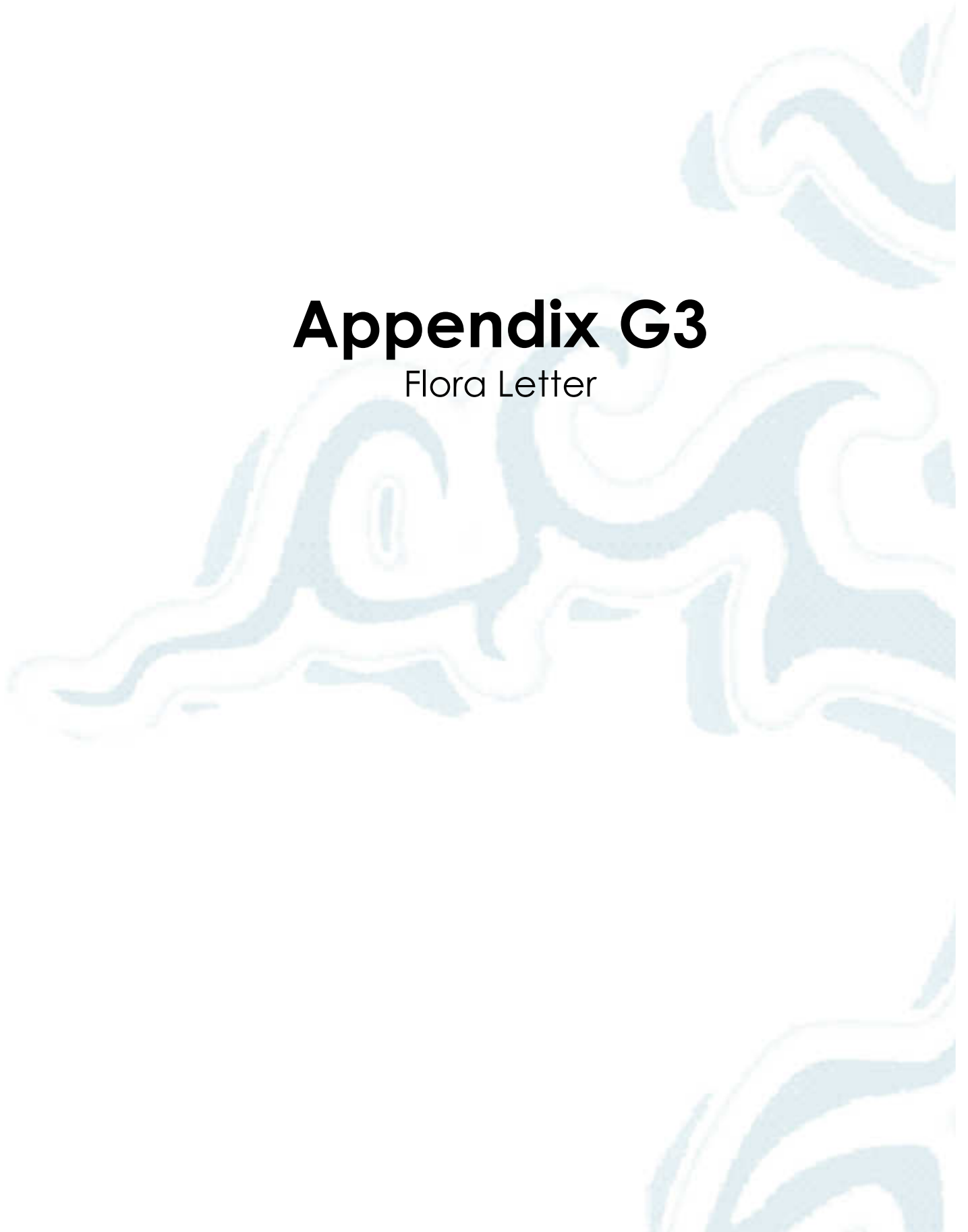
The site contains a highly altered valley bottom wetland that has been influenced by the stormwater runoff into the watercourse. Due to the highly erodible nature of the soils, the watercourse channel has been eroded and presents unstable conditions. The 32m buffer (as required by GDARD), has little effect on the protection and preservation of the watercourse. The 32m buffer, in my opinion, is not necessary as the focus should be placed on total stream rehabilitation and effective stormwater implementations should be introduced. A buffer of some sort is however necessary for the safety of any development of the area, as it is expected that the stability of the soils become less and less the closer you move towards the watercourse. An appropriate geotechnical engineer should be consulted in this regard.

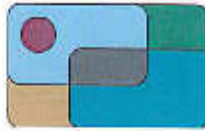
### References

- Department of Water Affairs and Forestry. 2005. A practical field procedure for identification and delineation of wetlands and riparian areas. Department of Water Affairs and Forestry. Pretoria. South Africa.
- Gauteng Department of Agriculture and Rural Development. GDARD Requirements for Biodiversity Assessments. Version 3
- Kleynhans CJ. 1996. A qualitative procedure for the assessment of the habitat integrity status of the Luvuvhu River. *Journal of Aquatic Ecosystem Health* 5
- McVicar *et al.* 1977. Soil Classification: A Binomial System for South Africa. Department of Agriculture.
- National Water Act, Act 36 of 1998.
- Soil Classification Working Group. 1991. Soil Classification: A Taxonomic System for South Africa. Department of Agriculture.

# Appendix G3

Flora Letter





**David Hoare Consulting cc**  
CC 2001/034446/23  
**Environmental & Natural  
Resource Consultants**

41 Soetdoring Avenue  
Lynnwood Manor,  
0041  
Pretoria  
Gauteng  
SOUTH AFRICA

Postnet Suite #116  
Private Bag X025  
Lynnwood Ridge, 0040  
tel: (012) 804 2281  
fax: 086 550 2053  
cellular: 083 284 5111  
e-mail: dhoare@lantic.net

02 June 2016

Att: Brian Gardner  
Seaton Thomson & Associates  
PO Box 936  
Irene, 0062

Dear Brian

**RE: REMAINING INDIGENOUS NATURAL VEGETATION ON THE SITE AT ORMONDE WEST**

This letter serves as a report on the outcomes of the survey undertaken at the site to determine the remaining extent of indigenous vegetation on site. According to EIA regulations (GNR 983), the following is a listed activity requiring an EIA:

*"The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-*  
*(i) the undertaking of a linear activity; or*  
*(ii) maintenance purposes undertaken in accordance with a maintenance management plan."*

As per the definition of GNR 546 and GNR 983, GNR 984 and GNR 985, "*Indigenous vegetation refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding 10 years.*"

The purpose of my site visit was to determine how much indigenous natural vegetation remains within the site. The site boundary used was as sent to me by email as a kml file.

The site was found to have been heavily invaded by alien invasive trees, primarily *Acacia mearnsii* and *Eucalyptus grandis*. Remaining areas of grassland around the edges of the site were heavily disturbed and consisted of secondary grassland and/or weeds. A species list of plant species found on site is appended to this letter. A total of 29 species were recorded on site, of which four are Declared Weeds or Alien Invader Plants, ten are naturalized exotics and six are indigenous weeds of disturbed places. Only nine are indigenous species that may be found within natural habitat, representing only 31% of the species recorded on site.

The vegetation was initially delineated from Google Imagery, but was done more accurately in the field using manual methods, as follows:

- The boundary between the habitat units was walked;
- A Garmin hand-held GPS was used to mark points a maximum of 2 metres apart in the field along the boundary between habitat units.

These points were used to draw a map of habitats on site using GIS software. This map is provided below to show the location of different habitats. The areas distinguished on site were divided into the following categories:

1. Natural;
2. Secondary / altered;
3. Alien trees;

THE GIS map was projected (Transverse Mercator projection, WGS84, LO29 central meridian) after which a GIS function was used to calculate areas of different classes. The areas are provided in the table below (indigenous vegetation fraction highlighted in green):

Habitat class	Area (hectares)
Natural	0.000
Altered	1.511
Alien trees	2.658
<b>TOTAL</b>	<b>4.169</b>

The results of the delineation indicate that the total area of unaltered indigenous vegetation on site is less than the 1 hectare that would trigger an EIA, according to the regulations.

