

ADDENDUM A



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Directorate Water Abstraction and In-stream Use
Section: Instream Water Use
Sedibeng Building, 4th Floor, 185 Schoeman Street, Pretoria 0001

☎ (012) 336 6608	✉ P/Bag X313	✉ Mr PBI Ackerman
e-mail: ackermanp@dwa.gov.za	PRETORIA	☎ (012) 336 8217
	0001	📁 To allocate

Provincial Head: North West
P/ Bag x995
Pretoria
0001

Attention: Mr Thato Mjona

**AMENDMENT OF WATER USE LICENCE: SANRAL: PARTIAL
RECONSTRUCTION OF NATIONAL ROUTE R104 FROM SIMON VERMOOTEN
ROAD TO BRONKHORSTSPRUIT: COMMENTS IN TERMS OF SECTION 21 (C)
AND (I) WATER USES OF THE NATIONAL WATER ACT (ACT 36 OF 1998):**

The presentation by Bokamoso (Ms Lizelle Gregory) to Mr Pieter Ackerman on 24 August 2016 refers.

BACKGROUND:

1. The project inter alia entails a culvert extension at an existing culvert crossing.
2. A Water Use Licence has been issued.
3. A wetland delineation and assessment has been compiled for the culvert extension.
4. A wetland rehabilitation plan has been compiled additionally for the culvert extension.
5. An EMP has been compiled for the culvert extension.
6. Environmental authorisation has been obtained.
7. Design drawings were shown.

RECOMMENDATIONS

1. The floor of the culvert must be made rough to accommodate the movement of small animals.
2. Energy breakers downstream of the culvert must be made as natural as possible.

3. Mitigation measures of the aforementioned additional EMP and Wetland Rehabilitation Plan must be implemented.
4. A Plant Species Plan must be drawn up and implemented by a landscape architect, botanist or wetland specialist.

CONCLUSION

1. The existing WUL must be amended with the inclusion of the culvert extension and additional recommendations as conditions.

Yours faithfully



Mr Pieter Ackerman
Chief Landscape Architect: Instream Water Use

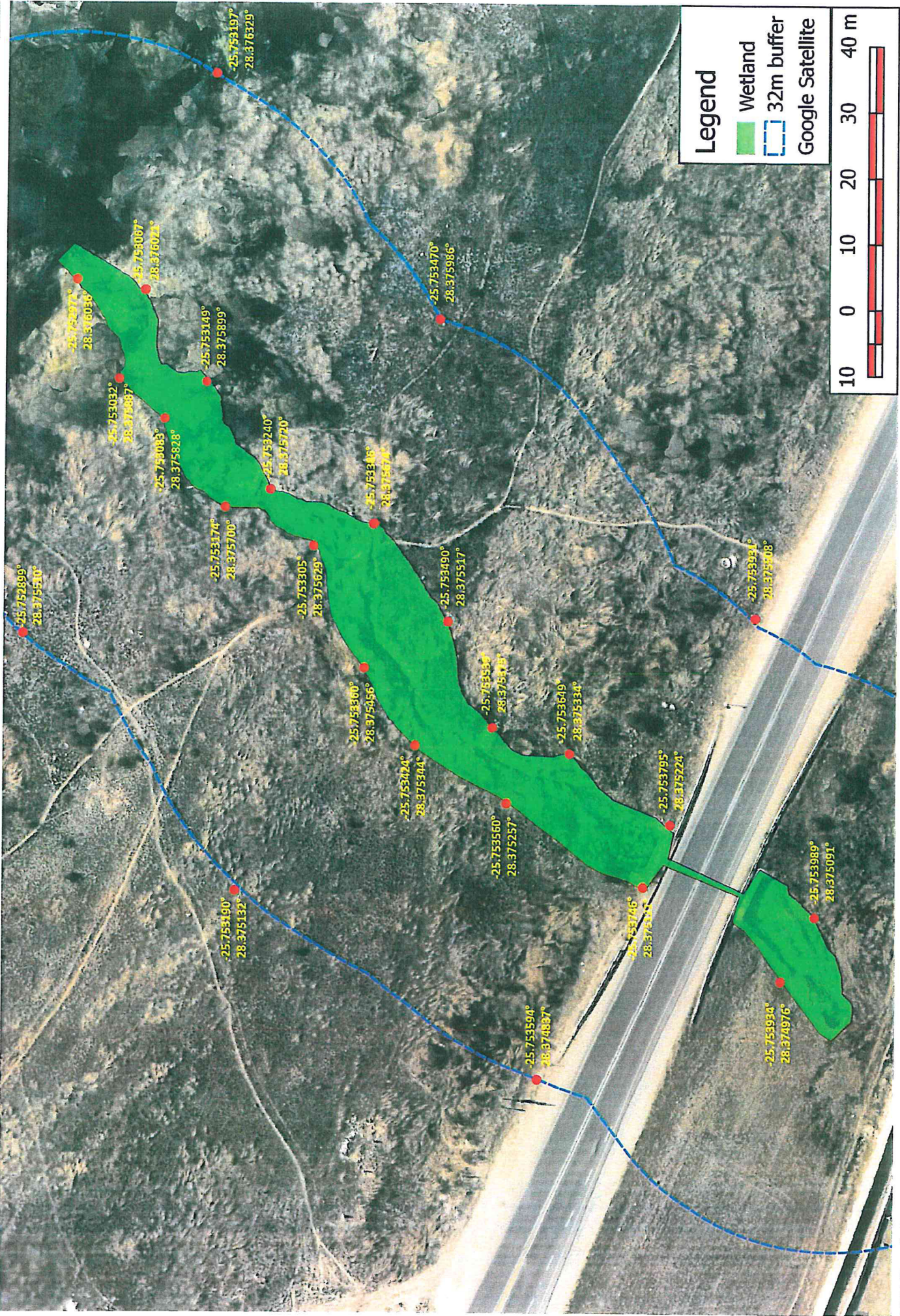
Date: 24/5/2016

ADDENDUM B

Wetland delineation



Bokamoso Environmental Consultants
Website: www.bokamoso.biz
E-Mail: Lizelleg@mweb.co.za



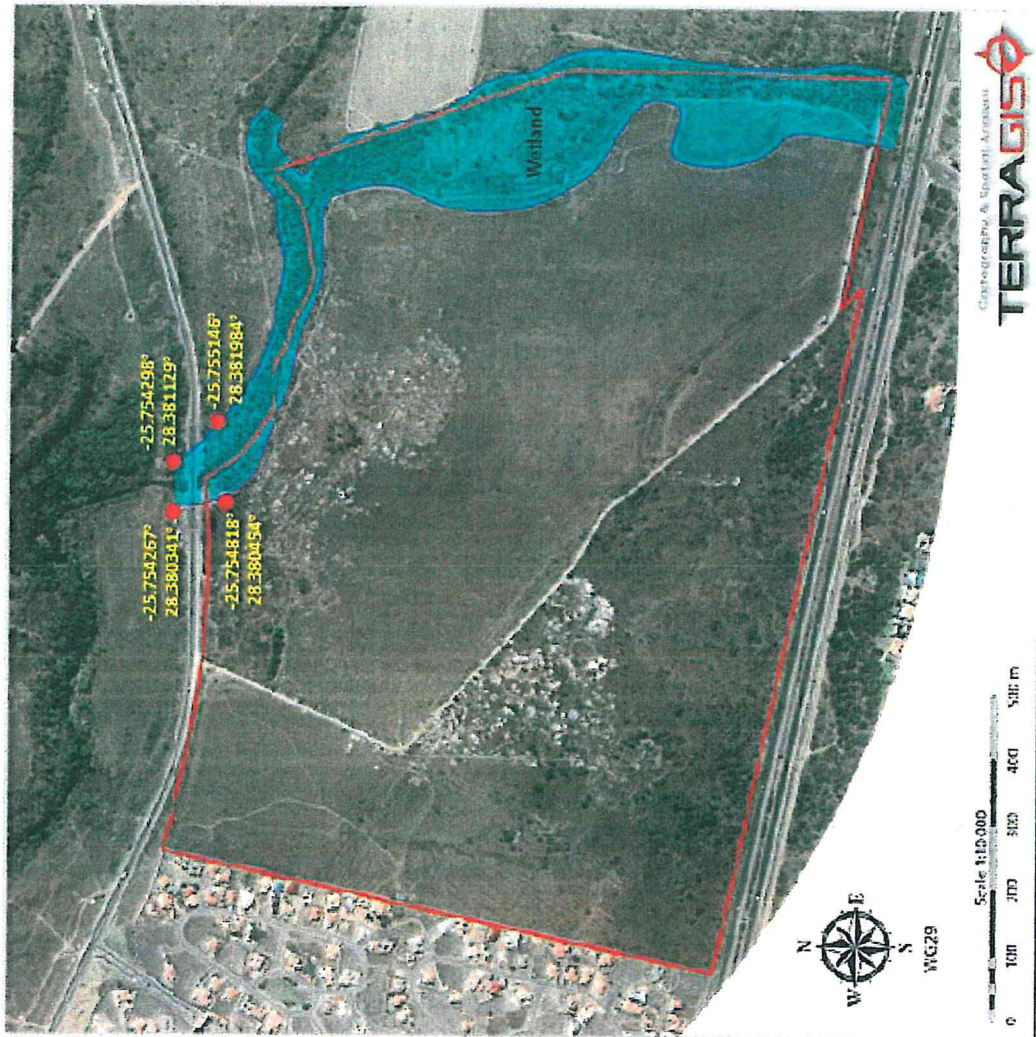


Figure 18 Wetland area on the site

ADDENDUM C

From: juanita@bokamoso.net
Sent: Monday, October 10, 2016 2:03 PM
To: 'jgrobler@geoscience.org.za'; 'asalomon@sahra.org.za'; nndobochani@sahra.org.za; 'maphata.ramphele@gauteng.gov.za'; 'justicem@dwaf.gov.za'; 'keetm@dwaf.gov.za'; 'SiwelaneL@dws.gov.za'; 'tshifaror@dwa.gov.za'; 'mathebet@dwa.gov.za'; 'central@eskom.co.za'; 'paia@eskom.co.za'; schmidk; kumen govender; mmpshe; nkoneigh; RudzaniM; 'loveous.tampane@transnet.net'; 'mike@ward101.co.za'; 'degoede@mweb.co.za'; wilma@trafalgar.co.za; adeleo@trafalgar.co.za; Tebogo Molokomme(GPSPORTS) (Tebogo.Molokomme@gauteng.gov.za); Stephan Joubert Weyers (weyerss@polka.co.za); masangug@yahoo.com; Mario Pretorius | TeleMasters (mario@masters.co.za)
Subject: Riverwalk External Services and Open Space Area - Errata Public Notice
Attachments: Errata - Public Notice BA_Riverwalk.pdf

Dear Interested and/or Affected Parties,

Please refer to the attached Errata Public Notice regarding the proposed *Riverwalk External Services and Open Space Area* Project.

Kind Regards/Vriendelike Groete

Juanita De Beer

Senior Public Participation Consultant & EAP in training

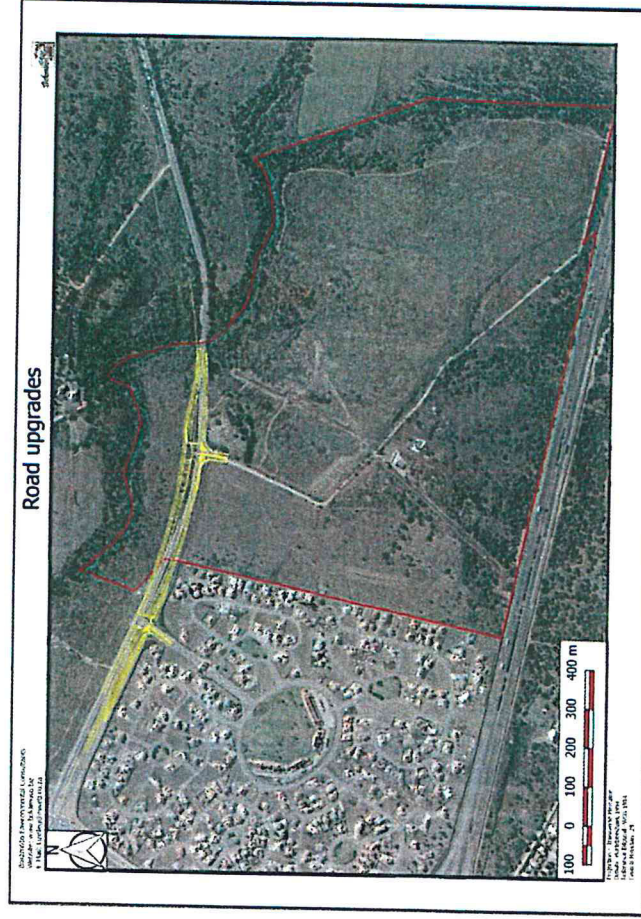


**Landscape Architects &
Environmental Consultants**

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

RIVERWALK EXTERNAL SERVICES AND OPEN SPACE AREA

Please note that after our correspondence with the South African National Roads Agency Limited (SANRAL) it was requested that the applicant apply for the upgrade to the R104 (Bronkhorstspuit Road) even though an Environmental Authorisation for such upgrades (part of a larger application) were already issued. This section to be upgraded is evident in the below Aerial Map. This notices serves to inform all Interested and Affected Parties (I&AP's) of the road upgrades which will form part of the Basic Assessment Process. In addition, a General Authorisation will be applied for with the Department of Water and Sanitation, for the road upgrades crossing a culvert (thus expansion of the culvert will take place). Should any I&AP's require more additional information they can request it from Bokamoso. The Final Basic Assessment Report will also include all the details on such road upgrades.



Aerial Map

ERRATA NOTICE OF BASIC ASSESSMENT PROCESS

Notice is given of an application for an **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 (Notice 1 and 3 – Government Notice R983 & R985)** for the following activity:

Project Name: Riverwalk External Services and Open Space Area

Property Description: Remainder of Portion 6 of the Farm Zwartkoppies No 364-JR, Portion 241 and 138 of the Farm Zwartkoppies No 364-JR and the R104 /K22 road reserve.

Project Description: This Environmental process is for the proposed rehabilitation and upgrading in areas below the flood line and within the wetland buffer at the Riverwalk residential development. It is the intention of the applicant to install and upgrade some external services in open space areas for the purpose of the Riverwalk development and other surrounding developments. This will also include the upgrading of roads and associated infrastructure. Storm water management for such infrastructure and the residential development will also be implemented (where required). It is also the applicant's intention to implement (if possible) a cycling track along the river in order to afford the residents and members of the public the opportunity to enjoy the natural assets of this open space area.

Proponent Name: Balwin Properties Limited.

Listing Activities Applied: GNR 983 (Listing Notice 1), 4 December 2014 – Activity 12, 19, 27, 48 and GNR 985 (Listing Notice 3), 4 December 2014 – Activity 4, 12, 14, 23.

Location: The proposed development is situated between the N4 and the Bronkhorstspuit road (R104) east of Pretoria. The Pienaars River borders the north-eastern section of the proposed site. The Silver Lakes Golf Estate is situated to the south of the proposed development (just to the south of the N4 Freeway).

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



In order to ensure that you are identified as an Interested and/or Affected Party (I&AP) please submit your name, contact information and interest in the matter, in writing, to the contact person given above.

Comments from engineer on alternatives

Appendix L



Civil Concepts (Pty) Ltd, Reg Number: 95/12428/07
50, 15th Street, Menlo Park (Cnr 17th Street &
Justice Mahomed (Charles) Street)
PO Box 36148, Menlo Park, 0102
Tel: 012 460 0008, Fax: 012 460 0005
Email: mail@civilconcepts.co.za



Our reference
C2142/WULA

Date
02/11/2016

Bokamoso Environmental Consultants
P.O Box 11375
Maroelana
0161

Attention: Ms. Mary-Lee van Zyl

Dear Madam

**REMAINDER OF PORTION 6 OF THE FARM ZWARTKOPPIES 364-JR
WATER USE LICENCE APPLICATION - ALTERNATIVES**

In response to comments received from the Gauteng Department of Agriculture & Rural Development on your Draft Basic Assessment Report we would like to highlight the following points with regards to route alternatives for the various services.

1. Sewerage: The existing outfall sewer is located inside a registered servitude for the specific purpose. We intend to upgrade the existing sewer pipeline and therefore propose to use the same servitude rather than following a new alignment which could adversely affect the environment. No alternative is proposed as an affected area already exists and adding another is not promoted.
2. Water: The water pipeline follows the inside of the road reserve boundary as per City of Tshwane Metropolitan Municipality requirements, therefore no alternatives can be considered for the alignment. The water pipe will also cross over the river by means of the planned bridge and not affect the water course or wetland.
3. Stormwater outlets: We can investigate alternative positions, and also reduce the amount of outlets. This will lead to higher concentrations of stormwater at the outlets, but fewer areas will be affected. Also note that stormwater harvesting will take place prior to discharging into the river system which will reduce peak run-off generated due to development.
4. We proposed two alternatives for the road bridge, the one being much wider than the other. The wider alternative will result in lower concentration of water but will affect a larger area, while the narrower alternative will increase concentration but reduce the affected area. Energy breaking structures proposed downstream of the bridge will negate both alternative's concentration effects.

I trust this serves to answer the comments received, please let us know how we can be of further assistance.

Yours faithfully

J.P. WELMAN
for CIVIL CONCEPTS (PTY) LTD

DIRECTORS:

FWJ Koen PrEng BSc BEng(Hons) MSAICE **TS Kruger** PrEng MEng MSAICE AStructE CEng **HJ van den Berg** PrEng B Eng (Civil)
W Stander Pr Eng BSc (Eng) MSAICE **MM Gouden** PrEng BSc (Eng)MSAICE MIHT

Town Planning Approval and Comments

Appendix M



City Planning and Development Department

Room LG004 | Basement | Isivuno House | 143 Lilian Ngoyi Street (Van der Watt) | Pretoria | 0002
PO Box 3242 | Pretoria | 0001
Tel: 012 358 7426 |
Email: CityP_Registration@tshwane.gov.za | www.tshwane.gov.za | www.facebook.com/CityOfTshwane

My ref: CPD 9/1/1/1 – ZKPX43 124 (Item no: N/A)
Your ref: F3253
Contact person: Ashok Sudu
Section/Unit: Regional Spatial Planning

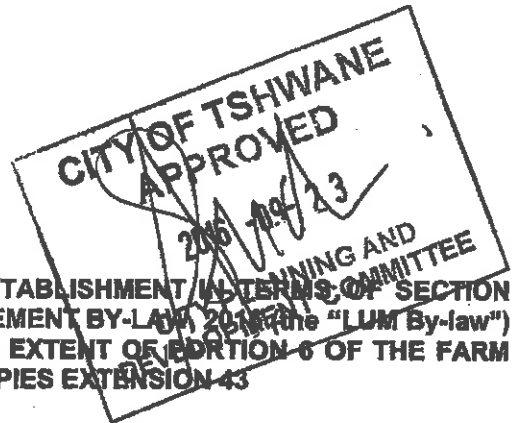
Tel: 012 358 7933
Fax:
Email: AshokS@tshwane.gov.za

REGISTERED LETTER

S F P TOWNPLANNING
P O BOX 908
GROENKLOOF
0027

Sir/Madam

APPROVAL OF AN APPLICATION FOR TOWNSHIP ESTABLISHMENT IN TERMS OF SECTION 16(4)(h) OF THE CITY OF TSHWANE LAND USE MANAGEMENT BY-LAW 2014 (the "LUM By-law") ON PORTION 138, PORTION 241 AND THE REMAINING EXTENT OF PORTION 6 OF THE FARM ZWARTKOPPIES 364 JR TO BE KNOWN AS ZWARTKOPPIES EXTENSION 43



- The Authorised Officials committee duly authorised hereby approves in terms of the provisions of section 16(4)(d) of the LUM By-law, the application for the Township Establishment on Portion 138, Portion 241 and the Remaining Extent of Portion 6 of the farm Zwartkoppies 364 JR, subject to the following conditions:
 - the conditions of establishment in terms of section 16(4)(g) attached hereto as Annexure 1; and
 - the layout plan no CPD/Zwartkoppies X43/4 attached hereto as Annexure 2; and
 - the approved amendment scheme in terms of section 16(4)(d) (Annexure T and scheme map) attached hereto as Annexure 3.
- Specifically also subject to the payment of development charges and/or monies for the provision of engineering services and parks and open spaces as contemplated in Chapter 7 of the LUM By-law and Sections 40(7), 49 and 50 of SPLUMA.
- Your attention is drawn to the provisions of sections 16(6), (7) and (8) of the LUM By-law and section 43(2) of SPLUMA with regard to the compliance with the conditions of establishment as the conditional approval necessary to bring the land use rights into operation in terms of section 16(9) of the LUM By-law.

A n n s Township Establishment Approval

TOWNSHIP ESTABLISHMENT APPROVAL ITEM NO. _____
INITIALS: _____

Kgoro ya Pesikanyo le Tshabelo ya Topologale • Department Stadepianing en -ontwikkeling
Lefapha la Tshabanyo la Tshabelo ya Topo • Ndzawulo ya Nkuvokiso wa Vupulani bya Dorobankulu
Umlingano Wesokuhlelwa Kwedolobha Nezandathuko • City Planning and Development Department
Umlinyango wokuhlelwa kweDorobha neTshuko

The applicant/owner's attention is drawn to the following:

1. Kindly take note that all amounts in respect of the provision of engineering services, except the amount in respect of electricity, must be paid at Group Financial Services Department: Mrs Lerato Salemane, BKS Building, 373 Pretorius Street, 2nd Floor, Room 206. This approval letter must be produced when payments are made.