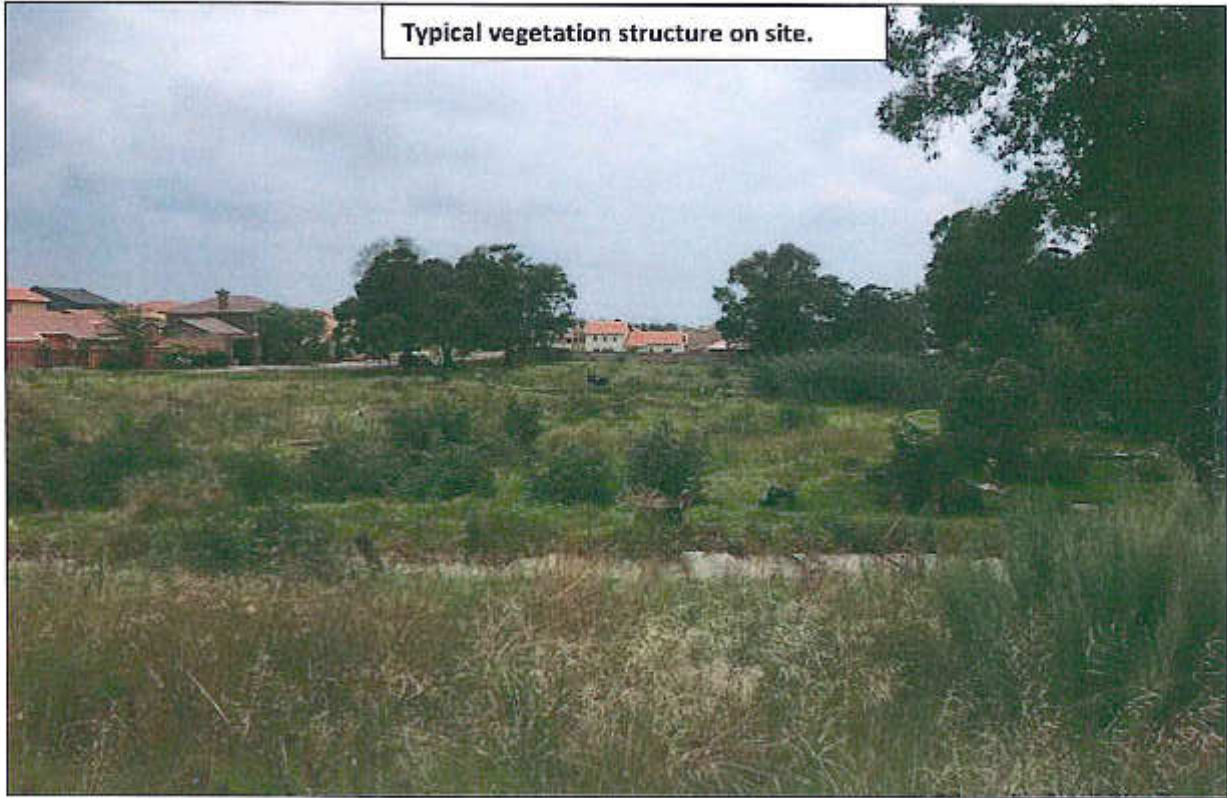
Yours faithfully,

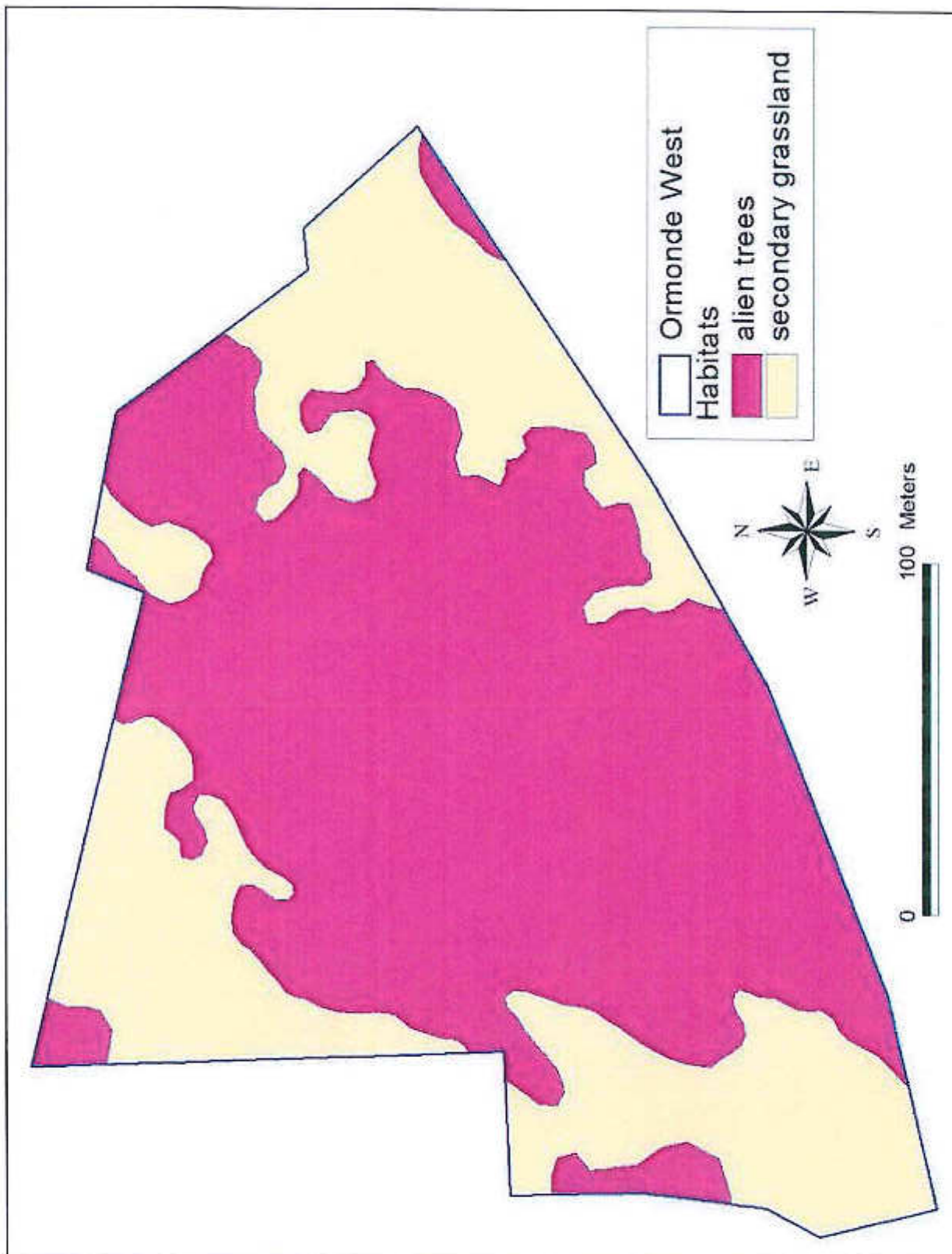


---

David Hoare  
Director / member







Member: Dr D.B. Hoare (PhD Botany/Ecology, Pr.Sci.Nat., Professional member: SAIE&FS)

**Appendix 1: Plant species recorded on site:**

<b>Species</b>
<i>Acacia mearnsii</i> * (Declared weed)
<i>Arundo donax</i> * (Declared weed)
<i>Asclepias fruticosus</i> #
<i>Bidens pilosa</i> *
<i>Chamaesyce hirta</i> #
<i>Chloris gayana</i> #
<i>Conyza canadensis</i> *
<i>Conyza canadensis</i> *
<i>Conyza podocephala</i>
<i>Cyperus esculentus</i> *
<i>Datura ferox</i> * (Declared weed)
<i>Delosperma herbeum</i>
<i>Eragrostis chloromelas</i>
<i>Eragrostis curvula</i>
<i>Gomphrena celosioides</i> *
<i>Helichrysum rugulosum</i>
<i>Hyparrhenia dregeana</i>
<i>Hyparrhenia hirta</i>
<i>Lactuca inermis</i>
<i>Paspalum urvillei</i> *
<i>Pennisetum clandestinum</i> * (Proposed declared weed)
<i>Plantago lanceolata</i> *
<i>Pseudognaphalium oligandrum</i> #
<i>Richardia brasiliensis</i> *
<i>Senecio inaequidens</i> #
<i>Sporobolus africanus</i> #
<i>Tagetes minuta</i> *
<i>Verbena bonariensis</i> *



# Appendix G4

Electrical Report



Buro Tech Consulting Engineers CC  
141 Main Street Heatherdale  
PO Box 59887 Karenpark 0118

Tel: (012) 542 1010  
(012) 753 5798  
(012) 754 1473

Int: (+27 12) 542 1010

Fax: (086 516 4024

E-mail: [burotech@burotech.co.za](mailto:burotech@burotech.co.za)

**To: KALE DEVELOPMENTS**

**Tel No:** 012 687 1000

**For Attention:** Mr Derek Wheals

**Email:** [derek@tri-star.co.za](mailto:derek@tri-star.co.za)

**Date:** 29 November 2016

**From:** Nico van Wyk

**Fax No:** 012 542 2097

**Cell No:** 082 600 8328

**Email:** [nicovw@burotech.co.za](mailto:nicovw@burotech.co.za)

**Page:** 1 of 10

**Ref:** PG 62 / DSN.A


**RE: ERVEN 1130 & 1131 ORMONDE SOUTH EXT 24  
EXTERNAL ELECTRICAL RETICULATION  
ENGINEERING REPORT ON ELECTRICAL SERVICES**

Dear Derek,

Enclosed please find for your information and attention the services report for the electrical services as requested.

Kindly contact us should any additional information be required.

Yours Faithfully

  
**Nico van Wyk** (Pr. Eng)

Cc: Jacques Pienaar  
Voight Uys  
Lindy Ras  
Werner Slabbert

Matla Projects (Pty) Ltd  
Kale Developments  
Kale Developments  
Urban Innovate

[jacques@pinard.co.za](mailto:jacques@pinard.co.za)  
[Voight@kaledevelopments.co.za](mailto:Voight@kaledevelopments.co.za)  
[Lindy@kaledevelopments.co.za](mailto:Lindy@kaledevelopments.co.za)  
[werner@urbaninnovate.co.za](mailto:werner@urbaninnovate.co.za)

Enclosed: Report & Annexures

Members: NJS van Wyk Pr Eng B Sc (Ing) (Elek) MSAACE MSAIEE MIESSA  
CK 92/05979/23



# ERVEN 1130 & 1131 ORMONDE SOUTH EXT 24 EXTERNAL ELECTRICAL RETICULATION ENGINEERING REPORT ON ELECTRICAL SERVICES

Date: 2016 November 29

## 1. Introduction

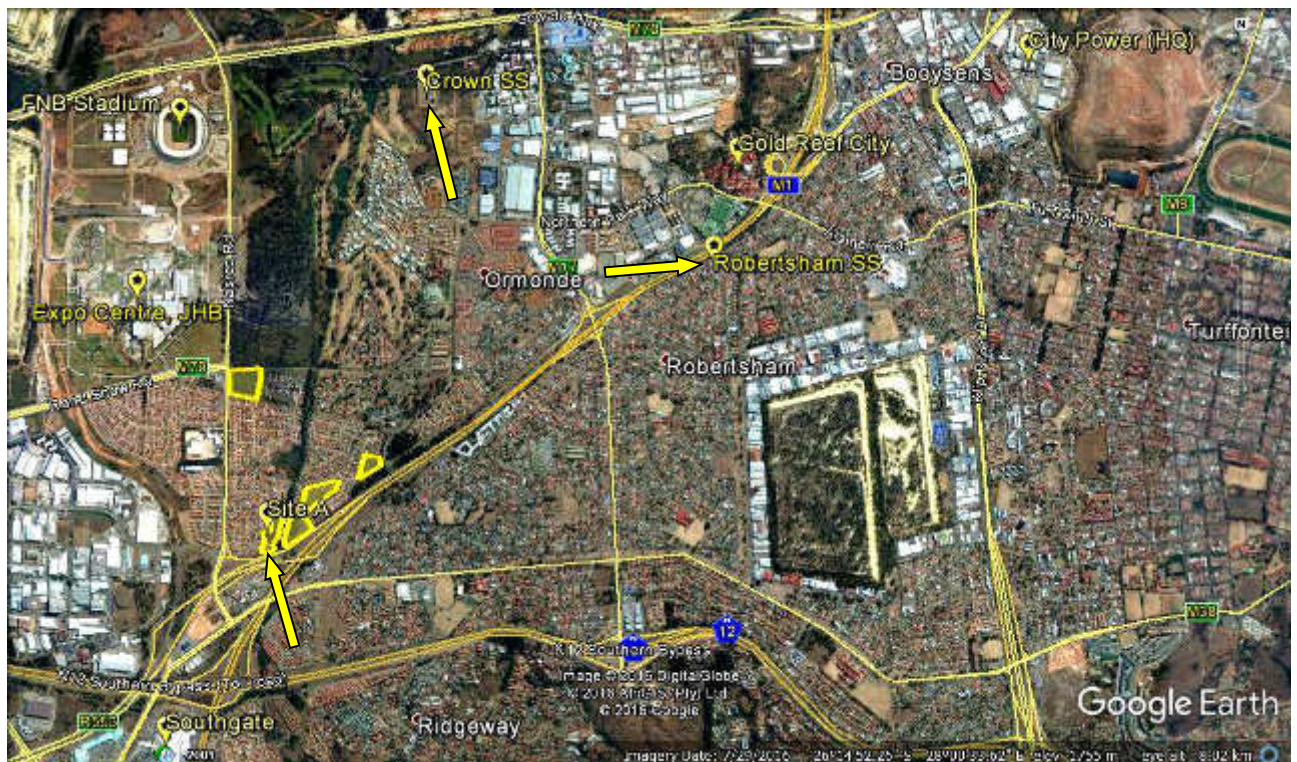
Buro Tech Consulting Engineers was appointed on 23 September 2016 as the Electrical Consulting Engineers for the proposed development / rezoning of Erven 1130 & 1131 Ormonde South Ext 24.

This report is based on input information received from City Power engineering department at various meetings and specifically on 21 November 2016.  
(refer to Annexures A & B of this report).

## 2. Brief on Existing Networks

The nearest distribution substations are the Crown Substation, located  $\pm 2$  km north of the proposed development, and Robertsham Substation, located  $\pm 2.2$  km North-East of the development.

Refer Google Earth overview below with **Site A**  
(referring to Erven 1130 & 1131, Ormonde Ext 24).



City Power indicated that although sufficient spare capacity is available from the Crown Substation, the existing cable networks to Ormonde South are being operated at full capacity (*no spare feeder cable capacity available*).  
(refer Annexure B for feedback)

Preliminary investigations indicated that spare capacity can be made available on the existing cable networks to Ormonde South, by rearranging the cable distribution configurations and shifting loads from the Ormonde South feeder cables to other cable networks. Some network strengthen may also be required, but City Power will only be able to define the full scope of the works required once they concluded a detailed master plan study.

### 3. Electrical Connection

The point of common coupling will be on the 11kV cable network (*on street front*) with the connection from City Power via a minisub at 400V.

In terms of the City Power processes, the master plan design process will have to be presented to City Power for both technical and financial viability and approval.

An application was submitted to City Power for 672kVA.  
(refer Annexure A for application, as well as paragraph 4.2 of this report for detailed calculations)

The minisub will be placed close the entrance to the site. The existing MV cable ring network will have to be extended to cater for this site.  
(refer Annexure C, "Proposed Minisub Positions")

### 4. Estimated Electricity Demand

**Load Estimate = Area × Density × Load/Unit**

#### 4.1 Existing Rights:

Area = 1.7 Hectare  
Density = 25 Units/Ha  
Load/Unit = 5.0 kVA[ADMD]  
= 1.7 Ha × 25 × 5.0 kVA[ADMD]

**Total Electrical Load = 210 kVA** (*existing rights*)

#### 4.2 Proposed Rights:

The proposed rezoning comprise of High Density Residential development on Erven 1130 and 1131 of Ormonde Ext 24.

Area = 1.7 Hectare  
Density = 112.94 Units/Ha  
Load/Unit = 3.5kVA[ADMD]  
Number of Units = 1.7 Ha × 112.94 = 192 Units  
Load Required = 192 Units × 3.5kVA[ADMD]

**Total Estimated Electrical Load Required = 672 kVA**

Servitude of restraint (restrictive condition of title):

City Power indicated that a servitude of restraint may be placed on the development, limiting the total supply to the site at **630kVA**

This equates to 3.28kVA[ADMD] per dwelling unit.

The additional extra capacity required is 420kVA (*630kVA less 210kVA*) for which Network Capacity Fees (*bulk services contributions*) will be payable (*refer to paragraph 4.3 for more detail*).

### 4.3 Financial Implications

Costs payable are calculated on the basis of the published tariffs (refer table below):

LV & LPU CUSTOMER'S ELECTRICAL SERVICES CONNECTIONS FEES, FOR THE PERIOD JULY 2016- JUNE 2017						
These Service Connection Fees Are For Proclaimed Townships Only						
SPLV & LPU Service Connection Less than 250 kVA @ 400Vac.						
Note:#1_ The Maximum Network capacity fee or the lesser of the difference of the Applied capacity less the entitled (Zoned) capacity at a rate of R 2 310 000/kVA is payable to cover the Capital cost of the additional Spare Capacity Applied for						
4a	Size	Enquiry fees	Connection fee	Note:#1_ Maximum Network Capacity fee	Maximum Total Service Connection fee	Non-Refundable Detail design fee
	70 kVA	No Charge	R 197 500.00	R 161 700.00	R 359 200.00	R 30,000.00
	105kVA	No Charge	R 250 000.00	R 242 550.00	R 492 550.00	R 30,000.00
	140kVA	No Charge	R 295 000.00	R 323 400.00	R 618 400.00	R 30,000.00
	175kVA	No Charge	R 340 000.00	R 404 250.00	R 744 250.00	R 30,000.00
	210kVA	No Charge	R 410 000.00	R 485 100.00	R 895 100.00	R 30,000.00
	250kVA	No Charge	R 450 000.00	R 577 500.00	R 1 027 500.00	R 30,000.00
SPLV & LPU Service Connection between 315 and 1000 kVA @ 400Vac.						
4b	Size	Enquiry fees	Connection fee	Note:#1_ Maximum Network Capacity fee	Total Service Connection fee	Non-Refundable Detail design fee
	315kVA	No Charge	R 490 000.00	R 727 650.00	R 1 217 650.00	R 30,000.00
	500kVA	No Charge	R 620 000.00	R 1 155 000.00	R 1 775 000.00	R 30,000.00
	630kVA	No Charge	R 745 500.00	R 1 455 300.00	R 2 200 800.00	R 30,000.00
	1000kVA	No Charge	R 1 100 000.00	R 2 310 000.00	R 3 410 000.00	R 30,000.00

Working on the premise that City Power will limit the supply to the site to **630kVA**, the total costs payable can be calculated as follows:

Connection Fee	=	R 745 500.00	
Network Capacity Fee	=	R 1 455 300.00	
less Credits due	=	<u>(R 485 100.00)</u>	(210kVA × R2310/kVA)
<b>Total Costs Payable</b>	=	<b><u>R 1 715 700.00</u></b>	

All amounts exclude VAT

City Power still need to formalize the cost above.

### 5. Conclusion

The development will be fed from the Crown substation which has adequate capacity.

No immediate capacity is available on the existing cable network to Ormonde South. City Power will conduct a master plan study detailing the extent of the works required to make capacity available on the Ormonde 11kV feeder/s.

The work will be funded via the bulk contributions paid by the developer.

----ooo0ooo----

### Annexures

- Annexure A: Application submitted & returned with “700” number detail
- Annexure B: City Power Confirmation: 2.2MVA supplied from Crown Substation
- Annexure C: Proposed Minisub Position



**ANNEXURE A**  
**Application submitted & returned with**  
**“700” number detail**

Johurg



APPLICATION FOR ELECTRICITY SUPPLY

\*CUSTOMERS TO APPLY AT RELEVANT AREA OFFICE\*

NB: READ THE BACK OF THIS FORM PRIOR TO COMPLETING THE SECTION

APPLICANT DETAILS

ACCOUNT NUMBER: 552 415 188 DATE: 22 / 10 / 17

STAND NUMBER: 1130 TOWNSHIP: ORMOND E

STREET ADDRESS: 40 Milkwood Road

TYPE OF BUSINESS (e.g. FLATS, HOUSE, FACTORY): Flats

APPLICATION FOR (tick relevant box)

CONNECTIONS

- Single Phase Pre Paid Conversion
- Single Phase Pre Paid New Connection
- Three Phase Pre Paid Conversion
- Three Phase Pre Paid New Connection
- Upgrade To Three Phase Pre Paid
- Downgrade To Single Phase Pre Paid
- Resellers Tariff
- Smart Meter Pre Paid Conversion

- TARIFF
- Domestic
  - Business
  - Demand
  - Off Peak

- INCREASE
- Existing
  - Required

OTHER (PLEASE SPECIFY)/SMART METER NUMBER: Bulk supply

NAME OF PROPERTY OWNER: Matla Projects (Pty)

TELEPHONE NUMBER: 011 571 3901

SIGNATURE: [Signature]

NAME OF ELECTRICAL CONTRACTOR: Burotech Consulting

TELEPHONE NUMBER: 0125471010, REGISTRATION NO: 2009

SIGNATURE: [Signature]

FOR OFFICE USE ONLY

BP NUMBER	6001297588
PREMISE	458138
CONNECTION OBJECT	1360589
NOTIFICATION NUMBER	70020073141

**ANNEXURE B**  
**City Power confirmation:**  
**2.2MVA supplied from Crown Substation**

**From:** Mike Radebe <mradebe@citypower.co.za>  
**Sent:** 31 August 2016 09:49 AM  
**To:** Ralph Gordon  
**Cc:** Tshililo Mudzudzanyi; Nico van Wyk; Lungi Mzizi; Tony Whittaker  
**Subject:** RE: ORMONDE SOUTH: Inputs Requested - 2016 07 27

**Sensitivity:** Confidential

Good day

The 2,2 MVA can be made available from Crown Substation, the costs will be based on the changes in the network which I still have to discuss and get approvals for.

Kind Regards,

M. Radebe  
Engineer Infrastructure Planning:  
Engineering Services

City Power Johannesburg  
40 Heronmere Road, Reuven, Johannesburg  
Tel: +27 (0) 11 490 7418  
Cell: +27 (0) 83 704 9343  
E-mail: [mradebe@citypower.co.za](mailto:mradebe@citypower.co.za)  
Web: [www.citypower.co.za](http://www.citypower.co.za)

---

**From:** Ralph Gordon [mailto:[Ralphg@burotech.co.za](mailto:Ralphg@burotech.co.za)]  
**Sent:** Wednesday, July 27, 2016 3:15 PM  
**To:** Mike Radebe  
**Cc:** Tshililo Mudzudzanyi; Nico van Wyk; Lungi Mzizi; Tony Whittaker  
**Subject:** ORMONDE SOUTH: Inputs Requested - 2016 07 27  
**Sensitivity:** Confidential

Good day Mike,

Further to our meeting of today, and in summary of what was discussed:  
We require a total of 2 200kVA (*as per breakdown attached*)

We request urgent feedback on the following:

- \* City Power solution & cost (as may be applicable) to make this capacity available.
- \* Timelines (when will it be available)?

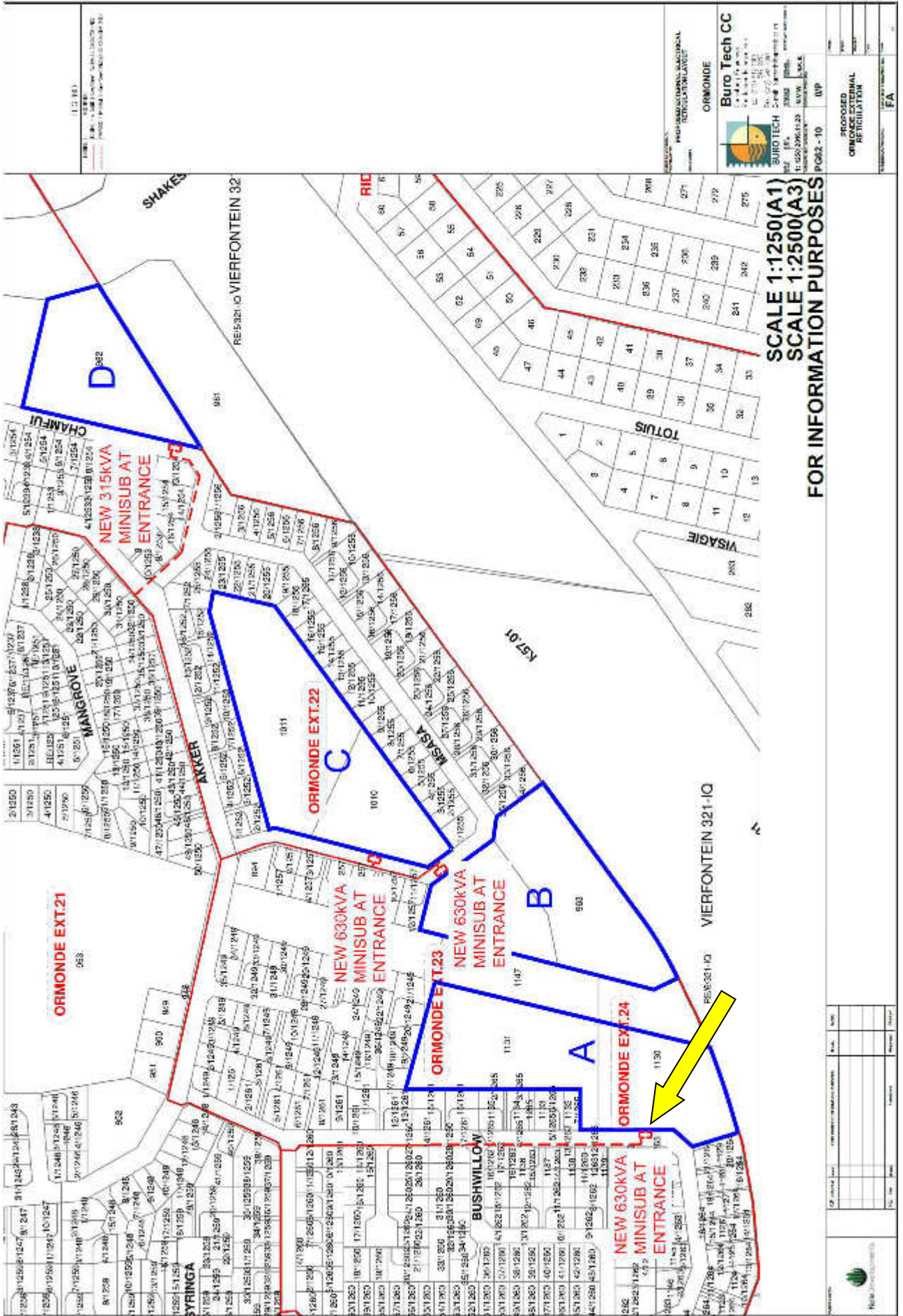
I would appreciate it if we can have this information before the end of this week?  
Alternatively please advise the soonest you will be able to supply us with this information.

With thanks.

Best Regards,  
**Ralph Gordon** (*Pr Techni Eng*)

# **ANNEXURE C**

## **Proposed Minisub Position**





Buro Tech Consulting Engineers CC  
141 Main Street Heatherdale  
PO Box 59887 Karenpark 0118

Tel: (012) 542 1010  
(012) 753 5798  
(012) 754 1473

Int: (+27 12) 542 1010

Fax: (086 516 4024

E-mail: [burotech@burotech.co.za](mailto:burotech@burotech.co.za)

**To: KALE DEVELOPMENTS**

**Tel No:** 012 687 1000

**For Attention:** Mr Derek Wheals

**Email:** [derek@tri-star.co.za](mailto:derek@tri-star.co.za)

**Date:** 29 November 2016

**From:** Nico van Wyk

**Fax No:** 012 542 2097

**Cell No:** 082 600 8328

**Email:** [nicovw@burotech.co.za](mailto:nicovw@burotech.co.za)

**Page:** 1 of 10

**Ref:** PG 62 / DSN.B

**RE: ERVEN 962 & 963 ORMONDE SOUTH EXT 22  
EXTERNAL ELECTRICAL RETICULATION  
ENGINEERING REPORT ON ELECTRICAL SERVICES**

Dear Derek,

Enclosed please find for your information and attention the services report for the electrical services as requested.