All amounts in respect of electricity are payable at Room 426, Bothongo Plaza East Building, Francis Baard Street.

2. The Municipality's approval in the above regard should not be seen or interpreted thus being so, as approval or approval in principle, of any application that may follow on the relevant erf.

All correspondence via e-mail must be sent to CityP_Registration@tshwane.gov.za or to the address as contained in the letterhead.

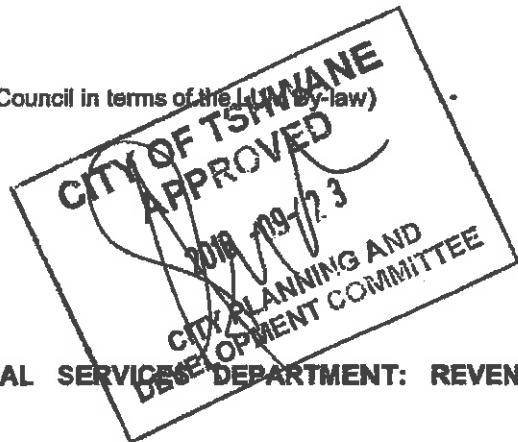
Note: any correspondence sent to a different address might not be received by the Department and cannot be attended to.

Yours Faithfully

f AO-COMMITTEE

(Committee delegated by the Authorised Official appointed by Council in terms of the LUM by-law)

Date.....



HARD COPIES TO:

CHIEF FINANCIAL OFFICER: GROUP FINANCIAL SERVICES DEPARTMENT: REVENUE MANAGEMENT
(For attention: Lerato Salemane)

CHIEF LEGAL COUNSEL: GROUP LEGAL SERVICES DEPARTMENT (For attention: Legal Services: Corporate Legal Compliance (Land use Rights and Township Establishment) – Registration Office 17th floor Saambou Building)

For further finalization

DEVELOPMENT COMPLIANCE/TOWN PLANNING SCHEME AND REGULATION
(For Attention: Development Consultants 10th floor Isivuno Building)

TOWNSHIP ESTABLISHMENT APPROVAL ITEM NO _____
INITIALS: _____

STATEMENT OF THE CONDITIONS UNDER WHICH THE APPLICATION MADE BY BALWIN PROPERTIES LIMITED (2003/028851/06) AND ZWARTKOPPIES PROPERTY INVESTMENT (PTY) LTD (2004/034661/07) (HEREINAFTER REFERRED TO AS THE TOWNSHIP OWNER) IN TERMS OF SECTION 16(4)(f)(i) OF THE CITY OF TSHWANE LAND USE MANAGEMENT BY-LAW, 2016 FOR THE ESTABLISHMENT OF A TOWNSHIP ON PART OF THE REMAINING EXTENT OF PORTION 6, PORTION 138 (A PORTION OF PORTION 23) AND PORTION 241 (A PORTION OF PORTION 6) OF THE FARM ZWARTKOPPIES NO 364-JR, GAUTENG PROVINCE HAS BEEN APPROVED

1 CONDITIONS TO BE COMPLIED WITH BY THE TOWNSHIP OWNER PRIOR TO THE OPENING OF THE TOWNSHIP REGISTER IN TERMS OF SECTION 16(7) AND (8), AND DECLARING THE TOWNSHIP A PROCLAIMED TOWNSHIP IN TERMS OF SECTION 16(9) OF THE CITY OF TSHWANE LAND USE MANAGEMENT BY-LAW 2016 (HEREINAFTER REFERRED TO AS THE "BY-LAW")

Proof of compliance of conditions in terms of this paragraph shall be to the satisfaction of the Municipality in terms of section 16(7)(a) of the By-law.

1.1 GENERAL

The township owner shall comply with the provisions of section 16(7) of the By-law and satisfy the City of Tshwane Metropolitan Municipality that –

1.1.1 Amendment Scheme

The relevant amendment scheme in terms of section 16(4)(d) of the By-law read with section 16(4)(g)(v) is in order and shall be published in terms of section 16(9)(a) and (b) in accordance with COT: F/28.

1.1.2 Name of Township, street names and numbering

The name of the township as well as the street names and numbers have been approved by the Municipality and is indicated on the General Plan in accordance with Schedule 5 and Section 42 of the By-law.

1.1.3 Geotechnical conditions in terms of section 28(12) to (14)

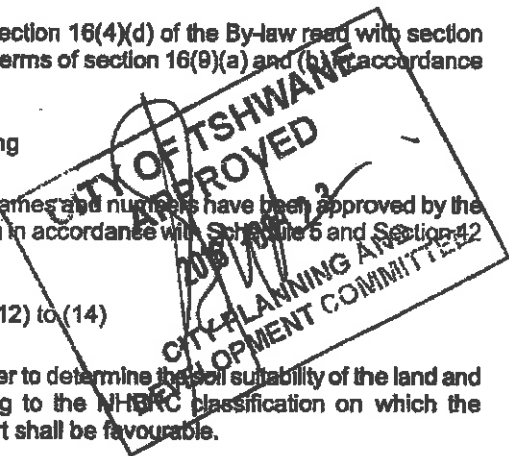
A geotechnical report has been submitted in order to determine the soil suitability of the land and indicating the various classes of soil according to the NHBC classification on which the township is to be established and the said report shall be favourable.

If it is determined that the property falls within a dolomitic area the applicant shall provide proof that a dolomitic stability and foundation investigation has been carried out and a report compiled from the results, indicating areas suitable for development and specifying conditions under which development may take place, has been submitted and accepted by the Municipality and the Council for Geoscience.

The Engineer Geologist has certified that he/she compared the final layout plan of the township with the geological report in conjunction with the consulting town planner and he/she is satisfied that buildings can be erected on every erf. If any special arrangements have to be made for any erf the township owner shall provide proof that these arrangements have been made to the satisfaction of the Municipality.

If required by the Municipality to do so, the township owners shall have the layout plan for the township vetted by the Council for Geoscience.

1.1.4 Non Profit Company in terms of Schedule 1 of the Companies Act (Act 71 of 2008)



A NPC (Non Profit Company) shall be registered by the township owner to the satisfaction of the Municipality, which company shall have as its main purpose the provision and maintenance of engineering services and private open space in terms of section 34 read with Schedule 19 of the By-law.

1.1.5 Engineering Services

- (i) Access is available to the township and that access to a public street system is available to all erven in the township whether by means of a private or public street in terms of section 28(5) of the By-law.
- (ii) The portions of the road reserves adjoining the proposed township, and which are required for the proper installation and maintenance of municipal services, shall be acquired by the township owner;
- (iii) Engineering Services read with Chapter 7 of the By-law: The township owner shall, at its (or his or her) costs provide such engineering services, social infrastructure and open spaces as the Municipality may deem necessary for the proper development of the land development area and/or land development application; provided that the Municipality may, for that purpose, enter into an engineering services agreement with the owner of the land development area, in terms of the By-law, other law and as may be required in accordance with section 49 of the Act;
- (iv) The township owner shall for the purpose of providing such engineering services reach agreement to the satisfaction of, and with the City of Tshwane on the availability and provision of engineering services for the township, which agreement shall indicate the standard of services to be provided and obligations of the Township Owner and the City of Tshwane with regard to the provision of internal and external engineering services and the payment of engineering services contribution toward the provision of such services in terms of section 21(3) of the by-law and section 49 of Spatial Planning and Land Use Management Act, (Act 16 of 2013).
- (v) A transport infrastructure study shall be submitted to the satisfaction of the Municipality, if required to do so by the Municipality in terms of Schedule 6 paragraph 3.(9)(d).
- (vi) A detailed Public Transport Assessment shall be submitted by the township owner in compliance with Section 38 of the National Land Transport Act, 2009 (Act 5 of 2009), to the satisfaction of the Municipality, if required to do so by the Municipality read with Schedule 6 paragraph 3(16).
- (vii) The stormwater plan for this township must be integrated with the greater stormwater master plan for the total relevant catchment area, including adjoining areas. The low points in roads and the accumulation of stormwater in crescents, cul-de-sacs and lower lying erven must be drained to the satisfaction of the Municipality.

1.1.6 Department Mineral Resources

The comments of the Department: Mineral Resources was obtained

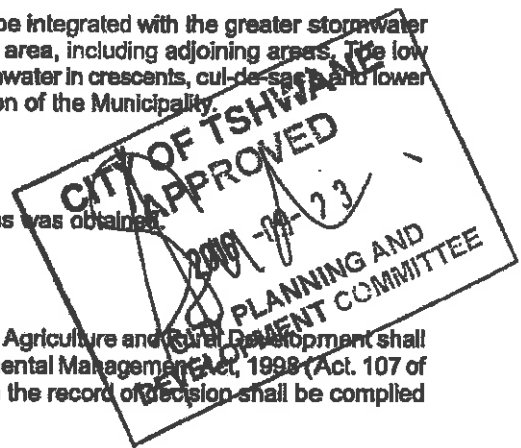
1.1.7 EIA read with Schedule 6 (18) of the By-law.

A record of decision from the Gauteng Department of Agriculture and Rural Development shall be obtained in terms of the provisions of the Environmental Management Act, 1998 (Act. 107 of 1998) and conditions that may have been imposed in the record of decision shall be complied with at the cost of the township owner.

1.1.8 General Plan

- (a) General Plan in terms of section 16(6) of the By-law plus extensions of time in terms of section 16(6)(a) and section 16(8)(a) of the By-law read with Schedule 10
- (b) The township owner shall comply with the provisions of section 16(6) and 29 (where applicable) of the By-law.

1.1.9 Ownership



In terms of the proviso of Section 16(4)(g)(i) of the By-Law and satisfy the City of Tshwane that all applicable properties are registered in the name of Balwin Properties Limited before the township may be proclaimed.

2 CONDITIONS OF ESTABLISHMENT RELATING TO THE TOWNSHIP WHICH SHALL REMAIN APPLICABLE TO THE TOWNSHIP AND ERVEN IN THE TOWNSHIP IN TERMS OF SECTION 16(4)(f) AND (g)(ii)

2.1 NAME

The name of the township is Zwartkoppes Extension 43 Township

2.2 DESIGN

The township consists of erven as indicated on Layout Plan CPD ZKP X 43/1

2.3 PROVISION AND INSTALLATION OF ENGINEERING SERVICES

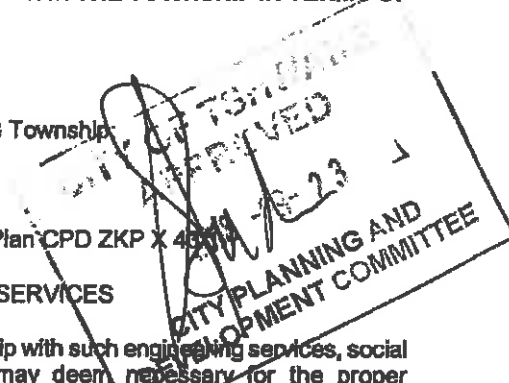
The Township Owner shall at his cost provide the township with such engineering services, social infrastructure and open spaces as the Municipality may deem necessary for the proper development of the township and comply with the engineering services agreement entered into between the township owner and the Municipality as required in terms of Section 21(3) of the By-law and in accordance with section 49 of the Spatial Planning and Land Use Management Act, 16 of 2013.

2.4 ACCEPTANCE AND DISPOSAL OF STORMWATER

The township owner shall arrange for the drainage of the township to fit in with that of the adjacent roads and all stormwater running off or being diverted from the roads and higher lying areas shall be received and disposed of, to the satisfaction of the Municipality.

2.5 CONDITIONS IMPOSED BY THE GAUTENG PROVINCIAL GOVERNMENT: DEPARTMENT OF ROADS AND TRANSPORT.

- (i) If circumstances change in the opinion of the Municipality in such a manner that roads and/or PWV routes under the control of the said Department are affected by the proposed layout of the township, the township owner shall resubmit the application for the purpose of fulfillment of the requirements of the controlling authority in terms of the provisions of Section 48 of the Gauteng Transport Infrastructure Act, 2001 (Act 8 of 2001).
- (ii) The township owner shall comply with the conditions of the Department as set out in the Department's letters dated 11 May 2016 and 28 June 2016.
- (iii) The township owner shall at his own expense comply with all the conditions imposed, by which the Gauteng Department of Roads and Transport (hereafter referred to as Gautrans) has granted consent for the development.
- (iv) The access to the land development area will be designed by a professional engineer and constructed in accordance with the latest requirements as laid down by Gautrans.
- (v) Access to the township will be provided from Road R104 (P154-1) (K22).
- (vi) Lines of no access will be applicable as shown on Layout Plan CPD ZKP X 43/1.
- (vii) A physical barrier, in compliance with EXECUTIVE COMMITTEE RESOLUTION NO. 1112 of 26 June 1978 and signed by the Deputy Director-General: Community Development and in accordance with the most recent standards of Gautrans will be erected along the lines of no access on the boundary of the development area fronting on provincial roads.
- (viii) Except for the physical barrier referred to in the paragraph above, a swimming pool and any essential stormwater drainage structure, no building or structure of any kind which is attached to the land, even though it does not form part of that land, shall be erected nor shall anything be constructed or laid under or below the surface of the erf within a distance less than 16m from the boundary of the erven abutting on Road R104 (P154-1 (K22) and 20m from the boundaries of the erven abutting on N4, nor shall any alteration



or addition to any existing structure of building situated within such distance of the said boundary be made except with the consent in writing of Gautrans and SANRAL.

- (ix) In terms of EXECUTIVE COMMITTEE RESOLUTION, NO 1112 of 26 June 1978 as signed by the Deputy Director-General: Community Development, the following building lines are applicable:

20m building line from Road N4 affecting Erven 2, 3, 4, 9 and 10.
16m building line from Road R104 affecting Erf 1.

- (x) The applicant shall arrange for the drainage of the development area to fit in with that of Provincial Road R104 and N4 and for all stormwater running off or being diverted from Provincial Roads R104 and N4 to be received and disposed of.

- (xi) No advertisements that may be visible from Provincial Road R104 and the N4 shall be displayed without the written approval of Gautrans, SANRAL and the Municipality.

2.6 CONDITIONS IMPOSED BY THE GAUTENG PROVINCIAL GOVERNMENT: DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT (GDARD)

- (a) Should the township not be proclaimed in terms of section 16(9) of the By-law before September 2021 the application to establish the township, shall be resubmitted to the Department of Agriculture, and Rural Development' authorisation in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended.
- (b) The township owner shall at his own costs comply with and strictly adhere to all the conditions and/or requirements imposed by the Department of Agriculture and Rural Development including those by which exemption has been granted from compliance with the Environmental Impact Assessment Regulations, 2014, promulgated on 4 December 2014 in terms of section 21, 22 and 26 of the Environmental Conservation Act, (Act 73 of 1989) or the National Environmental Act, 1998 (Act 107 of 1998) as amended and the Regulations thereto, as the case may be for the development of this township.

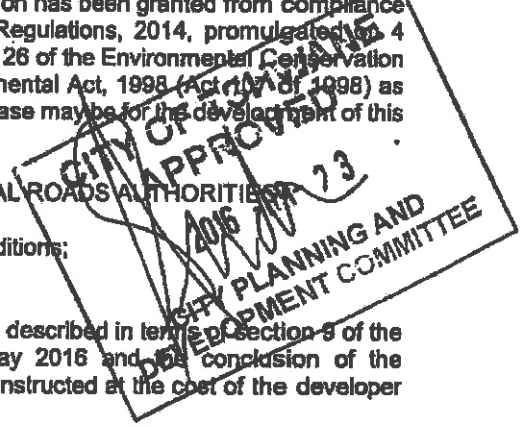
2.7 CONDITIONS IMPOSED BY NATIONAL AND REGIONAL ROADS AUTHORITIES

This approval is furthermore subject to the following conditions;

- All the roads upgrades required for phase 1 as described in terms of section 8 of the supplementary traffic impact study dated May 2016 and the conclusion of the memorandum dated 28 June 2016 must be constructed at the cost of the developer prior to commencement of the development.
- Detailed design drawings in the above mentioned regard must be submitted to SANRAL for approval of all construction activities inside the R104 road reserve prior to commencement with such construction. Such design must include street lighting.
- Traffic signals must be warranted or camera activated and the City of Tshwane must confirm in writing that they will accept responsibility for the maintenance and operations of the said traffic signals.

The township owner shall, at its own cost, comply with and strictly adhere to all the conditions and/or requirements imposed by the South African National Roads Agency Limited, the Department of Roads and Transport (Gauteng Provincial Government) and where applicable as imposed by the Municipality.

2.8 ACCESS CONDITIONS



- (a) Access to or egress from the township shall be provided to the satisfaction of the Municipality.
- (b) No access to or egress from the township shall be permitted along the lines of no access as indicated on the approved layout plan of the township No. CPD Zwartkoppies x43/4.
- (c) No access to or egress from the township shall be permitted via Road R104 and the National Road N4.

3 CONDITIONS TO BE COMPLIED WITH BEFORE THE ERVEN IN THE TOWNSHIP BECOME REGISTRABLE WHICH SHALL BE READ WITH THE CONDITIONS OF ESTABLISHMENT INDICATED IN 2 ABOVE IN TERMS OF SECTION 16(10) OF THE BY-LAW AND SECTION 53 OF THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT, 16 OF 2013

3.1 REFUSE REMOVAL

- (a) The township owner shall at his own expense have all litter within the township area removed to the satisfaction of the City of Tshwane Metropolitan Municipality, when required to do so by the City of Tshwane Metropolitan Municipality.
- (b) The township owner shall provide sufficient refuse collection points in the township and shall make arrangements to the satisfaction of the Municipality for the removal of all refuse.

3.2 REMOVAL OR REPLACEMENT OF EXISTING SERVICES

If, by reason of the establishment of the township, it should be necessary to remove or replace any existing municipal, TELKOM and/or ESKOM services, the cost of such removal or replacement shall be borne by the township owner. For purposes of removal or replacement the township owner shall, at its own costs, protect the services by means of the registration of servitudes in favour of the City of Tshwane, TELKOM and/or ESKOM should it be deemed necessary.

3.3 DEMOLITION OF BUILDINGS AND STRUCTURES

The township owner shall at its own costs cause all existing buildings/structures situated within the building line reserves, side spaces, or over common boundaries to be demolished to the satisfaction of the Municipality, when requested thereto by the Municipality or where buildings/structures are dilapidated.

3.4 NOTARIAL TIE OF ERVEN

The township owner shall, at its (or his or her) own costs, after proclamation of the township but prior to the development of any erf/unit in the township, notarially tie the following erven to the satisfaction of the Municipality (if you can include the purpose of the notarial tie):

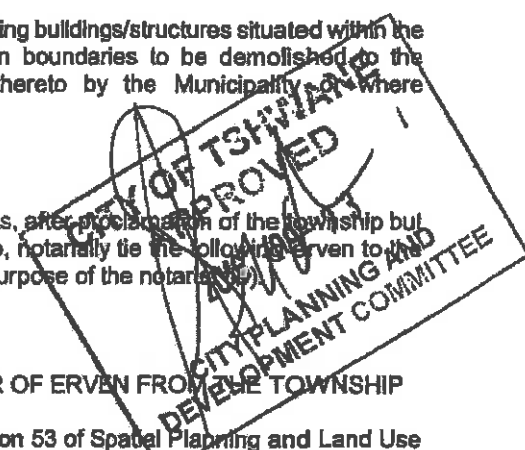
- (a) Erf 2 with Erf 10

3.5 RESTRICTION ON REGISTRATION AND TRANSFER OF ERVEN FROM THE TOWNSHIP

In terms of section 16(10) of the By-law read with section 53 of Spatial Planning and Land Use Management Act, (Act 16 of 2013) no property(ies) or land and/or erf/erven and/or sections and/or units, sectional title schemes/registers or other registration transaction/s, in a land development area, which registration transactions results from a land development application(s), may be submitted by the applicant and/or owner, to the Registrar of Deed for registration, including transfer and the registration of a Certificate of Consolidated Title and/or Certificate of Registered in the name of the owner;

prior to the Municipality certifying to the Registrar of Deeds that:

- (i) all engineering services have been designed and constructed to the satisfaction of the Municipality, including the provision of guarantees, and maintenance guarantees, for



- (ii) services having been provided to the satisfaction of the Municipality as may be required; all engineering services contributions and open spaces and parks contributions and/or development charges and/or other monies have been paid;
- (iii) all engineering services have been or will be protected to the satisfaction of the Municipality by means of servitudes;
- (iv) all conditions of the approval of the land development application have been complied with or that arrangements for compliance to the satisfaction of the Municipality have been made, which arrangements shall form part of an agreement read with Chapter 7 of the By-law, to the satisfaction of the Municipality;
- (v) it is in a position to consider a final building plan; and
- (vi) all the properties have either been transferred in terms of subsection 16(11) hereof or shall be transferred simultaneously with the first transfer or registration of a newly created property or sectional title scheme.

3.6 RESTRICTION ON THE TRANSFER OF AN ERF/ERVEN CONTEMPLATED IN SECTION 16(11) READ WITH SECTION 34 AND SCHEDULE 19 OF THE BY-LAW TO A NON PROFIT COMPANY

The erf may not be transferred thereafter by the non-profit Company before the consent of the City of Tshwane Metropolitan Municipality first been obtained.