Kindly contact us should any additional information be required.

Yours Faithfully

**Nico van Wyk** (Pr. Eng)

Cc: Jacques Pienaar  
Voight Uys  
Lindy Ras  
Werner Slabbert

Matla Projects (Pty) Ltd  
Kale Developments  
Kale Developments  
Urban Innovate

[jacques@pinard.co.za](mailto:jacques@pinard.co.za)  
[Voight@kaledevelopments.co.za](mailto:Voight@kaledevelopments.co.za)  
[Lindy@kaledevelopments.co.za](mailto:Lindy@kaledevelopments.co.za)  
[werner@urbaninnovate.co.za](mailto:werner@urbaninnovate.co.za)

Enclosed: Report & Annexures

Members: NJS van Wyk Pr Eng B Sc (Ing) (Elek) MSAACE MSAIEE MIESSA  
CK 92/05979/23



# ERVEN 962 & 963 ORMONDE SOUTH EXT 22 EXTERNAL ELECTRICAL RETICULATION ENGINEERING REPORT ON ELECTRICAL SERVICES

Date: 2016 November 29

## 1. Introduction

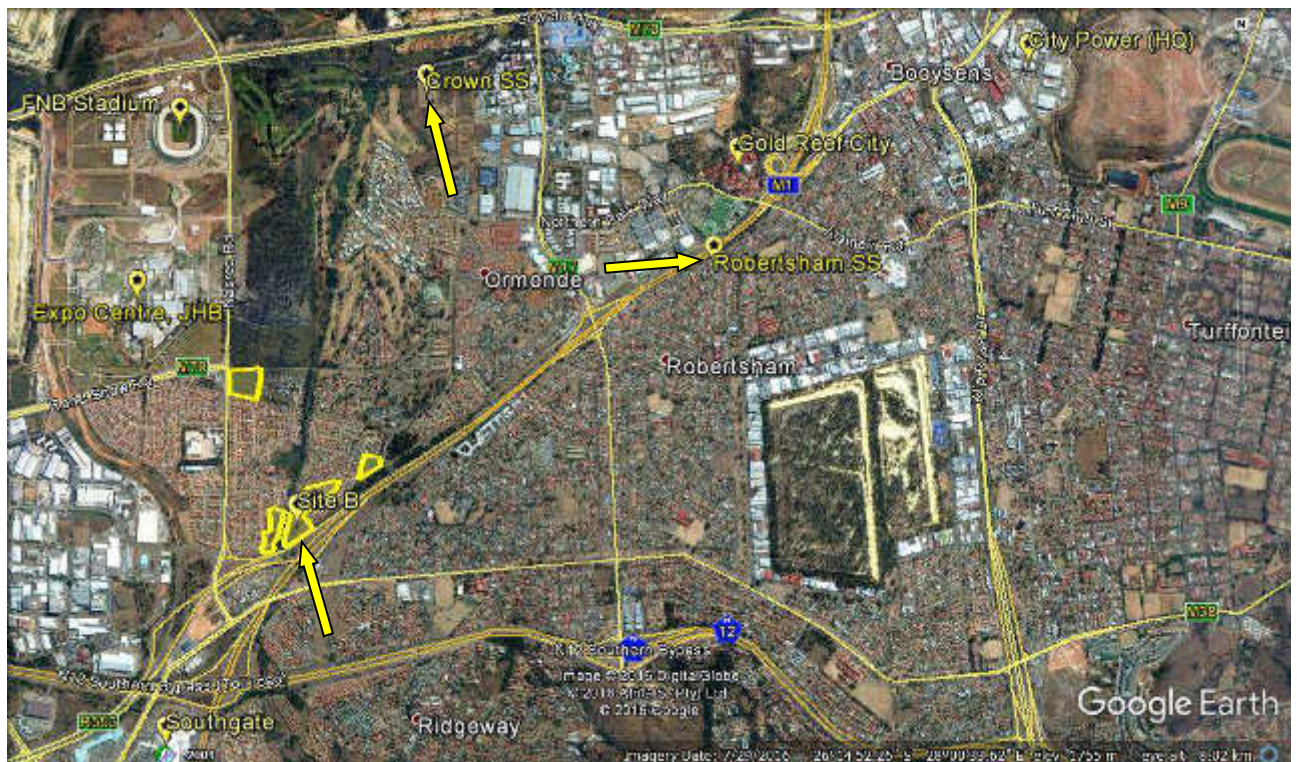
Buro Tech Consulting Engineers was appointed on 23 September 2016 as the Electrical Consulting Engineers for the proposed development / rezoning of Erven 962 & 963 Ormonde South Ext 22.

This report is based on input information received from City Power engineering department at various meetings and specifically on 21 November 2016.  
(refer to Annexures A & B of this report).

## 2. Brief on Existing Networks

The nearest distribution substations are the Crown Substation, located  $\pm 2$  km north of the proposed development, and Robertsham Substation, located  $\pm 2.2$  km North-East of the development.

Refer Google Earth overview below with **Site B**  
(referring to Erven 962 & 963, Ormonde Ext 22).



City Power indicated that although sufficient spare capacity is available from the Crown Substation, the existing cable networks to Ormonde South are being operated at full capacity  
(no spare feeder cable capacity available).  
(refer Annexure B for feedback)

Preliminary investigations indicated that spare capacity can be made available on the existing cable networks to Ormonde South, by rearranging the cable distribution configurations and shifting loads from the Ormonde South feeder cables to other cable networks. Some network strengthen may also be required, but City Power will only be able to define the full scope of the works required once they concluded a detailed master plan study.



### 3. Electrical Connection

The point of common coupling will be on the 11kV cable network (*on street front*) with the connection from City Power via a minisub at 400V.

In terms of the City Power processes, the master plan design process will have to be presented to City Power for both technical and financial viability and approval.

An application was submitted to City Power for 616kVA.  
(refer Annexure A for application, as well as paragraph 4.2 of this report for detailed calculations)

The minisub will be placed close the entrance to the site.  
(refer Annexure C, "Proposed Minisub Positions")

### 4. Estimated Electricity Demand

**Load Estimate = Area × Density × Load/Unit**

#### 4.1 Existing Rights:

Area = 1.6 Hectare  
Density = 25 Units/Ha  
Load/Unit = 5.0 kVA[ADMD]  
= 1.6 Ha × 25 × 5.0 kVA[ADMD]

**Total Electrical Load = 200 kVA** (*existing rights*)

#### 4.2 Proposed Rights:

The proposed rezoning comprise of High Density Residential development on Erven 962 and 963 of Ormonde Ext 22.

Area = 1.6 Hectare  
Density = 110 Units/Ha  
Load/Unit = 3.5kVA[ADMD]  
Number of Units = 1.6 Ha × 110 = 176 Units  
Load Required = 176 Units × 3.5kVA[ADMD]

**Total Estimated Electrical Load Required = 616 kVA**

Servitude of restraint (restrictive condition of title):

City Power indicated that a servitude of restraint may be placed on the development, limiting the total supply to the site at **630kVA**

This equates to 3.58kVA[ADMD] per dwelling unit.

The additional extra capacity required is 430kVA (*630kVA less 200kVA*) for which Network Capacity Fees (*bulk services contributions*) will be payable (*refer to paragraph 4.3 for more detail*).

### 4.3 Financial Implications

Costs payable are calculated on the basis of the published tariffs (refer table below):

LV & LPU CUSTOMER'S ELECTRICAL SERVICES CONNECTIONS FEES, FOR THE PERIOD JULY 2016- JUNE 2017						
These Service Connection Fees Are For Proclaimed Townships Only						
SPLV & LPU Service Connection Less than 250 kVA @ 400Vac.						
Note:#1_ The Maximum Network capacity fee or the lesser of the difference of the Applied capacity less the entitled (Zoned) capacity at a rate of R 2 310 000/kVA is payable to cover the Capital cost of the additional Spare Capacity Applied for						
4a	Size	Enquiry fees	Connection fee	Note:#1_ Maximum Network Capacity fee	Maximum Total Service Connection fee	Non-Refundable Detail design fee
	70 kVA	No Charge	R 197 500.00	R 161 700.00	R 359 200.00	R 30,000.00
	105kVA	No Charge	R 250 000.00	R 242 550.00	R 492 550.00	R 30,000.00
	140kVA	No Charge	R 295 000.00	R 323 400.00	R 618 400.00	R 30,000.00
	175kVA	No Charge	R 340 000.00	R 404 250.00	R 744 250.00	R 30,000.00
	210kVA	No Charge	R 410 000.00	R 485 100.00	R 895 100.00	R 30,000.00
	250kVA	No Charge	R 450 000.00	R 577 500.00	R 1 027 500.00	R 30,000.00
SPLV & LPU Service Connection between 315 and 1000 kVA @ 400Vac.						
4b	Size	Enquiry fees	Connection fee	Note:#1_ Maximum Network Capacity fee	Total Service Connection fee	Non-Refundable Detail design fee
	315kVA	No Charge	R 490 000.00	R 727 650.00	R 1 217 650.00	R 30,000.00
	500kVA	No Charge	R 620 000.00	R 1 155 000.00	R 1 775 000.00	R 30,000.00
	630kVA	No Charge	R 745 500.00	R 1 455 300.00	R 2 200 800.00	R 30,000.00
	1000kVA	No Charge	R 1 100 000.00	R 2 310 000.00	R 3 410 000.00	R 30,000.00

Working on the premise that City Power will limit the supply to the site to **630kVA**, the total costs payable can be calculated as follows:

Connection Fee	=	R 745 500.00	
Network Capacity Fee	=	R 1 455 300.00	
less Credits due	=	<u>(R 462 000.00)</u>	(200kVA × R2310/kVA)
<b>Total Costs Payable</b>	=	<b><u>R 1 738 800.00</u></b>	

All amounts exclude VAT

City Power still need to formalize the cost above.

### 5. Conclusion

The development will be fed from the Crown substation which has adequate capacity.

No immediate capacity is available on the existing cable network to Ormonde South. City Power will conduct a master plan study detailing the extent of the works required to make capacity available on the Ormonde 11kV feeder/s.

The work will be funded via the bulk contributions paid by the developer.

----ooo0ooo----

### Annexures

- Annexure A: Application submitted & returned with “700” number detail
- Annexure B: City Power Confirmation: 2.2MVA supplied from Crown Substation
- Annexure C: Proposed Minisub Position

**ANNEXURE A**  
**Application submitted & returned with**  
**“700” number detail**

Joburg



APPLICATION FOR ELECTRICITY SUPPLY

\*CUSTOMERS TO APPLY AT RELEVANT AREA OFFICE\*

NB: READ THE BACK OF THIS FORM PRIOR TO COMPLETING THE SECTION

APPLICANT DETAILS

ACCOUNT NUMBER: 505779345 DATE: 20/10/2012

STAND NUMBER: 962 TOWNSHIP: ORMONDE

STREET ADDRESS: 15 Msaasi Crescent

TYPE OF BUSINESS (e.g. FLATS, HOUSE, FACTORY): Flats

APPLICATION FOR (tick relevant box)

CONNECTIONS

- Single Phase Pre Paid Conversion
- Single Phase Pre Paid New Connection
- Three Phase Pre Paid Conversion
- Three Phase Pre Paid New Connection
- Upgrade To Three Phase Pre Paid
- Downgrade To Single Phase Pre Paid
- Resellers Tariff
- Smart Meter Pre Paid Conversion

- TARIFF
- Domestic
- Business
- Domestic
- Off Peak

- INCREASE
- Existing
- Required

OTHER (PLEASE SPECIFY)/SMART METER NUMBER: Bulk Supply

NAME OF PROPERTY OWNER: Maria Poojeda (PTY)

TELEPHONE NUMBER: 011 511 3901

SIGNATURE: [Signature]

NAME OF ELECTRICAL CONTRACTOR: Buro Tech Consulting

TELEPHONE NUMBER: 012 542 1010 REGISTRATION NO: 209

SIGNATURE: [Signature]

FOR OFFICE USE ONLY

NO NUMBER	6000727234
PREMISE	459475
CONNECTION OBJECT	1331908
NOTIFICATION NUMBER	70020073143

**ANNEXURE B**  
**City Power confirmation:**  
**2.2MVA supplied from Crown Substation**

**From:** Mike Radebe <mradebe@citypower.co.za>  
**Sent:** 31 August 2016 09:49 AM  
**To:** Ralph Gordon  
**Cc:** Tshililo Mudzudzanyi; Nico van Wyk; Lungi Mzizi; Tony Whittaker  
**Subject:** RE: ORMONDE SOUTH: Inputs Requested - 2016 07 27

**Sensitivity:** Confidential

Good day

The 2,2 MVA can be made available from Crown Substation, the costs will be based on the changes in the network which I still have to discuss and get approvals for.