The township owner shall comply with the provisions of section 34 read with Schedule 19 of the By-law in the establishing of a Non Profit Company.

The township owner shall, at its own costs and to the satisfaction of the Municipality, remove all refuse, building rubble and/or other materials from Erven 1 to 7 prior to the transfer of the erf/erven in the name of the Non Profit Company.

3.7 PROVISION OF OPEN SPACES AND PARKS IN TERMS OF SECTION 47 OF THE BY-LAW

The township owner shall, in terms of the provisions of Section 47(3) read with Schedule 16 of the By-Law, provide sufficient open space.

Erven 8, 9, 10 and 11 shall, prior to or simultaneously with the registration of transfer of the first erf /unit in the township and at the cost of the township owner, be transferred to the City of Tshwane Metropolitan Municipality for municipal purposes (Public Open Space).

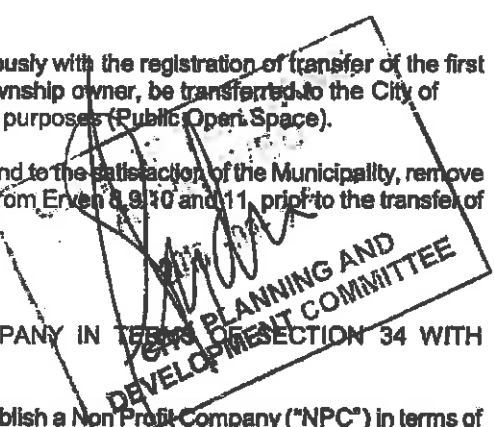
The township owner shall, shall at its own costs and to the satisfaction of the Municipality, remove all refuse, building rubble and or other materials from Erven 8, 9, 10 and 11, prior to the transfer of the erf/erven in the name of the City of Tshwane.

3.8 ESTABLISHMENT OF A NON PROFIT COMPANY IN TERMS OF SECTION 34 WITH SCHEDULE 19 OF THE BY-LAW

The township owner shall at his/her own cost establish a Non Profit Company ("NPC") in terms of schedule 1 of the Companies Act, 2008 (Act 71 of 2008) as amended and as contemplated in section 34 read with schedule 19 of the By-law, with the main object of the Company being to retain and maintain the private engineering services in the township. The township owner shall further submit proof that such a Company has been duly registered, before a section 16(10) Certificate shall be issued in terms of the By-law.

Servitudes in favour of all the erven within the township shall be registered over any and all property owned or transferred to a NPC for purposes of access and engineering services.

4 DISPOSAL OF EXISTING CONDITIONS OF TITLE IN TERMS OF SECTION 16(4)(g)



4.1 The applicant shall at its own expense have the following conditions and servitudes cancelled or have the township area freed therefrom:

4.1.1 Conditions I in Deed of Transfer T71643/2012.

"The within mentioned property is subject to the following condition imposed by the City of Tshwane Metropolitan Municipality in terms of the Town-Planning and Townships Ordinance 20 of 1986 upon subdivision:

Treatment of sewage effluent on the property must be done by means of either a suction tank system, closed sewage treatment plant or any similar system of Tshwane to the satisfaction of the City Metropolitan Municipality. Only existing buildings, as per approved building plans, may continue to be served by means of a combined septic tank and French drain system and only if such a system already exists and meets the requirements as laid down in the National Building Regulations."

4.2 All erven shall be made subject to existing conditions and servitudes, including the reservation of mineral rights, but excluding –

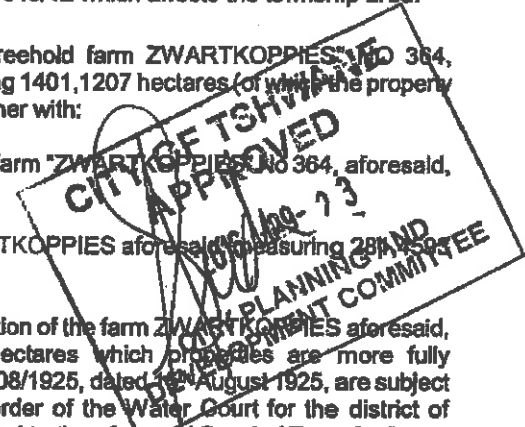
4.2.1 The following Condition A in Deed of Transfer T71643/12 which affects the township area:

"1. Certain South Western Portion of the freehold farm ZWARTKOPPIES NO 364, situated in the district of Pretoria, measuring 1401,1207 hectares (of which the property hereby transferred forms a portion), together with:

1.1 Certain Portion of a portion of the farm "ZWARTKOPPIES NO 364, aforesaid, measuring 12,4311 hectares;

1.2 Certain portion of the farm ZWARTKOPPIES aforesaid measuring 289,7220 hectares and;

1.3 Certain Remaining Extent of a portion of the farm ZWARTKOPPIES aforesaid, measuring as such 289,7220 hectares which properties are more fully described in Deed of Transfer T7908/1925, dated 19th August 1925, are subject and entitled to the terms of an order of the Water Court for the district of Pretoria, a copy of which is annexed to the aforesaid Deed of Transfer."



4.2.2 The following Condition 2 in Deed of Transfer T71643/12 which affects the township area:

"2. The provisions of Notarial Deed No. 336/1925-S, dated the 5th May 1925, whereby GRIFFITHS & RORKE LIMITED, their Successors in Title or Assigns as Owners of Portion "D" of the farm "THE WILLOWS" NO 23, situate in the district Pretoria, in extent 214,1330 hectares, was granted the right to conduct water to which the said portion of the farm "THE WILLOWS" may be entitled, from the Plenaar's River to the said Portion "D" of "THE WILLOWS", by means a water-furrow over certain South Western portion of the freehold farm ZWARTKOPPIES NO 364, situate in the district Pretoria; measuring 1401,1207 hectares, of which the property hereby transferred forms a portion."

4.2.3 The following Condition 3 in Deed of Transfer T71643/12 which affects the township area:

"3 The owner of the Remaining Extent of the South Western portion of the farm ZWARTKOPPIES NO 364, aforesaid, measuring as such 581,822 hectares (a portion of which is hereby transferred) and three further properties set out in clause A 1 hereof shall have the sole control of the water belonging to the said South Western portion of the farm ZWARTKOPPIES NO 364, aforesaid, measuring 1401,1207 hectares, and three further portions set out in clause A 1 hereof, and he shall have the right to take the whole of the said water for any purpose whatsoever during the winter month of each year i.e., May to September, inclusive. During the remainder of each year the owner

shall allow the full stream of water to which he is entitled under the Order of the Water Court, to pass to the property hereby transferred from Saturday 6 p.m. to Monday 6 a.m. in each week i.e., a period of 36 hours per week. The owner however shall allow all surplus water during the year to pass down the furrow to the property hereby transferred and shall not at any time return it to the river.

At no time shall the registered owner be permitted to interfere with the valve in the divisor dam, and the said owner undertakes during the abovementioned 36 hours period that the valve shall remain open sufficiently to allow the full stream of water, as provided above, to pass. This shall not apply, however, when the river is in flood."

4.2.4 The following Condition 4 in Deed of Transfer T71643/12 which affects the township area:

"4. The registered owner is solely responsible for the repairing, cleaning and maintenance of the furrow from the divisor dam in the Plenaars River, situated on the Remaining Extent of the said farm ZWARTKOPPIES No 384, and built to give effect to the Order of the Water Court in clause A 1.3 hereof, to the sluice gate and thence from deviation of the said furrow to the dam on the within mentioned property.

The owner is responsible for the repairing, cleaning and maintenance of the said furrow between the sluice gate and the deviation of the said furrow hereinbefore referred to."

4.2.5 The following Condition B in Deed of Transfer T71643/12 which affects the township area:

"B The property hereby transferred is subject to a Cession of all rights to water as well as ancillary rights thereto in favour of:-

1. The Remaining Extent of the South Western Portion of the said farm ZWARTKOPPIES, measuring as such 581,1207 hectares;
2. Certain Portion of a portion of the said farm ZWARTKOPPIES; measuring 12,4311 hectares;
3. Certain Portion of the said farm ZWARTKOPPIES, measuring 281,4593 hectares;
4. The Remaining Extent of certain portion of the of the said farm ZWARTKOPPIES, measuring as such 269,7220 hectares;

all held under Deed of Transfer NO T6836/1954, dated the 20th day of March 1954; as will more fully appear from Notarial Deed of Cession No. K1000/1954, dated the 28th day of October 1954."

4.2.6 The following Condition C in Deed of Transfer T71643/12 which affects the township area:

"C. Die hierin vermelde eiendom is onderhewig aan 'n Serwituut van Deurgangsreg ten gunste van die CITY OF TSHWANE METROPOLITAN MUNICIPALITY vir die geleiding van Elektrisiteit deur middel van luggrade en ondergrondse kables, soos meer ten volle sal blyk uit notariële Akte Nr. K1090/1961S, geregistreer op 7 September 1961."

4.2.7 The following Condition D in Deed of Transfer T71643/12 which affects the township area:

"D. Die hierin vermelde eiendom is onderhewig aan die terme van 'n bevel van die Waterhof, gedateer 27 Junie 1949, soos meer ten voile sal blyk uit bevel geliasseer onder 620A/49S."

4.2.8 The following Condition E in Deed of Transfer T71643/12 which affects the township area:

- "E. Die volgende serwitute is onteien en gesedeer aan die CITY OF TSHWANE METROPOLITAN MUNICIPALITY kragtens Notariële Akte van Sessie K6632/1993S.
1. 'n Serwituut vir Riolopyleiding 2 meter wyd soos aangedui deur lyn ABCDEFGH op diagram LG No A9236/1992.
 2. 'n Serwituut vir Riolopyleiding 2 meter wyd soos aangedui deur lyn HJKLM op diagram LG No A9236/1992.
 3. 'n Serwituut vir Riolopyleiding 2 meter wyd soos aangedui deur lyn NPQRS op diagram LG No A9236/1992"

4.2.9 The following Condition F in Deed of Transfer T71643/12 which affects the township area:

- "F. Kragtens Notariële Akte K 658/1995S gedateer 23 Januarie 1995 is hierinvermelde eiendom onderhewig aan 'n ewigdurende reg om water te neem en te voer oor en deur, deur middel van pyleidings binne stroke grond 3636 vierkante meter en 1695 vierkante meter groot soos aangedui deur die figure ABCDa Mid River bEFGH en ABCD op serwituutkaarte no L.G. No. A. 72/1993 en A73/1993 met bykomende regte ten gunste van RANDWATER soos meer volledig sal blyk uit gemelde Notariële Akte."

4.2.10 The following Condition G in Deed of Transfer T71643/12 which affects the township area:

- "G. Kragtens Notariële Akte No. K 3355/2003 S gedateer 18 April 2003 is die hierin vermelde eiendom onderhewig aan 'n 3 meter wye Rioloserwituut aangetoon op diagram 8160/2002 deur figuur ABCDEFGHA, 873 vierkante meter ten gunste van die Trust soos meer volledig sal blyk uit gemelde Notariële Akte."

4.2.11 The following Condition H in Deed of Transfer T71643/12 which affects the township area:

- "H. By virtue of Notarial Deed of Servitude K1009/2012-S dated 9 February 2012 the within mentioned property is subject to a water pipeline servitude 3239 square metres, 6 (six) metres wide, as indicated by the figure A B C D E F G H J K L M N P on diagram SG No 6921/2005 annexed hereto in favour of the CITY OF TSHWANE METROPOLITAN MUNICIPALITY, as will more fully appear from the said Notarial Deed of Servitude."

4.2.12 The following Condition A in Deed of Transfer T106850/07 which affects the township area:

- "A. Die eiendom hiermee getranspoteer is onderhewig aan en getoë tot die volgende regte en voorwaardes:
1. Certain South Western Portion of the freehold farm "ZWARTKOPPIES" NO 364, situated in the district of Pretoria, measuring 1401,1207 hectares (of which the property hereby transferred forms a portion), together with:
 - (i) Certain Portion of a portion of the farm "ZWARTKOPPIES" No 364, aforesaid, measuring 12,4311 hectares;
 - (ii) Certain portion of the farm ZWARTKOPPIES aforesaid, measuring 281,4593 hectares and;
 - (iii) Certain Remaining Extent of a portion of the farm ZWARTKOPPIES aforesaid, measuring as such 269,7220 hectares which properties are more fully described in Deed of Transfer T7908/1925, dated 15th August 1925, are subject and entitled to the terms of an order of the Water Court for the district of Pretoria, a copy of which is annexed to the aforesaid Deed of Transfer."

4.2.13 The following Condition 2 in Deed of Transfer T106850/07 which affects the township area:

- "2. The provisions of Notarial Deed No. 336/1925-S, dated the 5th May 1925, whereby GRIFFITHS & RORKE LIMITED, their Successors in Title or Assigns as Owners of Portion "D" of the farm "THE WILLOWS" NO 23, situate in the district Pretoria, in extent 214,1330 hectares, was granted the right to conduct water to which the said portion of the farm "THE WILLOWS" may be entitled, from the Pienaar's River to the said Portion "D" of "THE WILLOWS", by means a water-furrow over certain South Western portion of the freehold farm ZWARTKOPPIES NO 364, situate in the district Pretoria; measuring 1401,1207 hectares, of which the property hereby transferred forms a portion."

4.2.14 The following Condition 3 in Deed of Transfer T106850/07 which affects the township area:

- "3 The owner of the Remaining Extent of the South Western portion of the farm ZWARTKOPPIES NO 364, aforesaid, measuring as such 581,822 hectares (a portion of which is hereby transferred) and three further properties set out in clause 1 hereof shall have the sole control of the water belonging to the said South Western portion of the farm ZWARTKOPPIES NO 364, aforesaid, measuring 1401,1207 hectares, and three further portions set out in clause 1 hereof, and he shall have the right to take the whole of the said water for any purpose whatsoever during the winter month of each year i.e., May to September, inclusive. During the remainder of each year the owner shall allow the full stream of water to which he is entitled under the Order of the Water Court, to pass to the property hereby transferred from Saturday 6 p.m. to Monday 6 a.m. in each week i.e., a period of 36 hours per week. The owner however shall allow all surplus water during the year to pass down the furrow to the property hereby transferred and shall not at any time return it to the river.

At no time shall the Transferee be permitted to interfere with the valve in the divisor dam, and the said owner undertakes during the abovementioned 36 hours period that the valve shall remain open sufficiently to allow the full stream of water, as provided above, to pass. This shall not apply, however, when the river is in flood."

4.2.15 The following Condition 4 in Deed of Transfer T106850/07 which affects the township area:

- "4. The Transferee is solely responsible for the repairing, cleaning and maintenance of the furrow from the divisor dam in the Pienaar's River situate on the Remaining Extent of the said farm ZWARTKOPPIES NO 364, aforesaid, and built to give effect to the Order of the Water Court referred to in clause 1 (iii) hereof, to the sluice gate and thence from deviation of the said furrow to the dam on the property hereby transferred.

The owner is responsible for the repairing, cleaning and maintenance of the said furrow between the sluice gate and the deviation of the said furrow hereinbefore referred to."

4.2.16 The following Condition B paragraph Two in Deed of Transfer T106850/07 which affects the township area:

- "B. Gedeelte A van die Suid-Westelike gedeelte van die plaas "Zwartkoppies" No 364, Registrasie Afdeling J.R., distrik Pretoria (waarvan die gedeelte hiermee getranspoteer 'n gedeelte uitmaak), is onderworpe aan:

"A Cession of all rights to water as well as ancillary rights thereto in favour of:

- (a) The Remaining Extent of the South Western portion of the said farm "Zwartkoppies", measuring as such 581,9223 hectares.
- (b) Certain Portion of a portion of the farm "Zwartkoppies", measuring 12,4312 hectares;

- (c) The Remaining Extent of a certain portion of the said farm "Zwartkoppies", measuring as such 269,0262 hectares;

All held under Deed of Transfer No. T6337/1954, dated the 20th March, 1954, as will more fully appear from Notarial Deed of Cession No. 1000/1954, dated the 28th day of October, 1954."

4.2.17 The following Condition C in Deed of Transfer T106850/07 which affects the township area:

- "C. Gedeelte A van die Suid Westelike Gedeelte van gemelde plaas Zwartkoppies (waarvan die eiendom hiermee getransporeer 'n gedeelte uitmaak) is onderworpe aan:

"Notarial Deed No. 1223/1956-S, registered on the 20th day of November, 1956, whereby the right has been granted to the Escom to convey electricity over the property, along the route depicted by the letters ab on the annexed Diagram, together with ancillary rights, and subject to the conditions, as will more fully appear on reference to the said Notarial Deed and diagram annexed thereto."

4.2.18 The following Condition D in Deed of Transfer T106850/07 which affects the township area:

- "D. Gedeelte A van die Suid-Westelike gedeelte van die gemelde plaas Zwartkoppies (waarvan die eiendom hiermee getransporeer 'n gedeelte uitmaak) is onderworpe aan:

'n Serwituut van deurgangsreg ten gunste van die Stadsraad van Pretoria vir die geleiding van elektrisiteit deur middel van lugdrage en ondergrondse kabels, soos meer ten volle sal blyk uit Notariële Akte Nr. 1090/1961-S, geregistreer op die 7de dag van September 1961.

4.2.19 The following Condition E in Deed of Transfer T106850/07 which affects the township area:

- "E. Gedeelte A van die Suid-Westelike gedeelte van die plaas Zwartkoppies (waarvan die eiendom hiermee getransporeer 'n gedeelte uitmaak), is onderworpe aan:

Die terme van 'n bevel van die Waterhof, gedateer die 27de dag van Junie 1943, soos meer ten volle sal blyk uit bevel gelaasend onder 200/43S."

4.2.20 The following Condition F in Deed of Transfer T106850/07 which affects the township area:

- "F. By virtue of the Notarial Deed of Servitude K.1808/1993 dated 1st February, 1998 the owner of the within mentioned property grants to the Water Board the right in perpetuity to convey and transmit water over the property by means of pipeline already laid and which may hereafter be laid along a strip of ground 1,5763 metres in extent as indicated by the figures ABCDEFGHJK on Servitude Diagram S.G. No. A.75/1993 together with ancillary rights, as will more fully appear from the said Notarial Deed of Servitude."

4.2.21 The following Condition G in Deed of Transfer T106850/07 which affects the township area:

- "G. Kragtens Notariële Akte van Serwituut Nr. K 005977/2003-S word 'n Ewigdurende Roolservituut oor die Resterende Gedeelte van Gedeelte 23, welke serwituut 3 (drie) meter wyd is en loop oor die Resterende Gedeelte van Gedeelte 23, soos meer volledig aangetoon op Serwituut Diagram 8162/2002, waarvan die figure ABCSDEFGHA, Groot 2611 (Twee Ses Een Een) vierkante meter, die serwituut voorstel en welke serwituut geregistreer word ten gunste van HENRY BENDEMAN TRUST No. IT 1214.1995."

4.2.22 The following Conditions in Deed of Transfer T101371/2015 which affects the township area:

"A. The within mentioned property is subject to and entitled to the following rights and conditions:

1. Certain South Western Portion of the freehold farm ZWARTKOPPIES No 364 situated in the district of Pretoria, measuring 1401,1207 hectares (of which the within mentioned property forms a portion) together with:

1.1 Certain Portion of a portion of the farm ZWARTKOPPIES no 364, aforesaid, measuring 12,4311 hectares;

1.2 Certain portion of the farm ZWARTKOPPIES aforesaid, measuring 281,4593 hectares; and

1.3 Certain Remaining Extent of a portion of the farm ZWARTKOPPIES aforesaid, measuring as such 269,7220 hectares which properties are more fully described in Deed of Transfer T7908/1925, dated 15 August 1925, are subject and entitled to the terms of an order of the Water Court for the district of Pretoria, a copy of which is annexed to the aforesaid Deed of Transfer."

4.2.23 The following Conditions in Deed of Transfer T101371/2015 which affects the township area:

"2. The provisions of Notarial Deed K336/1925-S, dated 5 May 1925, whereby GRIFFITHS & RORKE LIMITED, their Successors In Title or Assigns as owners of Portion D of the farm THE WILLOWS no 23, situated in the district of Pretoria, in extent 214,1330 hectares, was granted the right to conduct water to which the said portion of the farm THE WILLOWS may be entitled, from the Plenaars River to the said Portion D of THE WILLOWS, by means of a water furrow over certain South Western portion of the freehold farm ZWARTKOPPIES No 364, situated in the district Pretoria measuring 1401,1207 hectares, of which the within mentioned property forms a portion."

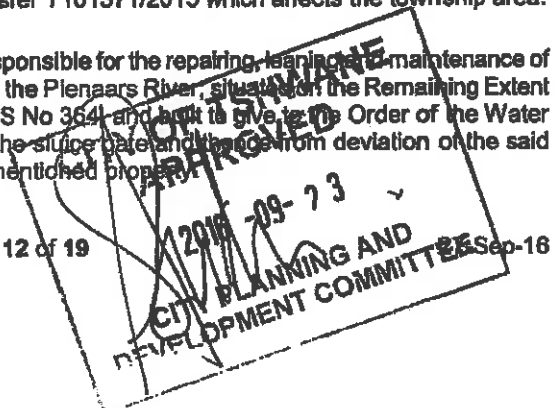
4.2.24 The following Conditions in Deed of Transfer T101371/2015 which affects the township area:

"3. The owner of the Remaining Extent of the South Western portion of the farm ZWARTKOPPIES No 364, aforesaid, measuring as such 581,8222 hectares (of which the within mentioned property forms a portion) and three further properties set out in clause A1 a hereof shall have the sole control of the water belonging to the said South Western portion of the farm ZWARTKOPPIES No 364, aforesaid, measuring 1041,1207 hectares, and three further properties set out in clause A 1 hereof, and he shall have the right to take the whole of the said water for any purpose whatsoever during the winter month of each year *ie* May to September; inclusive. During the remainder of each year week the owner shall allow the full stream of water to which he is entitle under the Order of the Water Court, to pass to the within mentioned property from Saturday 6pm to Monday 6am in each week *ie* a period of 36 hours per week. The owner however, shall allow all surplus water during the year to pass down the furrow to the within mentioned property and shall not at any time return it to the river.

At no time shall the registered owner be permitted to interfere with the valve in the divisor dam, and the said owner undertakes during the aforementioned 36 hour period that the valve shall remain open sufficiently to allow the full stream of water, as provided above, to pass. This shall not apply, however, when the river is in flood."

4.2.25 The following Conditions in Deed of Transfer T101371/2015 which affects the township area:

"4. The registered owner is solely responsible for the repairing, cleaning & maintenance of the furrow from the divisor dam in the Plenaars River, situated on the Remaining Extent of the said farm ZWARTKOPPIES No 364 and *and* to give, to the Order of the Water Court in clause A 1.3 hereof, to the sluice gate and to the dam from deviation on the said furrow to the dam on the within mentioned property."



The owner is responsible for the repairing, cleaning and maintenance of the said furrow between the sluice gate and the deviation of the said furrow hereinbefore referred to."

4.2.26 The following Condition B in Deed of Transfer T101371/2015 which affects the township area:

- "B. The within mentioned property is subject to a Cession of all rights to water as well as ancillary rights thereto in favour of:
1. The Remaining Extent of the South Western Portion of the said farm ZWARTKOPPIES measuring as such 581,1207 hectares;
 2. Certain Portion of a portion of the said farm ZWARTKOPPIES, measuring 12,4311 hectares;
 3. Certain Portion of the said farm ZWARTKOPPIES, measuring 281,4593 hectares;
 4. The Remaining Extent of certain portion of the said farm ZWARTKOPPIES, measuring as such 269,7220 hectares,

All held under Deed of Transfer T6636/1954, dated 20 March 1954, as will more fully appear from Notarial Deed of Cession No K1000/1954-S, dated 28 October 1954."

4.2.27 The following Condition C in Deed of Transfer T101371/2015 which affects the township area:

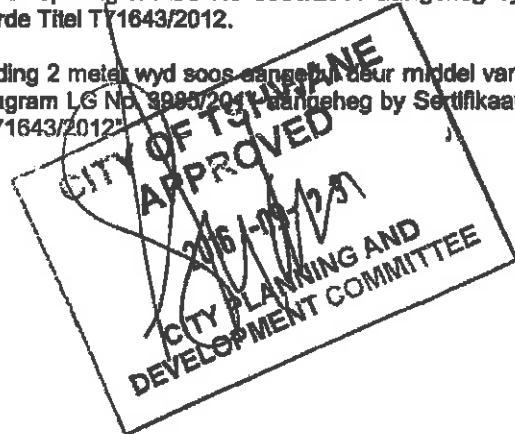
- "C. Die hierin vermelde eiendom is onderhewig aan 'n Serwituut van Deurgangsreg ten gunste van die City of Tshwane Metropolitan Municipality, vir geleiding van Elektriesiteit deur middel van lugrade en ondergrondse kables, soo smeer ten volle sal blyk uit notariële Akte Nr. K1090/1961S, geregistreer op die 7de September 1961."

4.2.28 The following Condition D in Deed of Transfer T101371/2015 which affects the township area:

- "D. Die hierin vermelde eiendom is onderhewig aan die terme van 'n bevel van die Waterhof, gedateer 27 Junie 1949, soos meer ten volle sal blyk uit bevel gelasseer onder 620A/49S."

4.2.29 E. Die volgende serwitute is ontelen en gesedeer aan die CITY OF TSHWANE METROPOLITAN MUNICIPALITY kragtens Notariële Akte van Sessie K6632/1993-S.

1. 'n Serwituut vir Riaalpypleiding 6 meter wyd soos aangedui deur middel lyn van serwituut w x y z a" b' c' d' op diagram LG No 3985/2011 aangeheg by Sertifikaat van Geregistraerde Titel T71643/2012.
2. 'n Serwituut vir Riaalpypleiding 2 meter wyd soos aangedui deur middel van serwituut d' e' f' g' h' op diagram LG No 3985/2011 aangeheg by Sertifikaat van Geregistraerde Titel T71643/2012"



- 4.2.30 F. Kragtens Notariële Akte K658/95S gedateer 23 Januarie 1995 is binnegemelde eiendom onderhewig aan 'n ewigdurende reg om water te neem en te voer oor den deur, deur middel van pypleiding binne stroke grond 3636 vierkante meter en 1695 vierkante meter groot soos naagedui deur die figure c d e f g Mid River h j k l m op serwituuikaarte no L.G. No. 3985/2011 aangeheg by Setifikaat van Geregistreeerde Title T71643/2012 met bykomende regte in die gunste van RANDWATER soos meer volledig sal blyk uit gemelde Notariële Akte."
- 4.2.31 G. Kragtens Notariële Akte No. K 3355/2003 S gedateer 28 April 2003 is die eiendom onderhewig aan 'n 3 (Drie) meter wye Rioolservituut aangetoon op diagram LG No 2371/2012 hierby aangeheg deur figuur a b c d e f, 873 vierkante meter ten gunste van die Trust soos meer volledig sal blyk uit gemelde Notariële Akte."
- 4.2.32 H. By virtue of Notarial Deed of Servitude K1009/2012-S dated 9 February 2012 the within mentioned property is subject to a water pipeline servitude 3239 square metres, 6 (six) metres wide, as indicated by the figure x'j'k'l'm'n'p'q'r's't'u'v'w' on diagram SG No 3985/2011 annexed to Certificate of Registered Title T71643/2012 in favour of the CITY OF TSHWANE METROPOLITAN MUNICIPALITY, as will more fully appear from the said Notarial Deed of Servitude."

All erven shall be made subject to existing conditions and servitudes, if any.

5 CONDITIONS OF TITLE.

5.1 Conditions of Title imposed in favour of the Municipality in terms of the section 16(4)(g) of the By-law.

5.1.1 ALL ERVEN

- (a) Each erf is subject to a servitude, 2m wide, in favour of the Municipality, for sewerage and other municipal purposes, along any boundary other than a street boundary and in the case of a panhandle erf, an additional servitude for municipal purposes 2m wide across the access portion of the erf, if and when required by the Municipality: Provided that the Municipality may dispense with any such servitude.
- (b) No building or other structure or any part of its foundation shall be erected within the aforesaid servitude area and no large rooted trees shall be planted within the area of such servitude or within 2m thereof.
- (c) The Municipality shall be entitled to deposit temporarily on the land adjoining the aforesaid servitude such material as may be excavated by it during the process of the construction, maintenance or removal of such sewerage mains and other works as it in its discretion may deem necessary and shall further be entitled to reasonable access to the said land for the aforesaid purpose subject to any damage done during the process of the construction, maintenance or removal of such sewerage mains and other works being made good by the Municipality.

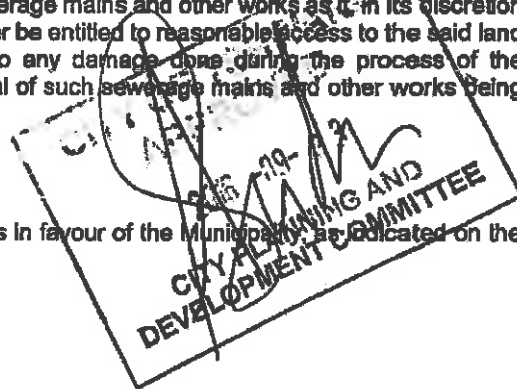
5.1.1 ERF 2

The erf is subject to the following servitudes in favour of the Municipality, as indicated on the General Plan:

- (a) A 5m wide sewer servitude.

ERF 1

The erf is subject to the following servitudes in favour of the Municipality, as indicated on the General Plan:



- (b) A 3m wide stormwater servitude.

5.1.2 ERF 8

No building of any nature shall be erected within those portions of the erf which are likely to be inundated by the floodwaters of a natural stream on an average of once every 50 years per 100 years

5.2 ALL ERVEN (EXCEPT ERF/ERVEN)

- (a) Each and every owner of the erf or owner of any sub-divided portion of the erf or owner of any unit thereon, shall on transfer automatically become and remain a member of The Blyde Home Owners Association and shall be subject to its Memorandum of Incorporation until he/she ceases to be an owner and such owner shall not be entitled to transfer the erf or any sub-divided portion thereof or any interest therein or any unit thereon, without a clearance certificate from the NPC of The Blyde NPC certifying that the provisions of the Memorandum of Incorporation ("MOI") have been complied with.

5.2.1 ERVEN 2 to 7

The relevant NPC shall maintain the stormwater attenuation system on the erf, to the satisfaction of the Municipality.

5.2.2 ERVEN 2 to 7

Servitudes for access and engineering services shall be registered in favour of all the erven within the township, over any and all property owned or transferred to a NPC or managed and maintained for purposes of engineering services and access by the NPC to the satisfaction of the Municipality.

5.3 Conditions of Title imposed by the Department of Roads and Transport (Gauteng Provincial Government) in terms of the Gauteng Transport Infrastructure Act, 2001 (Act 8 of 2001), as amended.

5.3.1 ERVEN 1 AND 8

- (a) The registered owner of the erf shall maintain, to the satisfaction of the Department of Roads and Transport (Gauteng Provincial Government), the physical barrier erected along the erf boundary abutting Road R104 (P154).
- (b) Except for the physical barrier referred to in clause (a) above, a swimming bath or any essential stormwater drainage structure, no building, structure or other thing which is attached to the land, even though it does not form part of that land, shall be erected neither shall anything be constructed or laid under or below the surface of the erf within a distance less than 16m from the boundary of the erf abutting Road R105 (P154) neither shall any alteration or addition to any existing structure or building situated within such distance of the said boundary be made, except with the written consent of the Department of Roads and Transport (Gauteng Provincial Government).

5.4 Conditions of Title imposed by the South African National Roads Agency Limited in terms of the Gauteng Transport Infrastructure Act, 2001 (Act 8 of 2001).

5.4.1 ERVEN 2, 3, 4, 9 AND 10

The registered owner of the erf shall maintain, to the satisfaction of the South African National



Roads Agency Limited, the security wall erected along the erf boundary abutting National Road N4.

6 CONDITIONS CONTAINED IN THE AMENDMENT SCHEME IN TERMS OF SECTION 16(4)(G)(v) INCORPORATED THE TSHWANE TOWN PLANNING SCHEME, 2008 (REVISED 2014)

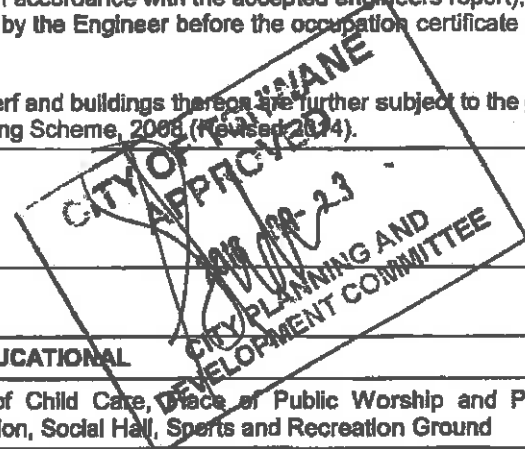
6.1 ERVEN 2 TO 7

PROPERTY DESCRIPTION: ERVEN 2 TO 7		
1	Use Zone	4: RESIDENTIAL 4
2	Uses permitted	Block of Flats, Clubhouse, Caretaker's Flat
3	Uses with consent	Table B, Column 3
4	Uses not permitted	Table B, Column 4
5	Definitions	<p>(1) For the purposes of this Scheme Block of Flats shall mean two (2) or more Dwelling-Units of one or more storeys contained in a building and may include other communal and subservient facilities.</p> <p>(2) For the purposes of this Scheme Club House shall mean land and buildings used for private meetings by a group of people with a collective aim and belonging to a club or association and may include a Place of Refreshment and children's play area ancillary and subservient to the main use. It may include laundry facilities, cafeteria, convenience store, a cinema, a spa for the residents and their guests only, hair salon, a gymnasium and recreational facilities such as squash courts, soccer fields, coffee shop ATM, Internet Café, for exclusive use by the employees and residents of the property.</p> <p>(3) For the purposes if this Scheme a Spa shall mean a place with therapeutic services such as massages and saunas.</p> <p>(4) Other: Clause 5</p>
6	Density	95 Dwelling-units per hectare
7	Coverage	In accordance with the Site Development Plan
8	Height	4 Storeys
9	Floor Area Ratio	In accordance with the Site Development Plan
10	Site Development Plan and Landscape Development Plan	<p>(1) A Site Development Plan and a Landscape Development Plan, unless otherwise determined by the City of Tshwane, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans.</p> <p>(2) The landscaping, in terms of the Landscape Development Plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.</p>
11	Street Building Lines	In accordance with the Site Development Plan
12	Building Restriction Areas	Clause 12

13	Parking requirements	Table G
14	Paving of traffic areas	Clause 28(5)
15	Access to the erf	(1) Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality. (2) Access to the site/development shall be to the satisfaction of the Municipality
16	Loading and off-loading facilities	All loading and off-loading activities shall take place on the erf.
17	Turning facilities	In accordance with the Site Development Plan.
18	Physical barriers	In accordance with the Site Development Plan.
19	Health measures	(1) Any requirements for air pollution-, noise abatement- or health measures set by Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. (2) Air-conditioning units or compressors shall not be mounted to the exterior walls of buildings without the prior consent of the Municipality.
20	Aesthetic Conditions	Clause 30
21	Open Space	Clause 14(3)(a)
22	General:	(1) The external water and sewer provision shall be indicated on the Site Development and Building Plans and be upgraded by the owner (in accordance with the accepted engineers report), and an inspection certificate must be provided by the Engineer before the occupation certificate may be issued. (2) In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Tshwane Town-planning Scheme, 2008 (Revised 2014).

6.2 ERF 1

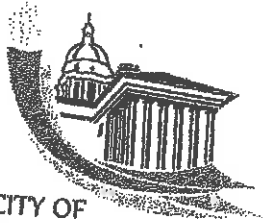
PROPERTY DESCRIPTION: ERF 1		
1	Use Zone	13: EDUCATIONAL
2	Uses permitted	Place of Child Care, Place of Public Worship and Place of Instruction, Social Hall, Sports and Recreation Ground
3	Uses with consent	Table B, Clause 4
4	Uses not permitted	Table B, Clause 5
5	Definitions	(1) For the purposes of this Scheme shall mean land and buildings used as a school, private school, academy, lecture hall, other educational centre including ancillary and subservient Hostel for persons attending any one of the aforementioned and may include a Place of Child Care and a Cafeteria ancillary and subservient to the main use on the property. (2) For the purposes of this scheme Sports and Recreational Ground shall mean land and buildings used for sporting activities such as soccer, rugby, cricket, hockey, tennis



		golf and may include grandstands, change rooms, ablution facilities and other recreation activities. (3) For the purposes of this scheme shall mean uses and activities which support and compliment the main use on the property and which shall not exist on their own when the main use on the property is discontinued.
6	Density	Not applicable
7	Coverage	In accordance with the Site Development Plan
8	Height	In accordance with the Site Development Plan
9	Floor Area Ratio	In accordance with the Site Development Plan
10	Site Development Plan and Landscape Development Plan	A Site Development Plan and a Landscape Development Plan, unless otherwise determined by the City of Tshwane, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans.
11	Street Building Lines	In accordance with the Site Development Plan
12	Building Restriction Areas	Clause 12
13	Parking requirements	Table G
14	Paving of traffic areas	Clause 28(5)
15	Access to the erf	(1) Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality (2) Access to the site/development shall be to the satisfaction of the Municipality
16	Loading and off-loading facilities	All loading and off-loading activities must take place on the erf.
17	Turning facilities	Shall be provided on the erf to the satisfaction of the Municipality.
18	Physical barriers	In accordance with the Site Development Plan
19	Health measures	(1) Any requirements for air pollution-, noise abatement- or health measures set by Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. Air-conditioning units or compressors shall not be mounted to the exterior walls of buildings without the prior consent of the Municipality.
20	Aesthetic Conditions	Clause 30(2)
21	General:	(1) The external water and sewer provision shall be indicated on the Site Development and Building Plans and be upgraded by the owner (in accordance with the accepted engineers report), and an inspection certificate must be provided by the Engineer before the occupation certificate may be issued. (2) In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Tshwane Town-planning Scheme, 2008 (Revised 2014).

6.3 ERVEN 8 TO 11

PROPERTY DESCRIPTION: ERVEN 8 TO 11		
1	Use Zone	20: PUBLIC OPEN SPACE
2	Uses permitted	Table B, Column 3
3	Uses with consent	Table B, Clause 4
4	Uses not permitted	Table B, Clause 5
5	Definitions	Clause 5
6	Density	In terms of the Scheme
7	Coverage	In terms of the Scheme
8	Height	In terms of the Scheme
9	Floor Area Ratio	In terms of the Scheme
10	Site Development Plan and Landscape Development Plan	Not applicable
11	Street Building Lines	In terms of the Scheme
12	Building Restriction Areas	In terms of the Scheme
13	Parking requirements	In terms of the Scheme
14	Paving of traffic areas	In terms of the Scheme
15	Access to the site	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality Access to the site/development shall be to the satisfaction of the Municipality
16	Loading and off-loading facilities	All loading and off-loading activities shall take place on the erf.
17	Turning facilities	Shall be provided to the satisfaction of the Municipality.
18	Physical barriers	To the satisfaction of the Municipality.
19	Health measures	To the satisfaction of the Municipality.
20	Outdoor Advertising	To the satisfaction of the Municipality
21	Open Space	Erf 2 shall be notarially tied with Erf 10 to ensure sufficient open space provision.
22	General:	<p>(1) The external water and sewer provision shall be indicated on the Site Development and Building Plans and be upgraded by the owner (in accordance with the accepted engineers report), and an inspection certificate must be provided by the Engineer before the occupation certificate may be issued.</p> <p>(2) In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Tshwane Town-planning Scheme, 2008 (Revised 2014).</p>



CITY OF
TSHWANE
IGNITING EXCELLENCE

Energy and Electricity Department

Room 608 | 06th Floor | Bothongo Plaza East | 285 Francis Beard Street | Pretoria | 0002
PO Box 440 | Pretoria | 0001
Tel: 012 358 4245 / 012 358 9999 | Fax: 086 569 1539
Email: NdwamatoM@tshwane.gov.za | www.tshwane.gov.za | www.facebook.com/CityOfTshwane

My ref: Z:12 102 106 116A101

Your ref:

Contact person:

Section/Unit:

Moloko Pitsi
Electricity Technical Planning, Design &
Provision

Tel:

Fax:

Email:

Date:

012 358 0232

086 742 4158

molokop@tshwane.gov.za

24 June 2016

TO: Mr. Gideon Venter
Electricity Development and Connections
4th Floor, Bothongo Plaza East
285 Francis Beard Street, Pretoria
0001

RE: TOWNSHIP APPLICATION FOR ZWARTKOPPIES EXTENSION X43

The application for electrical supply to the proposed Zwartkoppies x43 Development situated at Portions 6/R, 138 and 241 of the Zwartkoppies 364 JR farm has reference.

The development falls within the City of Tshwane municipality area, Electricity supply area and Hartherly 132/11kV substation supply area. The Developer/Consultant applied for a bulk electricity supply capacity of 2MVA (2000kVA) for the residential development (Phase 1: Consisting of 500 sectional title units, club house and a school).

The supply of the required 2MVA electricity supply capacity for the proposed Zwartkoppies extension 43 residential development can be made available subject to the following condition;

1. The construction the Wildebees 400/132kV Infeed station and the linking of the infeed station to Hatherley 132/11kV substation.
2. The refurbishment and commissioning of Hatherley 132/11kV substation.
3. The construction and commissioning of Mamelodi 2 - Hartherly 132kV overhead power line
4. The Hatherley 132/11kV substation and Hatherley – Mamelodi 2 132kV power line projects are expected to be completed in June 2017, thereafter the initial 2MVA capacity required can be made available.
5. Load rotating (shedding) may be applied due to network constraints and shortage of electricity.

All the electricity supply will be unfirm until the planned Wildebees 400/132kV Infeed Station is commissioned.

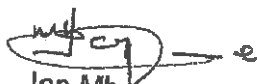
Energy and Electricity Department • Departement Energie en Elektriesiteit •
UmNyango wezaMandla neGezi • Ndzanwulo ya Eneji na Gezi • Lefapha la Maatla le Motlakase •
Umnyango Wezamandla Nezikagesi • Kgoro ya Eneti le Mohlagase



The electricity supply from the Hatherley 132/11kV substation to the above mentioned development shall be limited to the 2MVA and unfirm due to the capacity constraints on the existing bulk electricity network. Any future developments and application for additional capacity will depend on the construction and completion of the Wildebees 400/132KV infeed station.

The Developer will not have any claim against any party or group if the above projects are not completed in time as planned.