Kind Regards,

M. Radebe  
Engineer Infrastructure Planning:  
Engineering Services

City Power Johannesburg  
40 Heronmere Road, Reuven, Johannesburg  
Tel: +27 (0) 11 490 7418  
Cell: +27 (0) 83 704 9343  
E-mail: [mradebe@citypower.co.za](mailto:mradebe@citypower.co.za)  
Web: [www.citypower.co.za](http://www.citypower.co.za)

---

**From:** Ralph Gordon [mailto:[Ralphg@burotech.co.za](mailto:Ralphg@burotech.co.za)]  
**Sent:** Wednesday, July 27, 2016 3:15 PM  
**To:** Mike Radebe  
**Cc:** Tshililo Mudzudzanyi; Nico van Wyk; Lungi Mzizi; Tony Whittaker  
**Subject:** ORMONDE SOUTH: Inputs Requested - 2016 07 27  
**Sensitivity:** Confidential

Good day Mike,

Further to our meeting of today, and in summary of what was discussed:  
We require a total of 2 200kVA (*as per breakdown attached*)

We request urgent feedback on the following:

- \* City Power solution & cost (as may be applicable) to make this capacity available.
- \* Timelines (when will it be available)?

I would appreciate it if we can have this information before the end of this week?  
Alternatively please advise the soonest you will be able to supply us with this information.

With thanks.

Best Regards,  
**Ralph Gordon** (*Pr Techni Eng*)

# **ANNEXURE C**

## **Proposed Minisub Position**







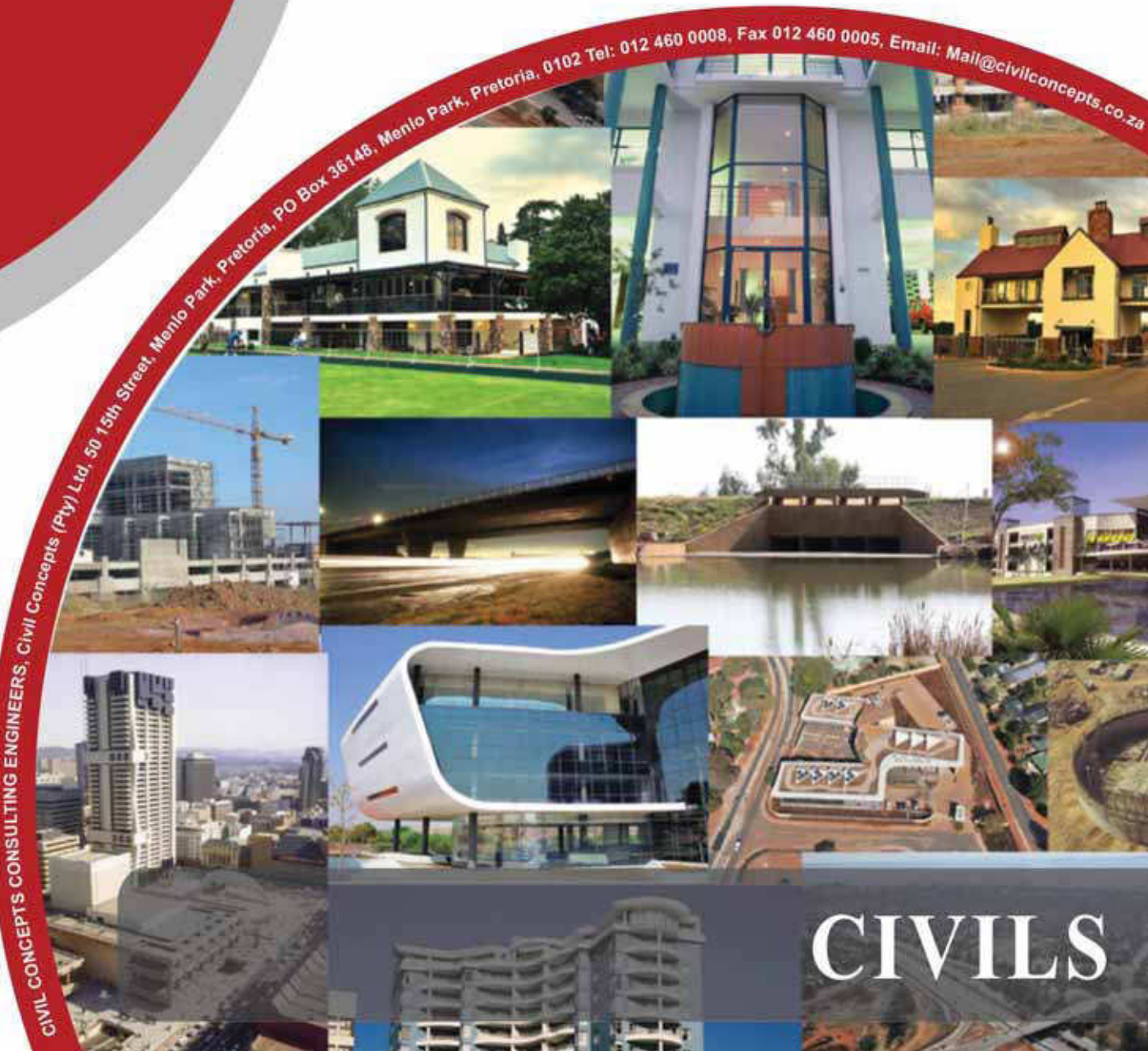
# Appendix G5

## Services Report



MATLA PROJECTS (PTY) LTD  
C2284\_OSR\_ORMA  
OUTLINE SCHEME REPORT  
ERVEN 1130 & 1131, ORMONDE EXT. 24

DECEMBER 2016



CIVILS



**BULK SERVICES REPORT  
ERVEN 1130 & 1131, ORMONDE EXT. 24**

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## **1. INTRODUCTION**

Civil Concepts (Pty) Ltd was appointed for the planning and design of the civil engineering infrastructure for the proposed township Ormonde South - Site A, situated on Erf 1130 and 1131, Ext. 24 .

The report was prepared to inform the relevant departments of the intended development's influence on the water and sanitation network, proposed connection points, bulk upgrades, guarantees and maintenance guarantees. Stormwater management, access to the site and external road upgrades is also addressed and an extract from the traffic impact assessment is included.

This report should be read in conjunction with reports C2284\_OSR\_ORMB, C2284\_OSR\_ORMC and C2284\_OSR\_ORMD as compiled by ourselves.

## **2. GENERAL INFORMATION**

### **2.1 Location of the Area Concerned**

The property is bordered by:

- Milkwood Road to the West,
- Bloubos Spruit to the East,
- M1 freeway to the South, and
- Ormonde Ext. 21 & Ext. 23 to the North.

Access to the site is off Milkwood Road.

Refer the attached locality plan in **Annexure A**.

### **2.2 Proposed Rights**

The site is currently zoned Residential 3 in terms of the Johannesburg Town Planning Scheme, 1979, and is vacant. The current zoning provides for a FAR of 0.4 with a coverage of 30% but limits the height zone to 3 storeys.

The erven are to remain zoned as Residential 3 with increased rights, subject to the following conditions:

Primary rights:	Dwelling units and residential buildings.
Height:	4 storeys
Coverage:	20%
FAR:	0.66
Density:	112.94 units/ha
Parking:	As per Scheme
Building lines:	In accordance with the Site Development Plan

### **2.3 Owner and Developer Information**

Matla Projects (Pty) Ltd  
Reg No : 1997/014217/07  
P O Box 14152  
Bredell  
1623

Physical Address:  
470 Killarney Road  
Bredell  
1623

Tel: 011 571 3901  
Mail: [jacques@pinard.co.za](mailto:jacques@pinard.co.za)

Responsible person: Mr. Jacques Pienaar

#### Erf 1130:

Title Deed : T46456/2013  
Registration Date : 2013/12/05

#### Erf 1131:

Title Deed : T27313/2009  
Registration Date : 2009/08/28

Refer the attached Title Deeds in **Annexure B**.

### **2.4 Consulting Engineer**

Name: Civil Concepts (Pty) Ltd

Postal Address:

PO Box 36148  
MENLO PARK  
0102

Contact person : Kobus van Jaarsveld  
Telephone : (012) 460 0008  
Fax Number : (012) 460 0005  
E-mail : [kobus@civilconcepts.co.za](mailto:kobus@civilconcepts.co.za)

### **2.5 Geo-technical**

A geo-technical report was done by Johann van der Merwe (Pty) Ltd for each erf and is included under **Annexure C** of this report.

#### Erf 1130

The site is split in two zones.

Zone "A" has a moderate horizon (0.5 m to 1.3 m thick) of loose, colluvial silty sand and course pebble marker gravels over very dense residual quartzite. Colluvium is potentially moderately collapsible and compressible.

Zone "B" has prominent horizon (2.0 m to > 2.5 m thick) of loose to very loose colluvial silty sand and course ferricrete gravels extending to more than 2.0 m and presumably underlain by dense to very dense residual quartzite at depth. Colluvium is potentially moderately collapsible and compressible. Shallow ground water conditions prevail.

Erf 1131

The site has loose to very loose colluvial silty sand and coarse pebble marker gravels abundant coarse, hard nodular ferricrete and scattered quartz gravels, containing coarse platy quartzite fragments. Colluvium is potentially moderately collapsible and compressible.

**2.6 Professional Team**

The professional team appointed for the development is:

Description	Company	Contact Person
1. Town Planner	Urban Innovate Consulting CC	Mr. Werner Slabbert
2. Civil Engineers	Civil Concepts	Mr. Kobus van Jaarsveld

**3. WATER RETICULATION**

**3.1 Existing Water**

There is an existing 110 mm ø uPVC water pipe running along Milkwood Road to the west of the development to which it will connect, refer to Plan C2284-SRA-004 in **Annexure D**.

**3.2 Proposed upgrading of existing water network**

According to the master planning report “**JW 6088, Network Analysis: Aeroton, Noordgesig and Nasrec Direct Water Feed Districts, April 2008**” done by GLS Consulting Engineers no upgrades have been earmarked for the area, and Bulk Contributions are payable directly to City of Joburg by the developer.

**3.3 Design Standards**

The water network will be constructed in accordance with the requirements of the Johannesburg Water “Guidelines and Standards for the design and maintenance of water and sanitation services”.

**3.4 Water Demand**

The water demand is calculated as follows:

Zoning	ERVEN 1130 AND 1131, ORMONDE EXTENSION 24 - SITE A		
	Area	Average Annual Daily Demand (AADD)	Water Demand (kℓ)
Zoning: Residential III	13,860 m <sup>2</sup>	2.7 kℓ/day/500m <sup>2</sup>	74.84
<b>AVERAGE DAILY DEMAND</b>			<b>74.84 kℓ/d</b>
<b>PEAK DEMAND (Excl. Fire Flow, Peak Factor = 4)</b>			<b>3.47 ℓ/s</b>
<b>FIRE FLOW (As per Table 7 of Standards)</b>			<b>15 ℓ/s</b>
<b>TOTAL PEAK DOMESTIC AND FIRE FLOW</b>			<b>18.47 ℓ/s</b>

Future water demand	=	74.84 kℓ /day
Existing water demand	=	45.46 kℓ / day
Increased water demand	=	29.38 kℓ / day
Contribution rate (Excl. VAT)	=	R 4,285 / kℓ
Estimated Contribution	=	R 125,893.30 (excluding VAT)

**4. SEWER RETICULATION**

**4.1 Existing Sewer**

There is an existing 300 mm ø clay pipe running along the eastern boundary of the erven, the development will connect to this network, refer to Plan C2284-SRA-003 in **Annexure E**.

**4.2 Proposed upgrading of existing sewer network**

According to the master planning report “**Master Plan for The Sewer System in the Klipspruit Drainage Basin, October 2007**” done by GLS Consulting Engineers (formally known as C.E.S.), no upgrades are required by the developer. Bulk Contributions will be paid to the City of Joburg by the developer.

**4.3 Design Standards**

The sewer network will be designed and constructed in accordance with the requirements of the Johannesburg Water “Guidelines and Standards for the design and maintenance of water and sanitation services”.

**4.4 Sewage Flow**

The sewage outflow is calculated as follows:

Zoning	ERVEN 1130 AND 1131, ORMONDE EXTENSION 24 - SITE A		
	Area	Average Annual Daily Flow (AADF)	Sewerage Flow (kℓ)
Zoning: Residential III	13,860 m <sup>2</sup>	2.295 kℓ/day/500m <sup>2</sup>	63.62
<b>AVERAGE DAILY FLOW</b>			<b>63.62 kℓ/d</b>
<b>OTHER EXTRANEIOUS FLOWS (15% OF TOTAL AADF)</b>			<b>9.54 kℓ/d</b>
<b>TOTAL AVERAGE DAILY FLOW</b>			<b>73.16 kℓ/d</b>
<b>PEAK DAILY WET WEATHER FLOW (Peak Factor 2.3)</b>			<b>1.95 ℓ/s</b>

Future sewer demand	=	73.16 kℓ /day
Existing sewer demand	=	44.44 kℓ / day
Increased sewer demand	=	28.72 kℓ / day
Contribution rate (Excl. VAT)	=	R 8,090 / kℓ
Estimated Contribution	=	R 232,344.80 (excluding VAT)

**5. STORMWATER RETICULATION**

**5.1 General**

Included under **Annexure F** of this document is the Stormwater Management Report for the proposed development.

There is no formal municipal stormwater infrastructure draining the property. The site slopes generally in a north eastern direction at an average slope of 6.9%. The runoff from the property currently drains overland in an eastern direction towards the Bloubos Spruit.

The internal stormwater drainage of the site will be done mainly with grass swales. The remainder of the site will drain towards a pipe system, which will outlet to an Attenuation Structure to attenuate the 1:5 and 1:25 year storm runoff from the site. From here it will be released towards the Bloubos Spruit, outside of the 50 and 100 year floodlines.

**5.2 Hydrology**

Included in **Annexure F**, are our calculations of the stormwater runoffs for various recurrence intervals, and percentage imperiousness as well as the sizing of the retention pond.

Hydrological data used in the above calculations to design the storm water drainage system for the development is shown in Table 5.2 below.

**Table 5.2: Hydrological Data**

Hydrological Data	
a) Flood return period	1:5 years for storm water pipe systems 1:25 years for the combined storm water pipe and road systems
b) Average yearly rainfall	750 mm
c) Minimum time of concentration and run-off co-efficient according to: JRA Stormwater Management Policy and Guidelines.	
d) Design method	HydroCube Design Software Ver. HQ3.005

The stormwater runoffs for the 1:5 and 1:25 year recurrence intervals for pre and post development are:

	PRE DEVELOPMENT RUNOFF		POST DEVELOPMENT RUNOFF ( <b>Attenuated</b> )	
	Q5	Q25	Q5	Q25
D1-1 + D1-2	0.59 m <sup>3</sup> /s	1.137 m <sup>3</sup>	R1-1 + R2-1 + R2-17 + D1-19 + D1-20 + D1-21 0.468 m <sup>3</sup> /s	0.93 m <sup>3</sup>



**5.3 Design Standards**

The standards used to design the storm water drainage system are shown in Table 5.3 below.

**Table 5.3: Storm Water Design Standards**

Design Element	Specification
a) Minimum pipe size	450 mm diameter
b) Pipe Type	Concrete pipes of Class 100D with ogee joints to SABS677
c) Minimum pipe gradient	1,0%
d) Storm water details	JRA Standard Detail Drawings

**5.4 Stormwater Attenuation**

According to the JRA’s stormwater policy, development sites larger than 8 500m<sup>2</sup> require stormwater attenuation facilities on site. This township is 2.1044 ha in extent and therefore stormwater attenuation is required.

Included in **Annexure F** are our calculations of the size of the attenuation pond, based on both a 5 and 25 year recurrence interval. We propose a pond with a volume of 740 m<sup>3</sup>, which drains both the 1:5 year flood and the 1:25 year flood via a 450mm Ø outlet pipe. The stormwater will be drained towards the Bloubos Spruit, outside of the 50 and 100 year floodlines.

Refer to Plan C2284-SRA-002 in **Annexure G** for the stormwater outlet and attenuation structure position.

**6. ROADS**

**6.1 General**

Traffic Impact Studies were conducted by Civil Concepts for Ormonde Ext. 22 and 24. The TIS for this development it is included under **Annexure H** of this report and must be read in conjunction with reports C2284/B01TIA, C2284/C01TIA and C2284/D01TIA also submitted by Civil Concepts. Item 9 and Annexure G of the TIA gives detail of the road upgrades required by the township Ormonde Ext. 24. Below is a summary of the incremental road upgrades required at each analyzed intersection. The upgrades required are for all four townships, and a report will be submitted for each one.

The upgrades will be done as each development commences, and each development will contribute their bulk contributions to the upgrades as listed below:

**Akker Avenue / Alwen Road / Shakespeare Avenue**

- Western approach of Akker Avenue: Provide an exclusive right turn lane of 65 m
- Western approach of Akker Avenue: The existing right-and-left turn lane must be changed to a left turn lane.
- Western approach of Akker Avenue: Road markings to be changed
- Northern approach of Alwen Road: The existing right turn lane must be increased from 25 m to 35 m.
- Southern approach of Shakespeare Avenue: Provide an exclusive left turn lane of 25 m
- Southern approach of Shakespeare Avenue: The shared through-and-left lane must be changed to a through lane
- Southern approach of Shakespeare Avenue: Road markings to be changed

The cost of the upgrades is R1,731,650 (excluding VAT and Professional Fees).

Dorado Avenue / Alwen Road

- Eastern approach of Alwen Road: It is proposed that the shared right-and-left turn lane must be changed to a left turn lane, and an exclusive right turn lane must be provided
- Eastern approach of Alwen Road: Road markings to be changed
- Southern approach of Alwen Road: The shared through-and-right lane must be changed to a through lane, and an exclusive right turn lane must be provided
- Southern approach of Alwen Road : Road markings to be changed
- It is proposed that this junction be signalized

The cost of the upgrades is R1,942,350 (excluding VAT and Professional Fees).

Akker Road / Chamfuti Crescent North

- It is proposed that the existing junction be converted to a mini-circle

The cost of the upgrades is R35,000 (excluding VAT and Professional Fees).

Akker Avenue / Msasa Crescent

- It is proposed that the existing junction be converted to a mini-circle

The cost of the upgrades is R27,000 (excluding VAT and Professional Fees).

**The total upgrade cost for Roads is ± R3,736,000**

Bulk Contributions for Roads for all four townships are shown below:

**CONTRIBUTIONS PAYABLE PER DEVELOPMENT**

<b>Development</b>	<b>Units</b>	<b>Trips</b>	<b>Contribution (%)</b>	<b>Contribution/ Trip</b>	<b>Total Contribution</b>
Site B – Erven 962 and 963, Ormonde Extension 22	176	150	27.2	R6 780	R1 017 060.00
Site C – Erven 1010 and 1011, Ormonde Extension 22	192	163	29.6	R6 780	R1 105 205.00
Site D – Erf 982, Ormonde Extension 22	88	75	13.7	R6 780	R508 530.00
<b>Site A - Erven 1130 and 1131, Ormonde Extension 24</b>	<b>192</b>	<b>163</b>	<b>29.6</b>	<b>R6 780</b>	<b>R1 105 205.00</b>

Site D – Erf 982, Ormonde Extension 22 will not contribute towards the road upgrading for the Akker Avenue / Msasa Crescent junction since it will generate close to 0% trips on this junction, however it will have to contribute towards all the other three (3) junctions on the north.

Where upgrades are due to existing background problems, bulk contributions will be used against the cost of the upgrades, the remainder will be payable to City of Johannesburg.

**6.2 Upgrades to be completed by Erven 1130 and 1131, Ormonde Ext 24**

Although all four of the developments will pay towards the upgrades of the roads, certain portions will only be done once that development commences.

This development will be responsible for the following:

Dorado Avenue / Alwen Road

- Southern approach of Alwen Road: The shared through-and-right lane must be changed to a through lane, and an exclusive right turn lane must be provided
- Southern approach of Alwen Road : Road markings to be changed
- Signalization of the junction.

Refer to **Annexure J** for upgrades to be completed by this development, with a total cost of R2,165,933 including contingencies, professional fees and VAT. The cost can be offset against bulk contributions, as the upgrades are due to background problems.

**6.3 Access**

Refer to the Traffic Impact Study included in **Annexure H** of this report.

The access to the proposed development site will be provided off Milkwood Road as a three legged priority controlled junction. It will be approximately 340 m south of the Akker Avenue / Milkwood Road junction. Refer to Plan C2284-SRA-001 in **Annexure I** for the Access Layout.

The access arrangement complies with TRH 26 South African Road Classification and Access Management Manual requirements, dated August 2012, Version 1.0.

**6.4 Pavement Design**

The proposed pavement design, based on anticipated traffic volumes and ground conditions is:

<b>Wearing course</b>	30 mm thick continuously – graded medium grade asphalt – AC.
<b>Base</b>	125 mm thick graded crushed stone compacted to 88% of apparent density G1.
<b>Sub base</b>	150 mm thick stabilized natural gravel compacted to 95% of modified AASHTO density. Minimum UCS = 750 kPa at 97% MDD – C4 Colto Classification
<b>Selected sub grade</b>	150 mm thick natural gravel compacted to 95% MDD. Minimum CBR = 15 at 93% MDD – G7 (in-situ or imported)
<b>Fill (where required)</b>	150 mm thick layers compacted to 90% MDD. Minimum CBR = 20 at 93% MDD – G7
<b>Roadbed</b>	150 mm Rip and Compacted to 90% MDD

**6.5 Public Transport and Pedestrians**

There are paved pedestrian walkways at the Akker Avenue / Alwen Road / Shakespeare Avenue junction, along the western side of Alwen Road to the north and along the eastern side of Shakespeare Avenue to the south.

There is an existing pedestrian crossing line at the Akker Avenue / Milkwood Road junction. There are no other pedestrian facilities that exist at the junctions that form part of this study.

Taxis operate along Alwen Road.

There are no public transport facilities proposed.

**7. COST ESTIMATE**

The estimated costs of the proposed external services are:

<b>A</b>	<b>CONSTRUCTION COSTS</b>	
	<b>EXTERNAL SERVICES</b>	
<b>1</b>	<b>Water Services</b>	
1.1	Water Connection (110 mm Ø)	R 25,000
<b>2</b>	<b>Sewage Services</b>	
2.1	Sewer Connection (160 mm Ø)	R 20,000
<b>3</b>	<b>Stormwater Services</b>	
3.1	Stormwater Connection and attenuation pond	R 150 000
<b>4</b>	<b>Roads</b>	
4.1	Dorado Avenue / Alwen Road (For Development A)	R 2,165,933
<b>TOTAL (EXTERNAL SERVICES)</b>		<b>R 2,360,933</b>

The above cost includes for contingencies, professional fees and VAT.

**7.1 Bulk Contributions**

Bulk contributions are payable and we request that you please confirm the relevant amounts.

**8. GUARANTEES**

**8.1 Construction Guarantees**

Guarantees will be provided in line with the municipal policy if required.

**8.2 Maintenance Guarantees**

Maintenance guarantees to the amount of 5% of the construction cost will be provided for a 12 month period or as per the municipal policy.