Regards,



Jan Mboyane

Acting Deputy Director: Primary Infrastructure Planning and Design



Roads and Transport Department Transportation Planning Division

Room B211 | 2nd Floor | Capitol Towers North Building | 225 Madiba Street | Pretoria | 0002
PO Box 1409 | Pretoria | 0001
Tel: 012 358 7703 | Fax: 086 214 8948 / 012 358 7999
Email: mehboobb@tshwane.gov.za | www.tshwane.gov.za | www.facebook.com/CityOfTshwane

My ref:	V10/1/2/1- Z17/43	Tel:	012 358 7254
Your ref:	CPD9/1/11 – ZKP X43 1247	Fax:	
Contact person:	Ikanyeng Seremane	Email:	Ikanyeng@tshwane.gov.za
Section:	Transport Land Development Applications and Facilitation	Address:	225 Madiba Street, Capitol Towers, Tshwane

The Executive Director: City Planning and Development
ISIVUNO OFFICES
Attention: Michael Mabunda

28 July 2016

TOWNSHIP ESTABLISHMENT: APPLICATION IN TERMS OF SECTION 96(1) PROPOSED TOWNSHIP: ZWARTKOPPIES EXTENSION 43

The letter dated 21 July 2016 has reference.

- 1 **Comments by Sub-Section: Development Applications (Clement Mashego – 012 358 7741)**
 - 1.1 The amended layout plan (Plan number CPD/ZwartkoppiesX43/4) is in order for this Division.
- 2 **Comments by Sub-Section: Integrated Roads Planning (Modiehi Thabane – 012 358 3039 / Jacques du Preez – 012 358 7695)**
 - 2.1 The layout plan CPD/Zwartkoppies X43/4 is acceptable.
 - 2.2 Erf 2 and Erf 3 must be consolidated.
- 3 **Comments by Sub-Section: Intelligent Transport System and Traffic Engineering (Hellen Msiza – 012 358 7996)**
 - 3.1 The layout plan number CPD/Zwartkoppies X43/4 is acceptable.
 - 3.2 Erf 2 and Erf 3 must be consolidated.



Kgoro ya Ditsela Dinamelwa + Departement Pasis en Vervoer + Lefapha la Ditsela le Dipalangwa
Ndzawulo ya Magondzo na Vutlekehi + Umnyango Wezemigwako Nezoluthutha +
UmNyango wezeeNdelela nezokuThutha + Roads and Transport Department

Yours faithfully



ACTING EXECUTIVE DIRECTOR: TRANSPORTATION PLANNING DIVISION

Q:\Roads & Stormwater\IPM Land Use Applications-Area\TOWNSHIP\Zwartkoppies\Zwartkoppies X43 (27-07-16).doc.docx

On request, this document can be provided in another official language

27

CPD 9/1/1/1-ZKPX43 1247

Marietta M.M. Albertse

From: Michael Mabunda
Sent: 09 May 2016 03:00 PM
To: CityP_ Registration
Subject: FW: zwartkoppies 43
Attachments: image2016-05-09-141920.pdf



Good Day

Please print and place on file.

Kind Regards,



Michael Mabunda
Land Use and Legislation Officer: Regional Spatial Planning

City Planning and Development | 5th Floor | Room 5020 | Isivuno House |
143 Lilian Ngoyi Street Pretoria | PO Box 440 | 0001 | www.tshwane.gov.za

Tel: 012 358 9999 | Cell: 073 456 7890 | Email: Employee@tshwane.gov.za



From: Anton Scholtz
Sent: Monday, May 09, 2016 2:25 PM
To: Michael Mabunda
Subject: zwartkoppies 43

From: Scanner@Tshwane.gov.za [mailto:Scanner@Tshwane.gov.za]
Sent: 09 May 2016 02:19 PM
To: Anton Scholtz
Subject:

Handwritten signature or initials in the bottom left corner.



Water and Sanitation Department

7th Floor | Capitol Towers North | 225 Madiba Street | Pretoria
P O Box 1022 | PRETORIA | 0001
Tel: (012) 358 7733 | Fax: (012) 358 4664
Email: amandams@tshwane.gov.za

My ref:	W10/1/2/1-Z20/43	Tel:	012 358 7783
Your ref:	CPD9/1/1/1-ZKPx43 1247	Fax:	012 358 8033
Contact person:	Anton Scholtz	E-mail:	antonsc@tshwane.gov.za
Division/Section/Unit:	System Development: Region A	Date:	9 May 2016

MEMORANDUM

TO: City Planning, Development and Regional Services.

143 Lilian Ngoyi Street
Isivuno
Pretoria
002

(Attention: M Mabunda)

**TOWNSHIP ESTABLISHMENT: APPLICATION IN TERMS OF SECTION 96(1):
ZWARTKOPPIES EXTENSION 43**

This Division has no objection against the layout plan (F3253/1)

This Division has in principle, from a civil services point of view, no objection against the proposed township establishment application provided that the Developer complies with the conditions below.

WATER:

1The site of application has existing water services available in the vicinity. The onus rests with the Professional Consulting Civil Engineer(s), appointed by the Developer, to determine and confirm that the available municipal water supply is sufficient for the proposed development. All link water networks required to connect the proposed new services to the existing municipal water network will be constructed to the satisfaction of the CoT, at the expense of the Developer.

As the availability of water provided by Rand Water cannot be confirmed by Council, it is required that confirmation of capacity be confirmed in writing by Rand Water.

2 The Consultant(s) must compile and submit detailed preliminary layout drawings of all proposed new services pertaining to this Division for approval. Information of all existing civil, electrical and telecommunication services and servitudes must be obtained by the Consultant(s) from the various authorities and shall be indicated on these drawings. Once these drawings have been approved by this Division, the approved water layout drawing(s) must be submitted by the Developer's Consultant(s) to the Fire Department of the CoT for approval of the proposed positions and type of fire hydrants. The Developer's Consultant (s) must obtain a completed UDC02 from the Fire Department, where applicable, indicating the appropriate size(s) of water connections where fire fighting provision has to be provided on site. These must be attached to the services report mentioned below. Please take note that all the fire requirements are to adhere to the SANS 090.

SEWERAGE :

The Priority Area with respect to sewerage is determined and defined as any area within 100m from an existing municipal sewer that has the required capacity to accommodate the proposed development. Any proposed development lying beyond this area will automatically be regarded as a "leap frog" development as is the case with this development.

The onus rests with the Developer's Consulting Engineers to determine whether the proposed development can be seweraged under gravitation. The Developer's Consulting Engineers must also submit proof that the existing municipal sewer, to which the proposed development may connect, can accommodate the additional flow. All the relevant information of the Municipal Sewerage System that is required can be obtained at the Information Desk for Water and Sewerage situated on the 7th Floor, Noordvaal Building, 225 Vermeulen Street Pretoria CBD.

All link sewers (collector sewers or services) required to connect the sewerage reticulation of the proposed development to the Municipal Sewer System will be for the account of the Developer. The Council will only contribute towards the cost of the enlargement of any such sewers, or any modification specifically required to provide for any existing or future townships, at the sole discretion of the Executive Director: Water and Sanitation.

GENERAL:

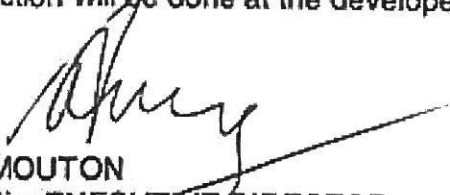
The Applicant shall be responsible to obtain all necessary approvals from GDARD where relevant, with regard to all possible listed activities within the boundaries of this township as well as listed activities resulting from the establishment of the township, outside the boundaries of the township.

The Applicant and/or his/her duly authorized consultant is not absolved from adhering to and complying with all requirements of the National Environmental Management Act 2006 (Act 8 of 2006) as well as its Regulations contained in Government Gazettes 28753: notices 385, 386 and 387, or any preceding legislation still in operation, stemming from any approval granted by the CoT.

Construction of any water or sewer services to be taken over by the CoT may only commence after the Consultant(s) have compiled and submitted detailed design drawings including layouts, sections and details according to the standards and specifications of the CoT of all proposed new services and such drawings have been approved and signed by this Division. All existing services, existing servitudes and proposed servitudes must also be indicated on these drawings.

The Consultant(s) must compile and submit a complete services report based on the approved services indicated on the preliminary layout drawings. Information to be contained in a typical report shall be: a) name of the township, b) full description of the property(ies) on which the township is to be established, c) full details of the Developer and the appointed Professional Consulting Civil Engineer(s), d) number and zoning of erven, e) length of township boundaries for determining boundary contributions, f) description of existing water and sewer services available and to which the new services shall connect, g) description of new services and h) design standards / criteria and cost of new services and all calculations pertaining to these. The approved Final Conditions of Establishment together with a layout plan approved by and available from the Town Planning Department must be attached to the services report.

Construction can commence after the services agreement has been signed by both parties and the necessary contributions have been paid. Any construction of services done prior to this action will be done at the developers own risk.



for F MOUTON
Acting EXECUTIVE DIRECTOR
WATER AND SANITATION

DWS Letter

Appendix N



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Directorate Water Abstraction and In-stream Use
Section: Instream Water Use
Sedibeng Building, 4th Floor, 185 Schoeman Street, Pretoria 0001

☎ (012) 336 6608	✉ P/Bag X313	✉ Mr PBI Ackerman
e-mail: ackermanp@dwa.gov.za	PRETORIA	☎ (012) 336 8217
	0001	📁 To allocate

Provincial Head: North West
P/ Bag x995
Pretoria
0001

Attention: Mr Thato Mjona

GA: BALDWIN AND SANRAL: CULVERT EXTENSION AS PART OF THE PARTIAL RECONSTRUCTION OF NATIONAL ROUTE R104 FROM SIMON VERMOOTEN ROAD TO BRONKHORSTSPRUIT: COMMENTS IN TERMS OF SECTION 21 (C) AND (I) WATER USES OF THE NATIONAL WATER ACT (ACT 36 OF 1998):

The meeting with between Bokamoso and Pieter Ackerman on 20 October 2016 and previous letter of review by IWU of August 2016 refers.

BACKGROUND:

1. The project inter alia entails a culvert extension at the existing culvert crossing close to Solomon Mahlangu road. The culvert extension work is due to an artificial stormwater outlet from the other neighbour township development next to Baldwin Development.
2. A Water Use Licence has been issued for the bigger project of road upgrade.
3. Baldwin developers will take responsibility and submit an EMP and design Plans for the work.

RECOMMENDATIONS

1. An EMP and design plan must be submitted.
2. Energy breakers downstream of the culvert must be made as natural as possible.
3. The watercourse downstream of the culvert must be made as natural as possible and to include rock protection, topsoil and indigenous vegetation.

4. A Plant Species Plan must be drawn up and implemented by a landscape architect, botanist or wetland specialist.

CONCLUSION

1. A General Authorisation is proposed if the aforementioned information show low risk.

Yours faithfully



Mr Pieter Ackerman (PrLArch)
Chief Landscape Architect: Instream Water Use

Date: 21/10/2016

S21 Water Use License – K22

Appendix O



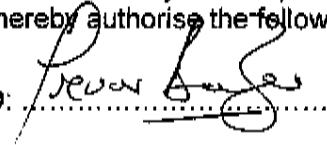
water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X313, Pretoria, 0001, Sedibeng Building, 185 Schoeman Street, Pretoria, Tel: (012) 336-7500
Fax: (012) 323-4472 / (012) 326-2715

LICENCE IN TERMS OF CHAPTER 4 OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) (THE ACT)

I, **Trevor Balzer**, in my capacity as Director-General (Acting) in the Department of Water Affairs and acting under authority of the powers delegated to me by the Minister of Water and Environmental Affairs, hereby authorise the following water uses in respect of this licence.

SIGNED: 

DATE: 22/07/2013

LICENCE NO: 08/C22E/CI/1640
FILE NO: 16/2/7/A230/N220

1. **Licensee:** South African National Roads Agency (SANRAL) Ltd
Postal Address Private Bag X17
Lynwood Ridge
0040
2. **Water Uses**
 - 2.1 Section 21(c) of the Act: Impeding or diverting the flow of water in a watercourse, subject to the conditions set out in Appendices I and II.
 - 2.2 Section 21(i) of the Act: Altering the bed, banks course or characteristics of a watercourse, subject to the conditions set out in Appendices I and II
3. **Properties in respect of which this licence is issued**
 - 3.1 Portions 145 and 147 of the farm Honderivier 508JR
 - 3.2 Portions 8 and 25 of the Onverwacht 509-JR
 - 3.3 Portions 11 and 1 of the farm Vaalbank 511-JR
 - 3.4 Portions 2 and 6 of the farm Zwartkoppies 364-IR

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4. Registered owner of the Properties

4.1 City of Tshwane Metropolitan Municipality

5. Licence and Review Period

5.1 This licence is valid for a period of twenty (20) years from the date of issuance and it may be reviewed every five (5) years.

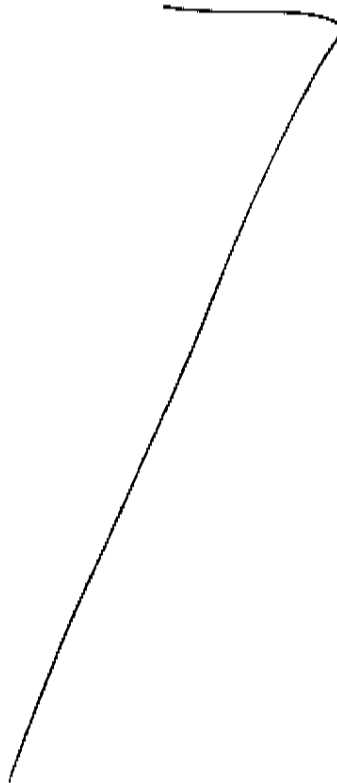
6. Definitions

"Any word or term defined under the National Water Act, 1998 (Act 36 of 1998) shall have the same meaning as defined in the Act, unless otherwise specifically stated."

"The Regional Head" means the Regional Chief Director: North West, Department of Water Affairs, Private Bag X5, Mmabatho, 0001.

7. Description of activity

This licence authorises South African National Roads Agency (SANRAL) Ltd for section 21(i) and (j) water uses in terms of Section 40 of the National Water Act (Act No 36 of 1998) for partial reconstruction of National Route R104 from Simon Vermooten Road to Bronkhorstspuit. The road passes through the Pienaars River, Forfar River, Honde River, Bronkhorst spruit and three unnamed drainage channels. The road upgrade will have four crossings from Simon Vermooten to Bronkhorstspuit. The activity falls within the Crocodile West Water Management Area in quaternary catchments A23A. The geographic points are start: S: 25°44'16.64" & E: 28°19'46.49" end: 25°48'23.20" & E: 28°43'49.92"




PS

APPENDIX I

General conditions for the licence

1. This licence is subject to all applicable provisions of the National Water Act, 1998 (Act 36 of 1998).
2. The responsibility for complying with the provisions of the licence is vested in the Licensee and not any other person or body.
3. The Licensee must immediately inform the Regional Head of any change of name, address, premises and/or legal status.
4. If the property(ies) in respect of which this licence is issued is subdivided or consolidated, the Licensee must provide full details of all changes in respect of the property(ies) to the Regional Head of the Department within 60 days of the said change taking place.
5. If a water user association is established in the area to manage the resource, membership of the Licensee to this association is compulsory.
6. The Licensee shall be responsible for any water use charges or levies imposed by a Regional Head.
7. While effect must be given to the Reserve as determined in terms of the Act, where a desktop determination of the Reserve has been used in issuance of a licence, when a comprehensive determination of the Reserve has finally been made; it shall be given effect to.
8. The licence shall not be construed as exempting the Licensee from compliance with the provisions of any other applicable Act, Ordinance, Regulation or By-law.
9. The licence and amendment of this licence are also subject to all the applicable procedural requirements and other applicable provisions of the Act, as amended from time to time.
10. The Licensee must conduct an annual internal audit on compliance with the conditions of licence. A report on the audit shall be submitted to the Regional Head within one month of the finalisation of the audit.
11. The Licensee must appoint an independent external auditor to conduct an annual audit on compliance with the conditions of this licence. The first audit must be conducted within three (3) months of the date of issuance of this licence and a report on the audit shall be submitted to the Regional Head within one month of finalisation of the report.
12. The Licensee shall establish and implement a continual process of raising awareness amongst itself, its workers and stakeholders for the need for Water Conservation and Water Demand Management.
13. Any incident that causes or may cause water pollution must be reported to the Regional Head or his/her designated representative within 24 hours.



APPENDIX II

Section 21(c) of the Act: Impeding or diverting the flow of water in a watercourse;
Section 21(i) of the Act: Altering the bed, banks, course or characteristic of a watercourse

1. GENERAL

1.1 This licence authorises SANRAL for Section 21(c) and (i) water uses for the reconstruction of (4) four bridges for the purpose of crossing the rivers and the drainage channel, as set out in Table 1 below;

Table 1: Water Use Activities:

Water Resource	Activities	Properties	Geographic positions	
			Start	End
Pienaars River	Widening of Pienaars river bridge.	Ptns 2 & 6 Farm Zwartkopies 364 JR	S 25° 45'16.5" E 28°45'16.5"S	S 28° 22' 50.2" E 28° 22' 50.5"
Forfar River	Widening of Forfar bridge	Ptns 173 & 178 of Farm Vaalbank 511JR	S 25° 47'40.4" E 28°47'40.4"S	S 28° 37' 11.4" E 28° 37' 11.7"
Honde River	Widening of Honde bridge	Ptns 67 & 68 Farm Onverwacht 509JR	S 25° 48'09.2" E 28°48'09.4"S	S 28° 41' 01.7" E 28° 41' 02.3"
Bronkhorst Spruit	Widening of Bronkhorst spruit bridge	Ptns 181 & 193 Hondsrivier 508JR	S 25° 48'22.1" E 28°48'22.3"S	S 28° 48' 23.9" E 28° 43' 24.4"
Unnamed wetlands on R104 between Simon Vermooten and Brokhortspruit	Gabion baskets on unnamed wetlands to lengthen culverts	R104 between Vermooten and Brokhortspruit	S 25° 45'21.7"	E 28°20'44.4"S

1.2 The Licensee must carry out and complete all the activities listed under condition 1.1 according to the following:

1.2.1 Reports submitted to the Department or the Regional Head, specifically:

1.2.1.1 Basic Assessment Report by Chameleon September 2011;

1.2.1.2 Public Participation Report by Scientific Aquatic Services dated May 2011;

1.2.1.3 Mitigations, Rehabilitation and Environmental Management Plan by Chameleon Environmental dated December 2011.

1.2.1.4 Storm Water Management Plan and Monitoring programme by

1.2.2 Environmental Authorisation from the Department of Agriculture and Rural Development dated March 2012

1.2.3 Conditions of this licence and

1.2.4 Any other written direction issued by the Regional Head in relation to this licence.

1.3 No activity must take place within the 1:100 year flood line or the delineated riparian habitat, whichever is the greatest, or within 500 m radius from the boundary of any wetland unless authorised by this licence.

- 1.4 The conditions of this licence must be brought to the attention of all persons (employees, sub-consultants, contractors etc.) associated with the undertaking of these activities and the Licensee must take such measures that are necessary to bind such persons to the conditions of this licence.
- 1.5 A copy of the water use licence and reports set out under condition 1.2 must be on site during the construction.
- 1.6 A suitably qualified person(s), appointed by the Licensee, and approved in writing by the Regional Head must be responsible for ensuring that the activities are undertaken in compliance with the specifications as set out in reports submitted to the Department or the Regional Head and the conditions of this licence.

2. FURTHER STUDIES AND INFORMATION REQUIREMENTS

- 2.1 For water use activities set out in Table 1 an environmental audit addressing how characteristics of the watercourse have been affected must be submitted to the Regional Head for a written approval within one (1) month after construction has been completed.
- 2.2 No fundamental alterations of the work method statements, site plan/s and drawings are allowed, unless a modification is requested and granted by the Regional Head in writing
- 2.3 No site activities must occur beyond the proposed site location of the erosion, sedimentation controls and marked limits of disturbance.
- 2.4 For all the activities listed under condition 1.1, Table 1, "as-built" plans and engineering drawings prepared by a registered professional engineer, must be submitted to the Regional Head within six (6) months of completion of new activities. These plans and drawings must indicate the watercourses including wetland boundaries and layout and structure locations of all infrastructure of impeding and/or diverting flow of watercourses as well as alterations to watercourses on the properties.
- 2.5 If the Licensee is not the end user/beneficiary of the water use related infrastructure and will not be responsible for long term maintenance and management of the infrastructure, the Licensee must provide a programme for hand over to the successor-in-title including a brief management/maintenance plan and the agreement for infrastructure along with allocation of responsibilities, within three (3) months of the date of issuing of this licence.

3. PROTECTIVE MEASURES

3.1 Storm Water Management

- 3.1.1 Storm water management practices must be constructed, operated and maintained in a sustainable manner throughout the project and for the water use activities set out in condition 1.1 and must include but are not limited to the following:
 - 3.1.1.1 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourses,
 - 3.1.1.2 Stormwater must be diverted from construction works and roads and must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow,
 - 3.1.1.3 The velocity of stormwater discharges must be attenuated and the banks of the watercourses protected,



- 3.1.1.4 Storm water leaving the Licensee's premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises,
- 3.1.1.5 Drainage next to the construction site must be diverted away from the water courses to ensure that any contaminated runoff does not flow directly into the watercourses as a storm water discharge, and
- 3.1.1.6 Sheet runoff from paved surfaces and access roads need to be curtailed.