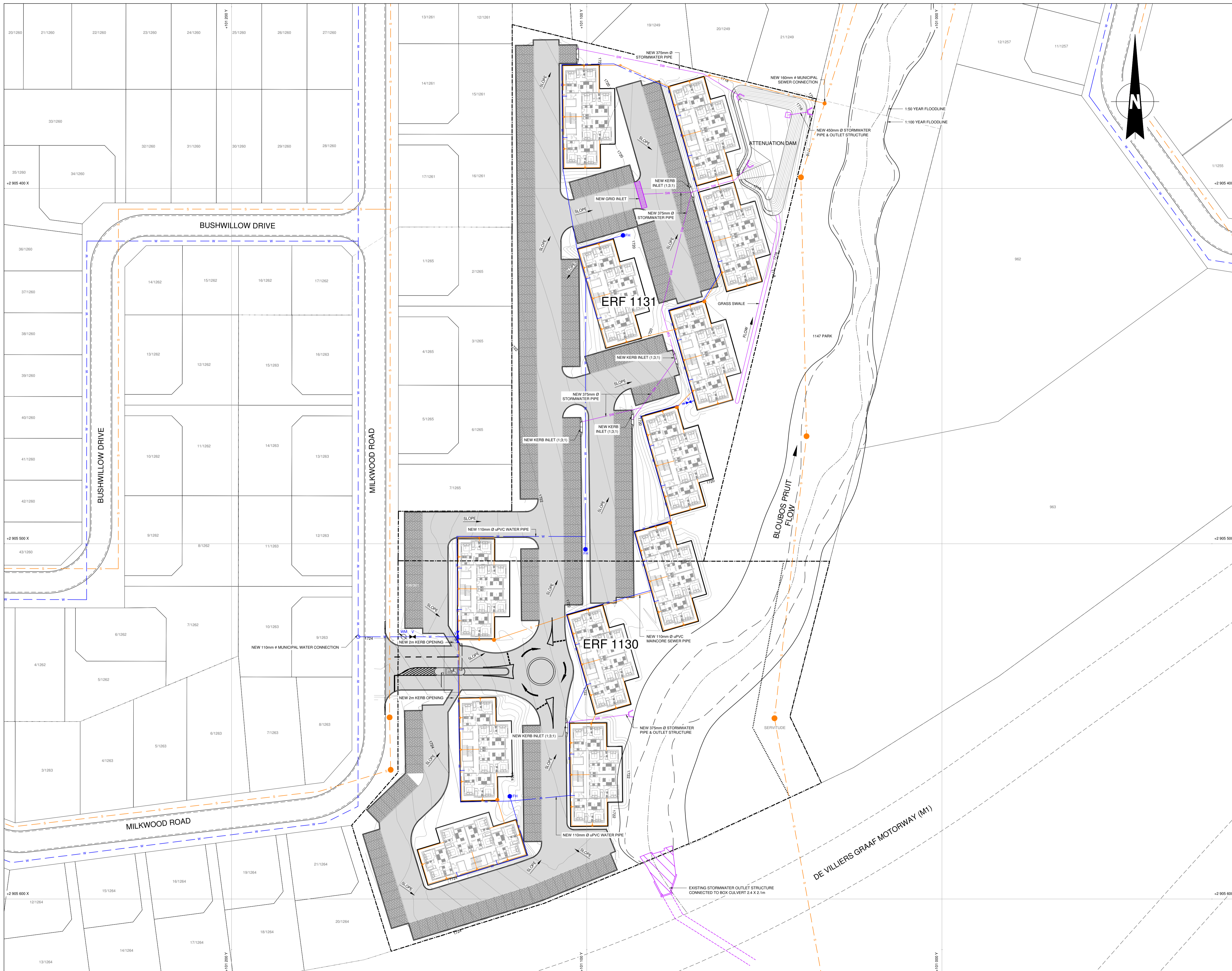
**9. CONCLUSION**

We believe this report contains all the necessary information and addresses all the relevant issues required by your department to approve this application. Should you be satisfied with the findings of the report we would like to request your approval of the proposed development.

Yours faithfully



**MJ VAN JAARSVELD (PrTechEng : 201170072)  
CIVIL CONCEPTS  
DECEMBER 2016**



**LEGEND:**

LEGEND :

- SEWER
- SEWER MANHOLE
- SEWER CLEANING EYE
- WATER
- WATER
- STORMWATER

FEB 2017	-	ISSUED FOR APPROVAL
DATE	NO	REVISION

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**Joburg**  
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**Civil Concepts (Pty) Ltd**  
 Consulting Civil & Structural Engineers  
 PO Box 36148, Menlo Park, 0102  
 Office: +27 12 460 0008  
 www.civilconcepts.co.za

PROJECT

**ORMONDE SOUTH**

**SITE A ON ERF 1130 & 1131**

DRAWING TITLE

**GENERAL SERVICES LAYOUT PLAN**

DRAWING NO **C2284-A-202-1**

REV. NO.					
SCALE	1:500	DESIGNED	A.OOSTHUIZEN		
		DRAWN	A.OOSTHUIZEN		
DATE	JANUARY 2017	CHECKED	L.ZIETSMAN		



MATLA PROJECTS (PTY) LTD  
C2284\_OSR\_ORMB  
OUTLINE SCHEME REPORT  
ERVEN 962 & 963, ORMONDE EXT. 22

DECEMBER 2016



CIVILS



**BULK SERVICES REPORT  
ERVEN 962 & 963, ORMONDE EXT. 22**

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## **1. INTRODUCTION**

Civil Concepts (Pty) Ltd was appointed for the planning and design of the civil engineering infrastructure for the proposed township Ormonde South - Site B, situated on Erf 962 and 963, Ext. 22.

The report was prepared to inform the relevant departments of the intended development's influence on the water and sanitation network, proposed connection points, bulk upgrades, guarantees and maintenance guarantees. Stormwater management, access to the site and external road upgrades is also addressed and an extract from the traffic impact assessment is included.

This report should be read in conjunction with reports C2284\_OSR\_ORMA, C2284\_OSR\_ORMC and C2284\_OSR\_ORMD as compiled by ourselves.

## **2. GENERAL INFORMATION**

### **2.1 Location of the Area Concerned**

The property is bordered by:

- Bloubos Spruit to the West,
- Msasa Crescent to the East,
- M1 freeway to the South, and
- Erf 1257, Ormonde Ext. 22 to the North.

Access to the site is off Msasa Crescent.

Refer the attached locality plan in **Annexure A**.

### **2.2 Proposed Rights**

The site is currently zoned Residential 3 in terms of the Johannesburg Town Planning Scheme, 1979, and is vacant. The current zoning provides for a FAR of 0.4 with a coverage of 30% but limits the height zone to 3 storeys.

The erven are to remain zoned as Residential 3 with increased rights, subject to the following conditions:

Primary rights:	Dwelling units and residential buildings.
Height:	4 storeys
Coverage:	30%
FAR:	0.7
Density:	110 units/ha
Parking:	1.3 parking bays per unit
Building lines:	In accordance with the Site Development Plan

### **2.3 Owner and Developer Information**

Matla Projects (Pty) Ltd  
Reg No : 1997/014217/07  
P O Box 14152  
Bredell  
1623

Physical Address:  
470 Killarney Road  
Bredell  
1623

Tel: 011 571 3901  
Mail: [jacques@pinard.co.za](mailto:jacques@pinard.co.za)

Responsible person: Mr. Jacques Pienaar

#### Erf 962:

Title Deed : T27309/2009  
Registration Date : 2009/08/28

#### Erf 963:

Title Deed : T27310/2009  
Registration Date : 2009/08/28

Refer the attached Title Deeds in **Annexure B**.

### **2.4 Consulting Engineer**

Name: Civil Concepts (Pty) Ltd

Postal Address:

PO Box 36148  
MENLO PARK  
0102

Contact person : Kobus van Jaarsveld  
Telephone : (012) 460 0008  
Fax Number : (012) 460 0005  
E-mail : [kobus@civilconcepts.co.za](mailto:kobus@civilconcepts.co.za)

### **2.5 Geo-technical**

A geo-technical report was done by Johann van der Merwe (Pty) Ltd for each erf and is included under **Annexure C** of this report.

#### Erf 962

The soil profile for this site is as follows :-

0.0 – 0.7 m : Slightly moist, light brown becoming dark orange, very loose, voided, silty sand; colluvium.  
Horizon extends down to depths ranging from 0.3 m to 1.2 m below surface.

0.7 – 1.0 m : Abundant coarse, medium and fine, quartz gravels, clast supported in a matrix as above;  
pebble marker, overall consistency is loose.

1.0 - 1.2 m : Dry, light pink speckled white, very dense, intact, coarse sand; residual quartzite. Grades  
to light purple and light pink, moderately weathered, soft rock quartzite across portions.

### Erf 963

The site is split in two zones.

“Zone A” - occupies the higher lying central and northern portion of the site.

The soil profile for this site is as follows :-

0.0 - 0.6 m : Slightly moist, light brown becoming dark yellow, medium dense, voided, silty sand; colluvium. Horizon extends down to depths ranging from 0.3 m to 1.2 m below surface.

0.6 - 0.7 m : Abundant coarse, medium and fine, quartz and quartzite gravels, clast supported in a matrix as above; pebble marker. Overall consistency is dense.

0.7 - 1.1 m : Slightly moist, pink banded yellow, very dense, intact coarse sand; residual quartzite. Becomes reddish purple banded yellow and red, highly weathered, very soft rock quartzite from below 0.7 m across portions of the soil zone.

## **2.6 Professional Team**

The professional team appointed for the development is:

Description	Company	Contact Person
1. Town Planner	Urban Innovate Consulting CC	Mr. Werner Slabbert
2. Civil Engineers	Civil Concepts	Mr. Kobus van Jaarsveld

## **3. WATER RETICULATION**

### **3.1 Existing Water**

There is an existing 110 mm ø uPVC water pipe running along Msasa Crescent to the east of the development to which it will connect, refer to Plan C2284-SRB-004 in **Annexure D**.

### **3.2 Proposed upgrading of existing water network**

According to the master planning report “**JW 6088, Network Analysis: Aeroton, Noordgesig and Nasrec Direct Water Feed Districts, April 2008**” done by GLS Consulting Engineers no upgrades have been earmarked for the area, and Bulk Contributions are payable directly to City of Joburg by the developer.

### **3.3 Design Standards**

The water network will be constructed in accordance with the requirements of the Johannesburg Water “Guidelines and Standards for the design and maintenance of water and sanitation services”.

### 3.4 Water Demand

The water demand is calculated as follows:

Zoning	ERVEN 962 AND 963, ORMONDE EXTENSION 22 - SITE B		
	Area	Average Annual Daily Demand (AADD)	Water Demand (kℓ)
Zoning: Residential III	11,352 m <sup>2</sup>	2.7 kℓ/day/500m <sup>2</sup>	61.30
<b>AVERAGE DAILY DEMAND</b>			<b>61.30 kℓ/d</b>
<b>PEAK DEMAND (Excl. Fire Flow, Peak Factor = 4)</b>			<b>2.84 ℓ/s</b>
<b>FIRE FLOW (As per Table 7 of Standards)</b>			<b>15 ℓ/s</b>
<b>TOTAL PEAK DOMESTIC AND FIRE FLOW</b>			<b>17.84 ℓ/s</b>

Future water demand	=	61.30 kℓ /day
Existing water demand	=	35.03 kℓ / day
Increased water demand	=	26.27 kℓ / day
Contribution rate (Excl. VAT)	=	R 4,285 / kℓ
Estimated Contribution	=	R 112,566.95 (excluding VAT)

## 4. SEWER RETICULATION

### 4.1 Existing Sewer

There is an existing 150 mm ø clay pipe running along the western boundary of the erven, the development will connect to this network, refer to Plan C2284-SRB-003 in **Annexure E**.

### 4.2 Proposed upgrading of existing sewer network

According to the master planning report “**Master Plan for The Sewer System in the Klipspruit Drainage Basin, October 2007**” done by GLS Consulting Engineers (formally known as C.E.S.), no upgrades are required by the developer. Bulk Contributions will be paid to the City of Joburg by the developer.

### 4.3 Design Standards

The sewer network will be designed and constructed in accordance with the requirements of the Johannesburg Water “Guidelines and Standards for the design and maintenance of water and sanitation services”.

**4.4 Sewage Flow**

The sewage outflow is calculated as follows:

Zoning	ERVEN 962 AND 963, ORMONDE EXTENSION 22 - SITE B		
	Area	Average Annual Daily Flow (AADF)	Sewerage Flow (kℓ)
Zoning: Residential III	11,352 m <sup>2</sup>	2.295 kℓ/day/500m <sup>2</sup>	52.11
<b>AVERAGE DAILY FLOW</b>			<b>52.11 kℓ/d</b>
<b>OTHER EXTRANEIOUS FLOWS (15% OF TOTAL AADF)</b>			<b>7.82 kℓ/d</b>
<b>TOTAL AVERAGE DAILY FLOW</b>			<b>59.93 kℓ/d</b>
<b>PEAK DAILY WET WEATHER FLOW (Peak Factor 2.3)</b>			<b>1.60 ℓ/s</b>

Future sewer demand	=	59.93 kℓ /day
Existing sewer demand	=	29.77 kℓ / day
Increased sewer demand	=	30.16 kℓ / day
Contribution rate (Excl. VAT)	=	R 8,090 / kℓ
Estimated Contribution	=	R 243,994.40 (excluding VAT)

**5. STORMWATER RETICULATION**

**5.1 General**

Included under **Annexure F** of this document is the Stormwater Management Report for the proposed development.

There is no formal municipal stormwater infrastructure draining the property. The site slopes generally in a north western direction at an average slope of 6.8%. The runoff from the property currently drains overland in a western direction towards the Bloubos Spruit.

The internal stormwater drainage of the site will be done mainly with grass swales. The remainder of the site will drain towards a pipe system, which will outlet to an Attenuation Structure to attenuate the 1:5 and 1:25 year storm runoff from the site. From here it will be released towards the Bloubos Spruit, outside of the 50 and 100 year floodlines.

**5.2 Hydrology**

Our calculations of the stormwater runoffs for various recurrence intervals, and percentage imperiousness as well as the sizing of the retention pond are shown in the Stormwater Management Report.

Hydrological data used in the above calculations to design the storm water drainage system for the development is shown in Table 5.2 below.

**Table 5.2: Hydrological Data**

Hydrological Data	
a) Flood return period	1:5 years for storm water pipe systems
	1:25 years for the combined storm water pipe and road systems
b) Average yearly rainfall	750 mm
c) Minimum time of concentration and run-off co-efficient according to: JRA Stormwater Management Policy and Guidelines.	
d) Design method	HydroCube Design Software Ver. HQ3.005

The stormwater runoffs for the 1:5 and 1:25 year recurrence intervals for pre and post development are:

	PRE DEVELOPMENT RUNOFF		POST DEVELOPMENT RUNOFF (Attenuated)	
	Q5	Q25	Q5	Q25
D1-1 + D1-2	0.59 m <sup>3</sup> /s	1.137 m <sup>3</sup>	R1-1 + R2-1 + R2-17 + D1-19 + D1-20 + D1-21	0.468 m <sup>3</sup> /s  0.93 m <sup>3</sup>

### 5.3 Design Standards

The standards used to design the storm water drainage system are shown in Table 5.3 below.

**Table 5.3: Storm Water Design Standards**

Design Element	Specification
a) Minimum pipe size	450 mm diameter
b) Pipe Type	Concrete pipes of Class 100D with ogee joints to SABS677
c) Minimum pipe gradient	1,0%
d) Storm water details	JRA Standard Detail Drawings

### 5.4 Stormwater Attenuation

According to the JRA's stormwater policy, development sites larger than 8 500m<sup>2</sup> require stormwater attenuation facilities on site. This township is 1.62 ha in extent and therefore stormwater attenuation is required.

Our calculations of the size of the attenuation pond, based on both a 5 and 25 year recurrence interval are shown in the Stormwater Management Report in **Annexure F**. We propose a pond with a volume of 525 m<sup>3</sup>, which drains both the 1:5 year flood and the 1:25 year flood via a 450mm Ø outlet pipe. The stormwater will be drained towards the Bloubos Spruit, outside of the 50 and 100 year floodlines.

Refer to Plan C2284-SRB-002 in **Annexure G** for the stormwater outlet and attenuation structure position.

**6. ROADS**

**6.1 General**

Traffic Impact Studies were conducted by Civil Concepts for Ormonde Ext. 22 and 24. The TIS for this development it is included under **Annexure H** of this report and must be read in conjunction with reports C2284/A01TIA, C2284/C01TIA and C2284/D01TIA also submitted by Civil Concepts. Item 9 and Annexure G of the TIS gives detail of the road upgrades required by the township Erven 962 & 963, Ormonde Ext. 22. Below is a summary of the incremental road upgrades required at each analyzed intersection. The upgrades required are for all four townships, and a report will be submitted for each one.

The upgrades will be done as each development commences, and each development will contribute their bulk contributions to the upgrades as listed below:

**Akker Avenue / Alwen Road / Shakespeare Avenue**

- Western approach of Akker Avenue: Provide an exclusive right turn lane of 65 m
- Western approach of Akker Avenue: The existing right-and-left turn lane must be changed to a left turn lane.
- Western approach of Akker Avenue: Road markings to be changed
- Northern approach of Alwen Road: The existing right turn lane must be increased from 25 m to 35 m.
- Southern approach of Shakespeare Avenue: Provide an exclusive left turn lane of 25 m
- Southern approach of Shakespeare Avenue: The shared through-and-left lane must be changed to a through lane
- Southern approach of Shakespeare Avenue: Road markings to be changed

The cost of the upgrades is R1,731,650 (excluding VAT and Professional Fees).

**Dorado Avenue / Alwen Road**

- Eastern approach of Alwen Road: It is proposed that the shared right-and-left turn lane must be changed to a left turn lane, and an exclusive right turn lane must be provided
- Eastern approach of Alwen Road: Road markings to be changed
- Southern approach of Alwen Road: The shared through-and-right lane must be changed to a through lane, and an exclusive right turn lane must be provided
- Southern approach of Alwen Road : Road markings to be changed
- It is proposed that this junction be signalized

The cost of the upgrades is R1,942,350 (excluding VAT and Professional Fees).

**Akker Road / Chamfuti Crescent North**

- It is proposed that the existing junction be converted to a mini-circle

The cost of the upgrades is R35,000 (excluding VAT and Professional Fees).

**Akker Avenue / Msasa Crescent**

- It is proposed that the existing junction be converted to a mini-circle

The cost of the upgrades is R27,000 (excluding VAT and Professional Fees).

**The total upgrade cost for Roads is ± R3,736,000**

Contributions for Roads for all four townships are shown below:

**CONTRIBUTIONS PAYABLE PER DEVELOPMENT**

Development	Units	Trips	Contribution (%)	Contribution/Trip	Total Contribution
<b>Site B – Erven 962 and 963, Ormonde Extension 22</b>	<b>176</b>	<b>150</b>	<b>27.2</b>	<b>R6 780</b>	<b>R1 017 060.00</b>
Site C – Erven 1010 and 1011, Ormonde Extension 22	192	163	29.6	R6 780	R1 105 205.00
Site D – Erf 982, Ormonde Extension 22	88	75	13.7	R6 780	R508 530.00
Site A - Erven 1130 and 1131, Ormonde Extension 24	192	163	29.6	R6 780	R1 105 205.00

Site D – Erf 982, Ormonde Extension 22 will not contribute towards the road upgrading for the Akker Avenue / Msasa Crescent junction since it will generate close to 0% trips on this junction, however it will have to contribute towards all the other three (3) junctions on the north.

Where upgrades are due to existing background problems, bulk contributions will be used against the cost of the upgrades, the remainder will be payable to City of Johannesburg.

**6.2 Upgrades to be completed by Erven 962 & 963, Ormonde Ext 22**

Although all four of the developments will pay towards the upgrades of the roads, certain portions will only be done once that development commences.

This development will be responsible for the following:

Akker Avenue / Alwen Road / Shakespeare Avenue

- Southern approach of Shakespeare Avenue: Provide an exclusive left turn lane of 25 m
- Southern approach of Shakespeare Avenue: The shared through-and-left lane must be changed to a through lane
- Southern approach of Shakespeare Avenue: Road markings to be changed

Akker Road / Chamfuti Crescent North

- It is proposed that the existing junction be converted to a mini-circle

Refer to **Annexure J** for upgrades to be completed by this development, with a total cost of R1,284,598 including contingencies, professional fees and VAT.

The cost of Akker Avenue / Alwen Road / Shakespeare Avenue can be offset against bulk contributions, as the upgrades are due to background problems, this amounts to R1,237,874. The Akker Road / Chamfuti Crescent North upgrade with a cost of R46,724 is for the development's own cost.



**6.3 Access**

Refer to the Traffic Impact Study included in **Annexure H** of this report.

The access to the proposed development site will be provided off Msasa Crescent as a three-legged priority controlled junction approximately 180 m south of the Akker Avenue / Msasa Crescent junction. Refer to Plan C2284-SRB-001 in **Annexure I** for the Access Layout.

The access arrangement complies with TRH 26 South African Road Classification and Access Management Manual requirements, dated August 2012, Version 1.0.

**6.4 Pavement Design**

The proposed pavement design, based on anticipated traffic volumes and ground conditions is:

<b>Wearing course</b>	30 mm thick continuously – graded medium grade asphalt – AC.
<b>Base</b>	125 mm thick graded crushed stone compacted to 88% of apparent density G1.
<b>Sub base</b>	150 mm thick stabilized natural gravel compacted to 95% of modified AASHTO density. Minimum UCS = 750 kPa at 97% MDD – C4 Colto Classification
<b>Selected sub grade</b>	150 mm thick natural gravel compacted to 95% MDD. Minimum CBR = 15 at 93% MDD – G7 (in-situ or imported)
<b>Fill (where required)</b>	150 mm thick layers compacted to 90% MDD. Minimum CBR = 20 at 93% MDD – G7
<b>Roadbed</b>	150 mm Rip and Compacted to 90% MDD

**6.5 Public Transport and Pedestrians**

There are paved pedestrian walkways at the Akker Avenue / Alwen Road / Shakespeare Avenue junction, along the western side of Alwen Road to the north and along the eastern side of Shakespeare Avenue to the south.

There are no other pedestrian crossing facilities that exist at the junctions that form part of this study.

Taxis operate along Alwen Road.

There are no public transport facilities proposed.

**7. COST ESTIMATE**

The estimated costs of the proposed external services are:

<b>A</b>	<b>CONSTRUCTION COSTS</b>	
	<b>EXTERNAL SERVICES</b>	
<b>1</b>	<b>Water Services</b>	
1.1	Water Connection (110 mm Ø)	R 25,000
<b>2</b>	<b>Sewage Services</b>	
2.1	Sewer Connection (160 mm Ø)	R 20,000
<b>3</b>	<b>Stormwater Services</b>	
3.1	Stormwater Connection and attenuation pond	R 150 000
<b>4</b>	<b>Roads</b>	
4.1	Akker Avenue / Alwen Road / Shakespeare Avenue	R 1,237,874
4.2	Akker Avenue / Chamfuti Crescent North	R 46,724
<b>TOTAL (EXTERNAL SERVICES)</b>		<b>R 1,479,598</b>

The above cost includes for contingencies, professional fees and VAT.

**7.1 Bulk Contributions**

Bulk contributions are payable and we request that you please confirm the relevant amounts.

**8. GUARANTEES**

**8.1 Construction Guarantees**

Guarantees will be provided in line with the municipal policy if required.

**8.2 Maintenance Guarantees**

Maintenance guarantees to the amount of 5% of the construction cost will be provided for a 12 month period or as per the municipal policy.

**9. CONCLUSION**

We believe this report contains all the necessary information and addresses all the relevant issues required by your department to approve this application. Should you be satisfied with the findings of the report we would like to request your approval of the proposed development.

Yours faithfully



**MJ VAN JAARSVELD (PrTechEng : 201170072)  
CIVIL CONCEPTS  
DECEMBER 2016**



**LEGEND:**

LEGEND :

- SEWER
- SEWER MANHOLE
- SEWER CLEANING EYE
- WATER
- WATER
- STORMWATER

FEB 2017	-	ISSUED FOR APPROVAL
DATE	NO	REVISION

CLIENT



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PROJECT

**ORMONDE SOUTH**

**SITE B ON ERF 962 & 963**

DRAWING TITLE

**GENERAL SERVICES LAYOUT PLAN**

DRAWING NO **C2284-B-202-1**

REV. NO.					
SCALE	1:500	DESIGNED	A.OOSTHUIZEN		
		DRAWN	A.OOSTHUIZEN		
DATE	JANUARY 2017	CHECKED	L.ZIETSMAN		