3.2 Structures, Construction Plant and Materials

- 3.2.1 The height, width and length of structures must be limited to the minimum dimension necessary to accomplish the intended function.
- 3.2.2 Structures must not be damaged by floods exceeding the magnitude of floods occurring on average once in every 50 years.
- 3.2.3 Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.
- 3.2.4 Structures must be inspected regularly for accumulation of debris, blockage, erosion of abutments and overflow areas - debris must be removed and damages must be repaired and reinforced immediately.
- 3.2.5 The construction camp, plant and material stockpiles must be located outside the extent of the watercourse/s and must be recovered and removed within a period of one (1) month after completion of construction phase.
- 3.2.6 During the construction and operation phase, erosion and siltation measures should be implemented to ensure the sustainability of all structures.
- 3.2.7 During construction erosion berms should be installed to prevent gully formation, according to the slope.
- 3.2.8 All areas affected by construction should be rehabilitated upon completion of the construction phase of the development. Areas should be reseeded with indigenous vegetation species as required, and the use of seednets is recommended to prevent erosion.
- 3.2.9 Sedimentation measures must be implemented and sedimentation barriers must be included.
- 3.2.10 The methods and management practices that minimize and avoid problems such as modification and riparian clearance, erosion and severe bank stability must be applied during construction and maintenance of road crossings across the rivers.
- 3.2.11 A wetland specialist must be involved with detail site planning and design and be on site during crossings construction because the rivers and the wetlands have a high ecological importance and the rest of the route a low importance because of agriculture and non-compatible land use practices according to the ecological assessment.
- 3.2.12 Softening of the substrate in the culverts must be included in the design to ensure that the function of the bed and banks (shelter, food, habitat diversity) is not lost.

3.3 Water Quality

- 3.3.1 The Licensee shall sample the water quality weekly during construction and monthly during operation for the variables listed in Table 2 at monitoring points both upstream and downstream of the activities and report to the Regional Head within thirty (30) days after the results of each sampling event is received:

Table 2: Water quality parameters relevant to sampling

Variable	Limit
Electrical conductivity (EC) (mS/m)	<50
Turbidity (NTU)	<3
Suspended solids (SS) (mg/l)	<25
Dissolved oxygen (mg/l)	>6

The variables may be amended on discretion of the Responsible Authority. Only an accredited (SANS 17025) laboratory to be used for analysis.

- 3.3.2 Monitoring must be undertaken as set out in condition 5 of Appendix II.
- 3.3.3 Activities that lead to elevated levels of turbidity of any watercourse must be prevented, reduced, or otherwise remediate.
- 3.3.4 Construction, operation and maintenance activities must be scheduled to take place during dry seasons when flows are lowest where reasonably possible. If this is not possible and if management measures have not been provided for in the reports submitted to the Department or the Regional Head, the Licensee must submit such to the Regional Head for a written approval before these activities commence. Natural in stream hydrology is to be used to determine which months constitute the low flow months.
- 3.3.5 The ecological state of the water resource must not be lowered by the proposed development. The Licensee must ensure that the quality of the water to downstream water users does not decrease to lower than the limits as set out on Table 2 because of the water use activities listed under condition 1.1 of Appendix II.
- 3.3.6 The Licensee must ensure that the quality of the water to downstream water users does not decrease to lower than the limits as set out on Table 2 because of the water use activities listed under condition 1.1 of Appendix II.
- 3.3.7 Pollution of and disposal/spillage of any material into the watercourse must be prevented, reduced, or otherwise remediate through proper operation, maintenance and effective protective measures.
- 3.3.8 Dirty water pumped from the trenches and foundations must be released through a filter before being discharged back to the rivers or wetlands.
- 3.3.9 Vehicles and other machinery must be serviced well above the 1:100 year flood-line or outer edge of the riparian habitat whichever is the greatest. Oils and other potential pollutants must be disposed off at an appropriate licenced site, with the necessary agreement from the owner of such a site.
- 3.3.10 Any hazardous substances must be handled according to the relevant legislation relating to transport, storage and use of the substance.
- 3.3.11 All reagent storage tanks and reaction units must be supplied with a banded area built to the capacity of the facility and provided with sumps and pumps return the spilled material back into the system. The system must be maintained in a state of good repair and standby pumps must be provided.

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3.4 Flow

- 3.4.1 The Licensee must determine flood lines (1:50 and 1:100 year) prior to construction to ensure risks are adequately managed. Flood lines must be clearly indicated on the site plan(s) and drawings along with all wetland boundaries.
- 3.4.2 The activities must be conducted in a manner that does not negatively affect catchment yield, hydrology and hydraulics. The Licensee must ensure that the overall magnitude and frequency of flow in the watercourse(s) does not decrease, other than for natural evaporative losses and authorised attenuation volumes.
- 3.4.3 Appropriate design and mitigation measures must be developed to minimise impacts on the natural flow regime of the watercourse i.e. through placement of structures/supports and to minimise turbulent flow in the watercourse.
- 3.4.4 Structures must be designed in a way to prevent the damming of stream/river water and not impact on the flow of the water, during the construction and operational phases of all developments.
- 3.4.5 The development may not impede natural drainage lines.
- 3.4.6 The diversion structures may not restrict river flows by reducing the overall river width or obstructing river flow.
- 3.4.7 Place infrastructure below calculated bank full flow scour depths and allow a safety margin.
- 3.4.8 Bank must be protected against erosion and vegetated to blend into the surrounding banks.
- 3.4.9 Where flow in watercourse is permanent, the trench must be staged across part of the channel to maintain flows. Flows must not be stopped.

3.5 Instream and Riparian Habitat (IRH)

- 3.5.1 Activities (including spill clean-up) must start up-stream and proceed into a down-stream direction, so that the recovery processes can start immediately, without further disturbance from upstream works.
- 3.5.2 Operation and storage of equipment must not take place within the 1:100 year flood line or delineated riparian habitat, whichever is the greatest unless authorised in this licence.
- 3.5.3 Necessary erosion prevention mechanisms must be employed to ensure the sustainability of all structures and activities and to prevent instream sedimentation.
- 3.5.4 The environmental management plans must describe the options to avoid, minimise or compensate for the potential adverse effects and promote the conservation of the Instream and Riparian Habitat and also methods for the rehabilitation of the affected areas following the completion of the impacting activity.
- 3.5.5 If avoidance or minimisation is not possible or will not adequately protect the Instream and Riparian Habitat (IRH), compensation for damage to and /or mitigation to conserve the IRH must be done.
- 3.5.6 Encroachment of additional exotic species and terrestrial species in riparian zones must be discouraged.
- 3.5.7 As much indigenous vegetation growth as possible should be promoted within the proposed development area in order to protect soil and to reduce the percentage of the surface area which is paved.
- 3.5.8 Run-off from paved surfaces should be slowed down by the strategic placement of berms.

- 3.5.9 Indigenous riparian vegetation, including dead trees, outside the limits of disturbance indicated in the site plans must not be removed from the area.
 - 3.5.10 The vegetation and surrounding catchment should be managed to prevent erosion and siltation of the watercourse.
 - 3.5.11 Alien and invasive vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be sustainably eradicated or controlled.
 - 3.5.12 Existing vegetation composition must be maintained or improved by maintaining the natural variability in flow fluctuations.
 - 3.5.13 The indiscriminate use of machinery within the instream and riparian habitat will lead to compaction of soils and vegetation and must therefore be strictly controlled.
 - 3.5.14 Soils that have become compacted through the water use activities must be loosened to an appropriate depth to allow seed germination.
 - 3.5.15 Stockpiling of removed soil and sand must be stored outside of the 1:100 floodline or riparian habitat, whichever is the greater, to prevent being washed into the river and must be covered to prevent wind and rain erosion.
 - 3.5.16 Additional disturbances from temporary coffer dams or diverting flows around the work site, vehicle and machinery accessing and crossing and material stockpile must be minimised.
 - 3.5.17 Adequate bank stabilisation measures must be implemented. Slopes not to be steeper than 1:3 unless otherwise specified.
 - 3.5.18 Trenches must be open for minimal length of time and must be backfilled with materials that will not alter substance flow significantly.
 - 3.5.19 The direction and alignment of the pipeline must be perpendicular to the direction of the slope or flow across a wetlands. Where this is not feasible, appropriate measures to reduce the risk of preferential flow path development and associated erosion must be put in place.
 - 3.5.20 A buffer zone of 35m must be developed for each wetland and construction within the buffer zone must be restricted to the trench line and working side of the trench.
 - 3.5.21 Lay pipes and cables across the watercourse on the downstream side of channel bedrock outcrops.
- 3.6 Biota**
- 3.6.1 The Licensee must take all reasonable steps to allow movement of aquatic species, including migratory species.
 - 3.6.2 All reasonable steps must be taken not to disturb the breeding, nesting and/or feeding habitats and natural movement patterns of aquatic biota.
 - 3.6.3 The current level of diversity of biotopes and communities of animals, plants and micro organisms must be maintained.



4. REHABILITATION AND MANAGEMENT

- 4.1 A comprehensive and appropriate rehabilitation and management programme to restore the watercourse/s to environmentally acceptable and sustainable conditions after construction must be developed and submitted to the Regional Head for a written approval within (1) months from the date of issuance of this licence.
- 4.2 The Licensee must embark on a systematic long-term rehabilitation programme to restore the watercourse/s to environmentally acceptable and sustainable conditions after completion of the activities, which must include, but not be limited to the rehabilitation of disturbed and degraded riparian areas to restore and upgrade the riparian habitat integrity to sustain a bio-diverse riparian ecosystem.
- 4.3 Rehabilitation must be concurrent with construction.
- 4.4 Sufficient topsoil must be stripped and redistributed.
- 4.5 The original contours must be established over the pipeline trench. After the backfill has subsided, the contour must follow the surrounding contours to stop irregular flows or blockage of biotic movement.
- 4.6 Compacted and disturbed areas must be shaped to natural forms and to follow the original contour. In general cut and fill slopes and other disturbed areas must not exceed 1:3 (v:h) ratio, it must be protected, vegetated, ripped and scarified parallel with the contour.
- 4.7 All disturbed areas must be re-vegetated with indigenous plants in consultation with an indigenous plant expert, ensuring that during rehabilitation only indigenous shrubs, trees and grasses are in restoring the biodiversity.
- 4.8 An active campaign for controlling invasive species must be implemented within disturbed zones to ensure that it does not become a conduit for the propagation and spread of invasive exotic plants.
- 4.9 Photos of pre-construction, post construction and post rehabilitation must be taken and kept on record.
- 4.10 Rehabilitation structures must be inspected regularly for the accumulation of debris, blockages instabilities and erosion with concomitant remedial and maintenance actions.
- 4.11 A Wetland Management and Rehabilitation Plan must be compiled by a wetland specialist when wetlands are affected and submitted to the Regional Head for a written approval.
- 4.12 Wetland crossing(s) must be visited by a wetland specialist prior to construction to determine baseline conditions. This should be repeated during and after rehabilitation measures have been implemented to assess the success of rehabilitation and erosion control measures.
- 4.13 The Regional Head must sign a release form indicating that rehabilitation was done satisfactory according to specifications as per this licence.

5. MONITORING AND REPORTING

- 5.1 The Regional Head must be notified in writing one month prior to commencement of the licenced activities and again upon completion of the activities.
- 5.2 A comprehensive and appropriate environmental (including bio-monitoring) assessment and monitoring programme to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities listed under condition 1.1 as well as compliance to these water use licence conditions must be developed and submitted to the Regional Head for

a written approval within one (1) month of the commencement of the activity and must subsequently be implemented as directed.

- 5.3 The Licensee must ensure that the pipeline is regularly monitored and maintained to ensure any problems with the pipeline are identified and rectified before it can impact on the river.
- 5.4 An Environmental Control Officer must be appointed and he/she will be responsible for monitoring of the affected areas.
- 5.5 Six (6) monthly monitoring reports must be submitted to the Regional Head until otherwise agreed in writing with the Regional Head.
- 5.6 The Licensee must conduct a two yearly internal audit on compliance with the conditions this licence. A report on the audit must be submitted to the Regional Head within one month of the finalisation of the audit. A qualified independent auditor must undertake this audit.
- 5.7 The audit reports must include but are not limited to:
 - 5.7.1 Reporting in respect of the monitoring programme referred to in condition 4.2 of Appendix II;
 - 5.7.2 A record of implementation of all mitigation measures and implementation of the watercourse rehabilitation and management plan including a record of corrective actions.
- 5.8 The applicant must apply in writing to the Regional Head for alternative monitoring and reporting arrangements for which written approval must be provided.
- 5.9 Compensation measures must be implemented for damage where mitigation measures have failed to adequately protect the in-stream and riparian habitat or any other characteristic of the watercourses.
- 5.10 A qualified and responsible scientist must be retained by the Licensee who must give effect to the various licence conditions and to ensure compliance thereof pertaining to all activities of impeding and/or diverting flow of watercourses as well as alterations to watercourses on the property (ies) as set out in condition 1.1.

6. OTHER WATER USERS

- 6.1 The Licensee must attempt to prevent adverse effect on other water users. All complaints must be investigated by a suitable qualified person and if investigations prove that the Licensee has impaired the rights of other water users, the Licensee must initiate suitable compensative measures.

7. POLLUTION PREVENTION, INCIDENTS AND MALFUNCTIONS

- 7.1 The Licensee must notify the Regional Head within 24 hours of the occurrence or potential occurrence of any incident which has the potential to cause, or has caused water and environmental pollution, health risks or which is a contravention of the licence conditions. Pollution incidents shall be dealt with in accordance with the Act.
- 7.2 Any incident that may cause pollution of any water resource shall immediately be reported to the Regional Head, during the construction, operation and decommissioning phases of the activity.

- 7.3 If surface and/or groundwater pollution has occurred or may possibly occur, the Licensee must conduct, and/or appoint specialists to conduct the necessary investigations and implement additional monitoring, pollution prevention and remediation measures to the satisfaction of the Regional Head.
- 7.4 The Licensee or his/her delegated authority must ensure that no waste is stored close to crossings.
- 7.5 The Licensee shall keep all records relating to the compliance or non-compliance with the conditions of this licence in good order. Such records shall be made available to the Regional Head within 14 (fourteen) days of receipt of a written request by the Department for such records.
- 7.6 The Licensee shall keep an incident report and complaints register, which must be made available to any external auditors and the Department.

8. BUDGETARY PROVISIONS

- 8.1 The Licensee must ensure that there is a budget sufficient to complete and maintain the water use and for successful implementation of the rehabilitation programme as set out in this licence.
- 8.2 The Regional Head may at any stage of the process request proof of budgetary provisions for rehabilitation and closure of project.

[END OF LICENCE]



Appendix 3: Environmental Management Plan & IWWMP

Environmental Management Programme (EMPr)

For the Proposed Development on the Remainder of Portion 6 of the Farm
Zwartkoppies No 364-JR, Portion 241 of the Farm Zwartkoppies No 364-JR,
Portion 138 of the Farm Zwartkoppies No 364-JR, City of Tshwane Metropolitan
Municipality, Gauteng Province.

September 2016



PREPARED BY:

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ACRONYMS

BAR	BASIC ASSESSMENT REPORT
DEA	DEPARTMENT OF ENVIRONMENTAL AFFAIRS
DWS	DEPARTMENT OF WATER AFFAIRS AND SANITATION
EA	ENVIRONMENTAL AUTHORISATION
ECO	ENVIRONMENTAL CONTROL OFFICER
EMPR	ENVIRONMENTAL MANAGEMENT PROGRAMME
I&AP	INTERESTED AND AFFECTED PARTY
IEM	INTEGRATED ENVIRONMENTAL MANAGEMENT
MSDS	MATERIAL SAFETY DATA SHEET
NEMA	NATIONAL ENVIRONMENTAL MANAGEMENT ACT
PCA	POST CONSTRUCTION AUDIT
RE	RESIDENT ENGINEER
SHE	SAFETY, HEALTH AND ENVIRONMENT



1. Introduction

1.1. Background

Bokamoso Landscape Architects and Environmental Consultants CC were appointed by Balwin Properties Limited to conduct a Water Use License Application for the Riverwalk Mix Use Development for which Environmental Authorisation was granted under Reference Number GAUT 002/05-06/1543.

1.2. Project description

The proposed development will be situated on the Remainder of Portion 6 of the Farm Zwartkoppies No 364-JR, Portion 241 of the Farm Zwartkoppies No 364-JR, Portion 138 of the Farm Zwartkoppies No 364-JR, City of Tshwane Metropolitan Municipality, Gauteng Province.

The proposed development will entail the following:

- "Education/ Private School" ($\pm 8,5$ ha);
- "Residential 4" (7 erven $\pm 90-95$ units per hectare) – size of area to be covered with residential units is ± 70 ha);
- "Private Open Space" (± 33 ha);
- Roads and associated landscaped areas and sidewalks (± 8 ha); and
- Gatehouse, Club House and Entrance Gate ($\pm 0,5$ ha).

Timeframe for construction:

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

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

1.3. Receiving Environment

Biodiversity:

- The proposed study area falls within the Marikana Thornveld vegetation unit according to Mucina and Rutherford (2006).
- Majority of the study area is regarded as degraded with some illegal dumping taking place.

- Some areas along the N4 highway is regarded as sensitive with rocky outcrops and in addition to this area, the drainage line/watercourse should be regarded as sensitive.

Hydrology:

- A perennial river and wetland occurs within the study area.
- The study area is affected by floodlines.
- The perennial river and associated wetland occur on the northern border of the site and along the eastern boundary there is a wetland associated with a tributary to the perennial river.

Cultural /Historical:

- No cultural heritage resources are expected to be present on the proposed development area.

Visual:

- The proposed development will be visible from the N4 Highway (between Pretoria and Witbank) bordering the study area on the south.

2. EMPr Objectives and context

2.1. Objectives

The objectives of this plan are to:

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

2.2. EMPr context

This EMPr fits into the overall planning process of the project by carrying out the conditions of consent set out by the Gauteng Department of Agriculture and Rural Development.

This EMPr addresses the following three phases of the development:

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



3. Monitoring

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

These role players may include the Authorities (A), other Authorities (OA), Developer/ Proponent (D), Environmental Control Officer (ECO), Project Manager (PM), Contractors (C), Environmental Assessment Practitioner (EAP) and Environmental Site Officer (ESO). Landowners, Interested and Affected Parties (I&APs) and the relevant environmental and project specialists are also important role players.

3.1. Roles and responsibilities

- **Developer (D)**

The developer is ultimately accountable for ensuring compliance with the EMP and conditions contained in the Environmental Authorisation. The developer must appoint an independent Environmental Control Officer (ECO), for the duration of the pre-construction and construction phases, to ensure compliance with the requirements of this EMPr. The developer must ensure that the ECO is integrated as part of the project team.

- **Project Manager (PM)**

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

- **Environmental Control Officer (ECO)**

An independent Environmental Control Officer (ECO) shall be appointed, for the duration of the pre-construction and construction phases of the development, by the developer to ensure compliance with the requirements of this EMPr.

- The Environmental Control Officer shall ensure that the contractor is aware of all the specifications pertaining to the project.
- Any damage to the environment must be repaired as soon as possible after consultation between the Environmental Control Officer, Consulting Engineer and Contractor.



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

- **Contractor (C):**

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

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

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

- **Environmental Site Officer (ESO):**

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

- **Authority (A):**

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

- **Other Authorities (OA):**

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



- **Environmental Assessment Practitioner (EAP):**

According to Section 1 of NEMA the definition of an Environmental Assessment Practitioner is “the individual responsible for the planning, management and coordination of Environmental Impact Assessments, Strategic Environmental Assessments, Environmental Management Programmes or any other appropriate environmental instruments through regulations”.

3.2. Lines of Communication

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

3.3. Reporting Procedures to the Developer

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

3.4. Site Instruction Entries

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

3.5. ESA/ESO (Environmental Site Officer) Diary Entries

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

3.6. Methods Statements

Methods statements from the contractor will be required for specific sensitive actions on request of the authorities or ESA/ESO (Environmental Site Officer). All method statements will form part of the EMPr



documentation and are subject to all terms and conditions contained within the EMPr document. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of ESA/ESO, the format should clearly indicate the following:

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

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

3.7. Record Keeping

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

4. Acts

- **The National Water Act, 1998 (Act No: 36 of 1998)**

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

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Reducing and preventing pollution and degradation of water resources;
- Facilitating social and economic development; and
- Providing for the growing demand for water use.

Impact on proposed Development:

The site borders a perennial wetland and river system as well as a tributary. A Section 21 (c) and (i) Water Use License will most probably be required by the Department of Water Affairs.



- **Atmospheric Pollution Prevention Act (Act 45 of 1965)**

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

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

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

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

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

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

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

Impact on proposed Development:

The Act have relevance to the proposed development during the construction phase. Dust pollution could be a concern primarily during the construction phase of the proposed project. Dust control would be adequately minimised during this phase by way of water spraying and possible dust-nets, when working close to existing residential dwellings or roads/highways. It is not foreseen that the proposed development would contribute significantly to pollution in terms of emissions and noise during its operational phase.

- **National Environmental Management Act (Act 107 of 1998)**

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

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

Impact on proposed Development:

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

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

- **The National Environmental Management: Waste Act (Act 59 of 2008)**

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

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

On 3 July 2009 the Minister of Environmental Affairs and Tourism promulgated a list of waste management activities that might have a detrimental effect on the environment. These listed activities provide the activities



that require a Waste Management License. Two Categories is specified: Category A and Category B. As part of Category A Waste Management License application a Basic Assessment in terms of Section 24(5) of the National Environmental Management Act (Act 107 of 1998) must be submitted to the relevant Authority. As part of a Category B Waste Management License a Scoping and EIA process in terms of Section 24(5) of the National Environmental Management Act (Act 107 of 1998) must be followed and submitted to the relevant Authority.

On 29 November 2013 the Minister of Environmental Affairs and Tourism amended the list of waste activities that might be detrimental to the environment.

Impact on proposed Development:

No Waste Management License is expected to be required during the construction or operational phase of the proposed development.

- **The Municipal Systems Act (Act 32 of 2000)**

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

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

Impact on proposed Development:

The proposed development will contribute to the municipal services to an extent.

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

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

Impact on proposed Development:

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



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

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

Impact on proposed Development:

No features of Heritage importance are expected to be found on the proposed study area. The proposed development is more than 4 km from a world heritage site. If any such features are discovered during construction activities and clearing of the application site, the correct "procedures for an Environmental incident" (at the end of the EMP) must be followed.

- **Conservation of Agricultural Resources Act (Act No. 43 of 1983)**

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

Impact on proposed Development:

According to the Gauteng Agriculture Potential Atlas (GAPA 3) the study area has a very low to moderate agricultural potential.

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

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

Impact on proposed Development:

Majority of the study area is regarded as degraded with some illegal dumping taking place. Some areas along the N4 highway is regarded as sensitive with rocky outcrops and in addition to this area, the drainage line/watercourse should be regarded as sensitive.

- **National Spatial Biodiversity assessment**

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.



Impact on proposed Development:

The proposed development is situated within the Marikana Thornveld vegetation type according to Mucina and Rutherford (2006).

- **Protected Species – Provincial Ordinances**

Provincial ordinances were developed to protect particular plant species within specific provinces. The protection of these species is enforced through permitting requirements associated with provincial lists of protected species. Permits are administered by the Provincial Departments of Environmental Affairs.

Impact on proposed Development:

Majority of the study area is regarded as degraded with some illegal dumping taking place. Some areas along the N4 highway is regarded as sensitive with rocky outcrops and in addition to this area, the drainage line/watercourse should be regarded as sensitive.

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

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

Impact on proposed Development:

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

5. Project activities

Pre-Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
General	Project contract	To make the EMPr enforceable under the general conditions of the contract.	The EMPr document must be included as part of the tender documentation	The EMPr is included as part of the tender documentation	Developer	-
Design and planning	Stability of structures and restriction of land use due to geology	To ensure stability of structures	The layout and land uses must correspond to the stability zonation and development types recommended by the geotechnical engineer.	The land uses and layout corresponds to the recommended stability zonation and development types.	Individual Developer Engineer	-
			Strip footings should be used for the foundations of construction.	Excavations and foundations remain stable	Engineer Individual Developer	
			More detailed foundation investigation shall be done for each of the structures.	More detailed foundation investigations done.	Engineer Individual Developer	-
	Stability of excavations due to geology	To ensure stability of excavations	Sides of excavations should be either shored or else battered back.	Excavations remain stable.	Engineer Individual Developer	
	Storm water design	Erosion of drainage lines	1) Appropriate flow diversion and erosion control structures i.e. earth embankments must be put in place in areas where soil may be exposed to high levels of erosion due to steep slopes etc. 2) Any damage, displacement or loss of soil resulting from unforeseen events is to be recorded and remediated immediately. Should this occur due to negligence on the			



Pre-Construction Phase						
TYPE	Environmental risk or issue	Objective requirement or	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			contractor's behalf, the contractor shall carry remediation costs. 3) Storm water at the site camp must be managed so as to reduce/ minimise the silt loads in the stream channel. 4) Construction on steep slopes and in soft or erodible material will require erosion control measures and appropriate grassing/ hydroseeding measures. 5) All construction areas should be suitably top-soiled and vegetated as soon as it is possible after construction; and disturbed areas to be rehabilitated must be ripped and the area must be backfilled with topsoil.			
		Stream – increased sediment input	1) To prevent erosion of material that is stockpiled for long periods, the material must be retained in a bermed area. 2) All topsoil within the area to be developed must be removed and stockpiled on site. 3) The temporary storage of topsoil must be above the 100yr floodline or at least 20m from the top of any bank or drainage lines. 4) An earth bank is to be constructed around the upslope portion of any stockpiles in order to direct runoff and prevent scouring of stockpiles. 5) A silt fence is to be erected around any stockpiles in order to trap sediment and prevent stockpile sediment loss.			
	Light pollution	To minimise light pollution	The generation of light by night events, security lighting and other lighting shall be	Lighting effectively designed	Architect/ Landscape	-



Pre-Construction Phase						
TYPE	Environmental risk or issue	Objective requirement or	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			effectively designed so as not to spill unnecessary outward into the oncoming traffic, or into the yards of the neighbouring properties, oncoming traffic on highway or open spaces.		Architect	
	Visual impact	To minimise the visual impact of the proposed development.	Architectural guidelines to minimize the visual impact: 1) Roof colour will blend in tastefully with the surrounding environment. Building design must be aesthetically pleasing. 2) Suitable plant materials should be used at strategic points to screen off impacts caused by roofs, cars in large parking areas. 3) Mature existing trees should be retained as far as possible. The trees will soften the impact of the proposed development. 4) Rubble and litter must be removed on a weekly basis and be disposed of at a suitably registered landfill site.	Architectural guidelines minimise visual impact	Architect	-
Climate	Extreme change in micro climate temperatures	To prevent the extreme change in micro climate temperatures	Where open parking bays are involved, one tree for every two parking bays shall be indicated on the Landscape Development Plan which shall be approved by the Design Review Committee/ Local Authority.	Landscape Development Plan complies	Landscape Architect	-
Fauna and flora	Floral biodiversity and ecological health	To ensure that the species introduced to the area, are compatible with the current and future quality of the ecological	1) The Landscape Development Plan for the proposed development shall be submitted to the local authority for approval. 2) It is important that all the plant positions, quantities and coverage per m ² be indicated on a plan. 3) The proposed planting materials for the	The landscape development plan submitted to the local authority for approval.	Landscape Architect	-

Pre-Construction Phase						
TYPE	Environmental risk or issue	Objective requirement or	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
		processes.	areas to be landscaped shall be non-invasive, and preferably indigenous and/ or endemic. Indigenous tree species will aid in habitat creation that will attract indigenous faunal species into the area. 4) Where possible, trees naturally growing on the site should be retained as part of the landscaping.			
Preparing Site Access	Environmental integrity	To avoid erosion and disturbance to indigenous vegetation	1) Designated routes shall be determined for the construction vehicles and designated areas for storage of equipment. 2) Clearly mark the site access point and routes on site to be used by construction vehicles and pedestrians. 3) Provide an access map to all contractors whom in turn must provide copies to the construction workers. Instruct all drivers to use access point and determined route.	Access to site is erosion free. Minimum disturbance to surrounding vegetation. Vehicles make use of established access routes.	Contractor	Continuous
		Entrance of Vehicles	Entrance by vehicles, especially off-road cars and bakkies, off-road bicycles and quad bikes and construction staff should be prohibited, both during the construction phase and during the lifespan of the project.			
	Waste storage	To control the temporary storage of waste.	Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks and these points should not be located in sensitive areas/areas highly visible from the properties of the surrounding land-owners/tenants/in areas where the wind direction will carry bad		Contractor ESO	-

<i>Pre-Construction Phase</i>						
<i>TYPE</i>	<i>Environmental risk or issue</i>	<i>Objective or requirement</i>	<i>Mitigation measure</i>	<i>Performance indicator</i>	<i>Responsibility</i>	<i>Frequency of Action</i>
			odours across the properties of adjacent tenants or landowners.			
		Ensure waste storage area does not generate pollution	Build a bund around waste storage area to stop overflow into storm water.		Contractor	-

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
Contractors Camp	Vegetation and topsoil	To minimize damage to and loss of vegetation and retain quality of topsoil	1) Site to be established under supervision of ECO. 2) Clearing and relocation of plants to be undertaken in accordance with site specific requirements.	Minimal vegetation removed/ damaged during site activities.	Contractor	As and when required
	Surface and ground water pollution	To minimize pollution of surface and Groundwater resources.	1) Sufficient and temporary facilities including ablution facilities must be provided for construction workers operating on the site. 2) A minimum of one chemical toilet shall be provided per 10 persons. The contractor shall keep the toilets in a clean, neat and hygienic condition. Toilets provided by the contractor must be easily accessible and a maximum of 50m from the works area to ensure they are utilized. The contractor (who must use reputable toilet-servicing company) shall be responsible for the cleaning, maintenance and servicing of the toilets. The contractor (using reputable toilet-servicing company) shall ensure that all toilets are cleaned and emptied before the builders' or other public holidays. 3) No person is allowed to use any other area than chemical toilets. 4) No French drain systems may be installed. 5) No chemical or waste water must be allowed to contaminate the run-off on site. 6) Avoid the clearing of the site camp (of specific phase) or paved surfaces with soap.	Effluents managed Effectively. No pollution of water resources from site. Workforce use toilets provided.	Contractor ESO	As and when required

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
		To minimize pollution of surface and Groundwater resources due to spilling of materials.	1) Drip trays and/ or lined earth bunds must be provided under vehicles and equipment, to contain spills of hazardous materials such as fuel, oil and cement. 2) Repair and storage of vehicles only within the demarcated site area. 3) Spill kits must be available on site. 4) Oils and chemicals must be confined to specific secured areas within the site camp. These areas must be bunded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks. 5) All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site. 6) No leaking vehicle shall be allowed on site. The mechanic/ the mechanic of the appointed contractor must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof. 7) No bins containing organic solvents such as paints and thinners shall be cleaned on site, unless containers for liquid waste disposal are placed for this purpose on site.	No pollution of the environment	Contractor ESO	Daily
		To minimize pollution of surface and groundwater resources by cement	The mixing of concrete shall only be done at specifically selected sites, as close as possible to the entrance, on mortar boards or similar structures to prevent run-off into drainage lines, streams and natural vegetation.	No evidence of contaminated soil on the construction site.	Contractor ESO	Daily
		To minimize	No effluent (including effluent from any storage	No evidence of	Contractor	Daily



Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
		pollution of surface and Groundwater resources due to effluent.	areas) may be discharged into any water surface or ground water resource.	contaminated water resources.	ESO	
	Pollution of the environment	To prevent unhygienic usage on the site and pollution of the natural assets.	<p>1) Weather proof waste bins must be provided and emptied regularly.</p> <p>2) The contractor shall provide labourers to clean up the contractor's camp and construction site on a daily basis.</p> <p>3) Temporary waste storage points on the site should be determined. THESE AREAS SHALL BE PREDETERMINED AND LOCATED IN AREAS THAT IS ALREADY DISTURBED. These storage points should be accessible by waste removal trucks and these points should be located in already disturbed areas /areas not highly visible from the properties of the surrounding land-owners/ in areas where the wind direction will not carry bad odours across the properties of adjacent landowners. This site should comply with the following:</p> <ul style="list-style-type: none"> • Skips for the containment and disposal of waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; • Small lightweight waste items should be contained in skips with lids to prevent wind littering; • Bunded areas for containment and 	<p>No waste bins overflowing</p> <p>No litter or building waste lying in or around the site</p>	Contractor ESO	Daily Weekly



Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			holding of dry building waste. 4) No solid waste may be disposed of on the site. 5) No waste materials shall at any stage be disposed of in the open veld of adjacent properties. 6) The storage of solid waste on the site, until such time as it may be disposed of, must be in a manner acceptable to the local authority and DWS. 7) Cover any wastes that are likely to wash away or contaminate storm water.			
		Recycle material where possible and correctly dispose of unusable wastes	1) Waste shall be separated into recyclable and non-recyclable waste, and shall be separated as follows: <ul style="list-style-type: none"> • General waste: including (but not limited to) construction rubble, • Reusable construction material. 2) Recyclable waste shall preferably be deposited in separate bins. 3) All solid waste including excess spoil (soil, rock, rubble etc) must be removed to a permitted waste disposal site on a weekly basis. 4) No bins containing organic solvents such as paints and thinners shall be cleaned on site, unless containers for liquid waste disposal are placed for this purpose on site. 5) Keep records of waste reuse, recycling and disposal for future reference. Provide information to ECO.	Sufficient containers available on site No visible signs of pollution	Contractor ESO	Daily Weekly

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
	Waste	To keep the site clean and tidy. To ensure waste enters the appropriate waste stream in order to optimize recycling opportunities.	1) Rubble must be removed from the construction site frequently and be disposed of at an approved dumping site. 2) Sufficient and covered containers must be available on the construction site. 3) Such containers are to be emptied frequently. 4) All liquid effluent is to be disposed of in a manner approved of by the Local Authority. 5) Material to be used as backfill during a later stage of the building construction must be covered with a layer of soil to prevent litter from being blown over the site and to prevent unhygienic conditions. 6) Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site. 7) The burning of waste is prohibited. 8) Where possible, waste must be separated into clearly marked containers and subsequent recycling thereof must be a priority.		Contractor	Monitor daily
	Increased fire risk to site and surrounding areas	To decrease fire risk.	1) Fires shall only be permitted in specifically designated areas and under controlled circumstances. 2) Food vendors shall be allowed within specified areas. 3) No wood may be collected from the site for fires. 4) Fire extinguishers to be provided in all vehicles and fire beaters must be available on site.	No open fires on site that have been left unattended	Contractor	Monitor daily



Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			5) Emergency numbers/ contact details must be available on site, where applicable.			
Construction site	Geology and soils	To protect underground services from alkaline or corrosive attack.	Underground services should be treated appropriately prior to installation.	Underground services are not being corroded	Contractor	Monitor regularly/ as required
		To prevent the damage of the existing soils and geology.	1) The top layer of all areas to be excavated for the purposes of construction shall be stripped and stockpiled in areas where this material will not be damaged, removed or compacted. 2) All surfaces that are susceptible to erosion, shall be protected either by cladding with biodegradable material or with the top layer of soil being seeded with grass seed/planted with a suitable groundcover.	Excavated materials correctly stockpiled No signs of erosion	Contractor	Monitor daily
		To prevent the loss of topsoil To prevent siltation & water pollution.	1) Stockpiling will only be done in designated places where it will not interfere with the natural drainage paths of the environment. 2) In order to minimize erosion and siltation and disturbance to existing vegetation, it is recommended that stockpiling be done/ equipment is stored in already disturbed/ exposed areas. 3) Cover stockpiles and surround downhill sides with a sediment fence to stop materials washing away. 4) Remove vegetation only in areas designated during the planning stage. 5) Rehabilitation/ landscaping are to be done	Excavated materials correctly stockpiled No visible signs of erosion and sedimentation Minimal invasive weed growth Vegetation only removed in designated areas	Contractor of the Individual Developer	Monitor daily



Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			<p>immediately after the involved works are completed.</p> <p>6) All compacted areas should be ripped prior to them being rehabilitated/ landscaped by the contractor as appointed by the developer/ individual erf owner.</p> <p>7) The top layer of all areas to be excavated must be stripped and stockpiled in areas where this material will not be damaged, removed or compacted. This stockpiled material should be used for the rehabilitation of the site and for landscaping purposes.</p> <p>8) Strip topsoil at start of works and store in stockpiles no more than 1,5 m high in designated materials storage area.</p> <p>9) During the laying of any cables, pipelines or infrastructure (on or adjacent to the site) topsoil shall be kept aside to cover the disturbed areas immediately after such activities are completed.</p>			
	Erosion and siltation	To prevent erosion and siltation	<p>1) It is recommended that the construction of the development be done in phases.</p> <p>2) Each phase should be rehabilitated immediately after the construction for that phase has been completed. The rehabilitated areas should be maintained by the appointed rehabilitation contractor until a vegetative coverage of at least 80% has been achieved as appointed by the developer/ individual erf owner.</p> <p>3) Mark out the areas to be excavated.</p>	<p>No erosion scars</p> <p>No loss of topsoil</p> <p>All damaged areas successfully rehabilitated</p>	Contractor ESO	Monitor daily

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			<p>4) Large exposed areas during the construction phases should be limited. Where possible areas earmarked for construction during later phases should remain covered with vegetation coverage until the actual construction phase. This will prevent unnecessary erosion and siltation in these areas.</p> <p>5) Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided.</p> <p>6) All embankments must be adequately compacted and planted with grass to stop any excessive soils erosion and scouring of the landscape if required.</p> <p>7) The eradication of alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed areas by the individual erf owner.</p> <p>8) Storm water outlets shall be correctly designed to prevent any possible soil erosion.</p> <p>9) All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur.</p> <p>10) Implementation of temporary storm water management measures that will help to reduce the speed of surface water by the individual erf owner / developer.</p> <p>11) All surfaces that are susceptible to erosion shall be covered with a suitable vegetative</p>			

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			cover as soon as construction is completed by the individual erf owner / developer.			
	Stability of structures due to geology	To ensure stability of structures	Preventative foundation designs shall be done. Detailed foundation inspections should be carried out at the time of construction to identify any variances and adjust foundation designs accordingly if need be. The foundation recommendations from the geotechnical engineers must be adhered to.		Engineers / Contractor / Individual Developer	When required
	Seepage of groundwater into excavations	To ensure that excavations do not become flooded	Provision should be made for the removal of groundwater from excavations.		Contractor	Monitor daily
	Cracking of structures	To ensure that built structures do not crack due to collapsible soils and settlement	<p>1)The floors of foundation excavations should be compacted by a hand-operated vibratory roller or else by a machine equivalent to a Wacker Rammer (a mechanised tamping device); a test section should firstly be compacted under supervision of the Engineer in order to determine the number of roller passes. The structures may then be constructed by conventional means.</p> <p>Additional precautionary measures that can be employed are:</p> <p>2) The provision of expansion joints in the walls of structures;</p> <p>3) A concrete walkway of 1,0m in width around the perimeter of each structure; and</p> <p>4) The shaping of the walkway and the ground surface in the vicinity of the structures so as to</p>	Built structures show no sign of cracks	Engineer/ Contractor	As required

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			drain water away from each structure so that no ponding of surface water can take place in the vicinity of the structures.			
	Hydrology	To minimise pollution of soil, surface and groundwater	1) Increased run-off during construction must be managed using berms and other suitable structures as required to ensure flow velocities are reduced. 2) The contractor shall ensure that excessive quantities of sand, silt and silted water do not enter the storm water system.	No visible signs of erosion. No visible signs of pollution	Contractor	Monitor daily
	Wetland	Preserving River and Wetland areas.	1) The delineated wetland and river area with its associated buffer zones should be clearly marked prior to construction. These areas are strictly excluded from development and should remain open space during the proposed development activities. 2) Construction of water control structures to prevent and control any erosion on the site. 3) Prevent contamination of wetland areas from polluted runoff/ seepage/ drainage water by utilizing relevant control measures. 4) During the construction phase, no dumping and no stockpiling of materials within the wetland areas and associated buffers should take place. 5) No construction or dumping of activities should take place within the 1:50 year or 1:100 year floodline or a horizontal distance of 100m from a water resource unless authorized by DWA. 6) No vehicles should be allowed to	No visible signs of pollution	Contractor	

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			indiscriminately drive through the wetland areas. Fence-off sensitive areas prior to construction and apply temporary storm water management measures outside the watercourse and watercourse buffer zones to prevent entry into the wetland areas and drainage line by construction vehicles and prevent storing or dumping of topsoil, construction material and other waste in the wetland/drainage line. 7) The area should be prepared with sandbags or other applicable measures to avoid siltation into the wetland/ river area.			
	Fauna and flora	To protect the existing fauna and flora.	1) All exotic invaders and weeds must be eradicated on a continuous basis. 2) Exotic invaders must be included in an alien management program for the site. Eradication must occur every 3 months. 3) No plants not indigenous to the area, or exotic plant species, especially lawn grasses and other ground-covering plants, should be introduced in the communal landscaping of the proposed site, as they will drastically interfere with the nature of the area. 4) Where possible, trees naturally growing on the site should be retained as part of the landscaping.	No exotic plants used for landscaping	Contractor ESO / Home Owners Association / Design Review Committee	As and when required Every 6 months
		To protect the existing fauna and flora.	1) Trees that are intended to be retained shall be clearly marked on site. 2) Snaring and hunting of fauna by construction workers on or adjacent to the	No measurable signs of habitat destruction	Contractor ESO	As and when required

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			<p>study area are strictly prohibited and the Council shall prosecute offenders.</p> <p>3) All mitigation measures for impacts on the indigenous flora of the area should be implemented in order to limit habitat loss as far as possible and maintain and improve available habitat, in order to maintain and possibly increase numbers and species of indigenous fauna.</p> <p>4) Wood harvesting of any trees or shrubs on the study area or adjacent areas shall be prohibited.</p> <p>5) Where possible, work should be restricted to one area at a time.</p> <p>6) Noise should be kept to a minimum and the development should be done in phases to allow faunal species to temporarily migrate into the conservation areas in the vicinity.</p> <p>7) The integrity of remaining wildlife should be upheld, and no trapping or hunting by construction personnel should be allowed. Caught animals should be relocated to the conservation areas in the vicinity.</p> <p>8) Entrance by vehicles, especially off-road cars and bakkies, off-road bicycles and quad bikes and construction staff into the application site should be prohibited, both during the construction phase and during the lifespan of the project.</p>			
		To protect the existing fauna and	1) Retain natural habitat elements such as tree stumps, termite mounds, etc. where possible.	No measurable signs of habitat destruction	Contractor ESO	As and when required



Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
		flora.	2) Preserve, maintain and construct biological corridors where possible, as well as retaining green belts interconnected with these corridors.			
Social	Noise impact	To maintain noise levels below "disturbing" as defined in the national Noise Regulations.	1) Site workers must comply with the Provincial noise requirements as outlined in Provincial Notice No. 5479 of 1999: Gauteng Noise Control Regulations. 2) Noise activities shall only take place during working hours.	No complaints from surrounding residents and I & APs	Contractor	Monitored daily
	Dust impact	Minimise dust from the site	1) Dust pollution could occur during the construction works, especially during the dry months. Regular and effective damping down of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that will have a negative impact on the surrounding environment. 2) When necessary, these working areas should be damped down in the mornings and afternoons.	No visible signs of dust pollution No complaints from surrounding residents and I & APs	Contractor	Monitored daily
	Safety and security	To ensure the safety and security of the public.	1) Although regarded as a normal practice, it is important to erect proper signs indicating the operations of heavy vehicles in the vicinity of dangerous crossings and access roads or even in the development site if necessary. 2) With the exception of the appointed security personnel, no other workers, friend or relatives will be allowed to sleep on the construction site (weekends included) 3) Construction vehicles and activities to avoid peak hour traffic times	No incidences reported	Contractor ESO	Monitored daily

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			4) Presence of law enforcement officials at strategic places must be ensured 5) Following actions would assist in management of safety along the road <ul style="list-style-type: none"> ▪ Adequate road marking ▪ Adequate roadside recovery areas ▪ Allowance for pedestrians and cyclists where necessary ▪ Although regarded as a normal practice, it is important to erect proper signs indicating the danger of the excavation in and around the development site. Putting temporary fencing around excavations where possible. 			
	Infrastructure and services	Installation of services	Determine areas where services will be upgraded and relocated well in advance. Discuss possible disruptions with affected parties to determine most convenient times for service disruptions and warn affected parties well in advance of dates that service disruptions will take place	No complaints from I & AP	Contractor ESO	When required
	Cultural Resources		If any graves or archaeological sites are exposed during construction work it should immediately be reported to a museum. The report from the archaeologist must be provided to GDARD if any graves are recovered.	No destruction of or damage to graves or known archaeological sites	Contractor ESO	Monitor daily
	Visual impact	In order to minimise the visual impact.	1) The disturbed areas shall be rehabilitated immediately after the involved construction works are completed. 2) Shade cloth must be used to conceal and	Visual impacts minimized	Contractor ESO	Monitor daily

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			minimise the visual impact of the site camps and storage areas			
	Vegetation	Landscaping	1) When planting trees, care should be taken to avoid the incorrect positioning of trees and other plants, to prevent the roots of trees planted in close proximity to the line of water-bearing services from causing leaking in, or malfunctioning of the services. 2) The proposed planting materials for the areas to be landscaped should preferably be endemic and indigenous. 3) All new trees and shrubs to be planted on the study area shall be inspected for pests and diseases prior to them being planted. 4) The inspection shall be carried out by the maintenance contractor at the property of the supplier and not on the study area. 5) All trees to be planted shall be in minimum 100L containers with a height of approximately 3 metres and a main stem diameter of approximately 80 mm.	Landscaping done according to landscape development plan	Landscape architect Contractor / Individual Developer	When required
		Loss of plants	1) Aerate compacted soil and check and correct pH for soils affected by construction activities. 2) Make sure plant material will be matured enough and hardened off ready for planting. Water in plants immediately as planting proceeds. 3) Apply mulch to conserve moisture. Plant according to the layout and planting techniques specified by the Landscape	Landscaping done according to landscape development plan	Landscape architect Contractor / Individual Developer	When required

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			Architect in the Landscape Development plans for the site.			
		Spread of weeds	Ensure that materials used for mulching and topsoil/ fertilisers are certified weed free. Collect certifications where available. Control weed growth that appears during construction.	Weed growth controlled	Landscape architect Contractor	When required
		To ensure rehabilitation of the site	1) Compacted soils shall be ripped at least 200mm. 2) All clumps and rocks larger than 30mm diameter shall be removed from the soil to be rehabilitated. 3) The soil shall be levelled before seeding 4) Hydroseed the soil with Potch mixture 5) Watering shall take place at least once per day for the first 14 days until germination of seeds have taken place 6) Thereafter watering should take place at least for 20 minutes every 4 days until grass have hardened off.	Grass have hardened off	Landscape architect Contractor	Once a day Then every 4 days
		Rehabilitation of area directly surrounding stream	1) Vehicles and workers associated with construction should not have free access to the stream and unnecessary disturbance to the stream should be avoided. 2) No vegetation may be removed from the stream area or buffer zone unless stipulated in a Water Use License granted to the owner of the site. 3) Erosion control measures should be implemented on all open soils and steep slopes.	No erosion surrounding new river area	Landscape architect Contractor	Immediately after construction

Construction Phase						
TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			4) Upon completion of the construction in the area, the area should be rehabilitated to a level that will ensure that wetland vegetation can become re-established. In this regard special mention of the following is made: <ul style="list-style-type: none"> • All areas of disturbed and compacted soils need to be compacted and reprofiled. • Ongoing removal of alien vegetation from the area must take place after the completion of the structure to prevent the uncontrollable recruitment of these species. 			

Operational Phase					
TYPE	Environmenta l risk or issue	Objective or requirement	Mitigation measure	Responsibility	Frequency of Action
Site clean-up and preparation for use	Storm water pollution	Do not allow any materials to wash into the storm water system.	Remove erosion and sediment controls only if all bare soil is sealed, covered or re-vegetate. Sweep roadways clean and remove all debris from kerb and gutter areas. Do not wash into drains.	Contractor	-
		Minimise waste	Decontaminate and collect waste in storage area ready for off-site recycling or disposal Arrange for final collection and removal of excess and waste materials.	Contractor	-
Establishing plants	Slow or no re-vegetation to stabilise soil; loss or degradation of habitat	To ensure re-vegetation to stabilize soil	Agreed schedule for regular follow-up watering, weed control, mulch supplements and amenity pruning, if needed. Replace all plant failures within three month period after planting.	Contractor	To be agreed
Materials failure	Structural damage. Loss of site materials.		Inspect all structures monthly to detect any cracking or structural problems. Confirm with designer if there are design problems. Rectify with materials to match, or other agreed solution.	Contractor	-
Drainage failure	On-site and downstream drainage pollution or flooding	Storm water management plan	Inspect all site drainage works and repair any failures. Confer with design engineer and to correct site problems.	Contractor / Dolomite Risk manager as appointed by the home owner	-
Site audit	Eventual project failure	Successful project establishment	Routinely audit the works and adjust maintenance schedule accordingly.	Contractor	-
General			Open fires and smoking during maintenance works are strictly prohibited.	Contractor	-

6. Procedures for environmental incidents

6.1. Leakages & spills

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

6.2. Failure of erosion/sediment control devices

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

6.3. Bank/slope failure

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

6.4. Discovery of rare or endangered species

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

6.5. Discovery of archaeological or heritage items

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



7. EMP review

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

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

INTEGRATED WATER QUALITY AND QUANTITY MANAGEMENT AND MONITORING PLAN (IWQQMMP)

River Walk Development

WATER USE LICENSE APPLICATION TO THE DEPARTMENT OF WATER AND SANITATION IN TERMS OF
SECTION 21 OF NWA (ACT 36 OF 1998) WATER USE AUTHORISATION

Section 21 (c)

Impeding or diverting the flow of water in a watercourse

Section 21 (i)

Altering the bed, banks, course or characteristics of a watercourse

SEPTEMBER 2016



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Acronyms

BAR	BASIC ASSESSMENT REPORT
DEA	DEPARTMENT OF ENVIRONMENTAL AFFAIRS
DWS	DEPARTMENT OF WATER AFFAIRS AND SANITATION
EA	ENVIRONMENTAL AUTHORISATION
ECO	ENVIRONMENTAL CONTROL OFFICER
EMPR	ENVIRONMENTAL MANAGEMENT PROGRAMME
I&AP	INTERESTED AND AFFECTED PARTY
IEM	INTEGRATED ENVIRONMENTAL MANAGEMENT
MSDS	MATERIAL SAFETY DATA SHEET
NEMA	NATIONAL ENVIRONMENTAL MANAGEMENT ACT
PCA	POST CONSTRUCTION AUDIT
RE	RESIDENT ENGINEER
SHE	SAFETY, HEALTH AND ENVIRONMENT

1) INTRODUCTION AND BACKGROUND

The purpose of this Integrated Water Quality and Quantity Management and Monitoring Plan (IWQQMMP) is to supply the proposed Riverwalk Development with a dynamic, holistic and integrated system and process management tool aimed at the detection and remediation of adverse environmental impacts, pollution prevention and minimization at source, managing the impact of pollution and waste on the receiving environment and remediating damaged environments.

The plan also serves as a framework to ensure efficient, appropriate, affordable, economical and sustainable use and development of water resources and includes the management of wastes that have the potential to impact on the water resource, in such a manner that it promotes the conservation of water resources, and general health and safety.

In terms of Section 21 of the National Water Act (Act No. 36 of 1998) (NWA), the developer must obtain a water use license for any activity that will pose an impact to the water resource, should that activity impede or divert the flow of water in that water course, or if the activity leads to the alteration of the morphology of the river bed, banks, course and its characteristics (water quality, habitat, biota and the flow regime).

2) DESCRIPTION OF THE PROPOSED DEVELOPMENT

Balwin Properties Limited proposes to develop the Remainder of Portion 6 of the Farm Zwartkoppies No 364-JR, Portion 241 of the Farm Zwartkoppies No 364-JR, Portion 138 of the Farm Zwartkoppies No 364-JR, City of Tshwane Metropolitan Municipality, Gauteng Province. An Environmental Authorisation for the proposed development is currently underway conducted by Bokamoso Environmental. The current environmental authorisation will entail the installation of services within the 1:100 year flood line. The wetland buffer demarcated during the initial application will include a water pipeline, storm water infrastructure, sewer pipeline as well as roads, specifically with a bridge crossing a tributary. A cycling track is also proposed along the Pienaars River in the open space area. In addition Balwin Properties Limited proposes to upgrade the current sewer pipeline in-situ within the existing 2m servitude.

A Record of Decision was issued on the 22nd July 2008 (Ref No:) for the initial development footprint, which included the following activities:

- The establishment of 3355 dwelling units;
- An eighteen (18) hole championship golf course;
- A nine (9) hole mashie course with a driving range;
- A four storey club house with corporate suite and penthouse;
- A conference centre with a theatre and a wellness centre;

- A hotel with 200 rooms with a swimming pool;
- A Crèche;
- A fully equipped gymnasium;
- Squash courts;
- A soccer field;
- Basketball courts;
- Tennis courts;
- A convenience store within the estate;
- A laundromat and cleaning services;
- Self storage space and offices; and
- An office park/ restaurant at the entrance.

On the 3rd of September 2010 an amendment application was undertaken and approved by GDDARD. The amendment entailed layout upgrades with entailed the authorisation of the construction of a road within the development footprint.

A further Amendment to the existing Authorisation is currently underway. This amendment application proposes to exclude the golf course and subsequently amend the layout of the development. The new layout will include the following land-uses:

- "Education/ Private School" ($\pm 8,5$ ha);
- "Residential 4" (7 erven $\pm 90-95$ units per hectare) – size of area to be covered with residential units is ± 70 ha;
- "Private Open Space" (± 33 ha);
- A low impact cycling track and on-going rehabilitation and open space management are planned for the natural private open space areas;
- Roads and associated landscaped areas and sidewalks (± 8 ha); and
- Gatehouse, Club House and Entrance Gate ($\pm 0,5$ ha).

The 2016 Amendment Application is also to reduce the study area and exclude a section.

The R104 is also being upgraded and this falls under an Environmental Authorisation issued by the Department of Environmental Affairs on 29th March 2012 with DEA Reference 12/12/20/2238.

3) PROPERTY DESCRIPTION

The development is located within the City of Tshwane Metropolitan Municipality, Gauteng Province. The property on which the activity is to be undertaken is on the Remainder of Portion 6 of the Farm Zwartkoppies

No 364-JR, Portion 241 of the Farm Zwartkoppies No 364-JR, Portion 138 of the Farm Zwartkoppies No 364-JR (location coordinates shown in Table 1 below).

The town Centre of Hillcrest is located approximately 8 Km north of the site. The site is currently zoned agriculture and used for commercial sugarcane farming. The site is located on the southern side of the N3 Highway and is bounded on the east by J.B. McIntosh Drive (extension of Kassier Road). Sugarcane forms the south and west boundaries.

The site is approximately 114 hectares in total and will be incorporate the following land uses; education/ private school (\pm 8,5ha, 85000m²); residential 4 (7 erven (\pm 90-95 units per hectare) – size of area to be covered with residential units is \pm 70ha, 70000m²); Private Open Space (\pm 33 ha, 330000m²); A low impact cycling track and on-going rehabilitation and open space management are planned for the natural private open space areas; road networks and associated landscaped areas and sidewalks (\pm 8ha, 80000m²); and Gatehouse, Club House and Entrance Gate (\pm 0,5ha, 5000m²).

The site is approximately 19km from Pretoria Central. Green open space is located to minimise the potential impact that the proposed development will have on the drainage line that transverses the site in a north east - south west orientation.

Table 1: Location of the Riverwalk Development within in this WULA

Riverwalk Development Co-ordinates			
1	25°45'32.64"S	28°22'46.88"E	Centre point of the proposed RiverWalk Development

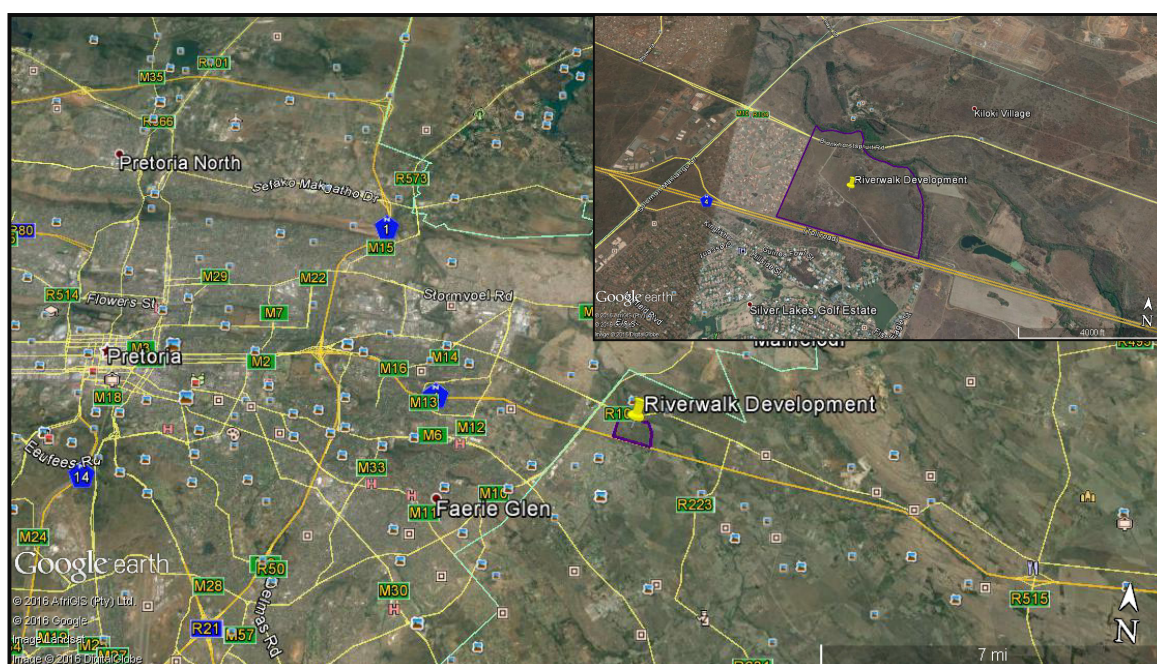


Figure 1: Locality map showing the location of the proposed development.

4) SECTION 21 WATER-USE LICENSE APPLIED FOR

This study site is affected by the 1:100 year flood line, the riparian habitat, whichever is the greatest, and is within a 500m radius from the boundary of a wetland. There is one prominent drainage feature namely the Jukskei River and three wetland areas that have been identified namely a distinct drainage depression and a water course of the Jukskei River, and an apparent drainage feature in the northern section that is characterised by shallow erosion channels, and a number of small hill slope seepage wetlands.

Waterfall Investment Company is applying for the following Section 21 Water-Uses:

- **Section 21(c):** 'Impeding or diverting the flow of water in a watercourse'
- **Section 21 (i):** 'Altering the bed, banks, course or characteristics of a watercourse'

4.1. SECTION 21 (C) 'IMPEDING OR DIVERTING THE FLOW OF WATER IN A WATERCOURSE'

There are specific activities that will lead to the impedance or diversion of the flow of water in the Jukskei River and the associated wetlands. Such activities includes a bridge crossing which will be constructed to permit access to and from the development.

Please take note that although the bridge is within the extent of a watercourse, i.e. the 1: 100 year flood line, or riparian habitat, whichever is the greatest, and/ or is within a 500m radius from the boundary of a wetland, the bridge will not physically divert the flow regime of the drainage line, nor the wetlands.

Sewer pipelines will be implemented to control and manage the sewage reticulation system for the development. The sewer pipelines however will be within the extent of a watercourse as pipeline river crossings.

There will be proposed water pipelines for the development, however, this will not traverse the affected watercourses.

In terms of **storm water** management, storm water pipelines, outlets, erosion prevention measures (i.e. gabions, concrete basins with stone pitching etc.) and attenuation features within the watercourse and watercourse buffers of the river referred to.

The Landscape Architects appointed for the landscape master planning of the larger development also made some proposals for recreational pedestrian walkways and street furniture along the river. The idea is

to make the river frontage area an attractive area that is used by humans for late afternoon strolls and for the general enjoyment of the natural open space. On-going rehabilitation and maintenance works adjacent to the river also forms part of the development plan. It is however difficult to supply specific co-ordinates for the planned informal pedestrian walkways, because the intention is to rather set out the pathways on site during the rehabilitation phase of the river area. It will therefore be required that the DWS consider the landscaping masterplan and that the DWS approve the proposed landscaping activities/ features (which will be low impact features) as part of the (c) and (i) approvals. The DWS must approve the co-ordinates of the area within the watercourse zone to be landscaped and not the specific GPS co-ordinates, because such co-ordinates could change during the landscaping phase.

4.2.1 IMPLICATIONS ASSOCIATED WITH WATER-USE ACTIVITY SECTION 21 (C) WATER USE

- Presence of wetlands on the study site and their protection thereof;
- The impacts brought about by the proposed activities which can have a detrimental impact on the integrity and sustainability of the wetlands;
- Should erosion, siltation and storm water not be effectively managed, these factors can have detrimental effects to the lower lying drainage features;
- As per the Wetland Delineation Assessment conducted by Terrasoil Science, it is recommended due to the current eroded state of the river banks, that significant engineering intercession be implemented to ensure appropriate bank stabilization;
- The site should be developed outside of the wetlands and the drainage features should be stabilized and protected to counteract further degradation;
- Storm water management and its related design must be implemented to ensure that the wetlands are protected, in such a manner that their integrity will not be compromised;
- Impermeable surfaces can lead to an increase in the speed, quantity and quality of storm water runoff;
- Erosion can be quite prevalent at the storm water discharge points;
- Henceforth, a good storm water management plan is required to effectively control and manage storm water so as to prevent surface and ground water contamination;
- The possibility of ground water tables lowering;
- Henceforth, an appropriate groundwater monitoring strategy should be developed as a part of effective and appropriate monitoring.

4.3. SECTION 21 (I) 'ALTERING THE BED, BANKS, COURSE OR CHARACTERISTICS OF A WATERCOURSE'

As discussed in terms of Section 21 (c) water use, the activities will also lead to an alteration and/ or a change in the morphology of the river and its associated water quality characteristics (water quality, flow regime, habitat and biota).

4.3.1 IMPLICATIONS ASSOCIATED WITH SECTION 21 (I) WATER USE

- It is imperative that monitoring of both the surface and ground water occurs and in accordance with a prescribed monitoring program, so as to achieve effective monitoring of water quality;
- Erosion and sedimentation processes will be quite severe and can alter the characteristics of the watercourse if not appropriately managed;
- Regular monitoring of the storm water management plan, its implementation and effectiveness in terms of preventing adverse and cumulative impacts of erosion;
- Rubble dumping and sedimentation processes can further lead to an adverse effect on the aquatic biota (micro and macro invertebrates) and this can be quite detrimental if not appropriately managed.

5. OBJECTIVES OF THE INTEGRATED WATER QUALITY AND QUANTITY MANAGEMENT AND MONITORING PLAN (IWQQMMP)

WATER POLLUTION MANAGEMENT:

- To manage, prevent, reduce, control and remediate surface water and groundwater pollution from all identified sources.
- To ensure that the quality of water needed to maintain ecological functions is protected, so that human use of water does not individually or cumulatively compromise the long-term sustainability of aquatic and associated ecosystems.

LAND AND/ OR SOIL POLLUTION MANAGEMENT:

- To manage, prevent, reduce and control soil pollution linked to water quality management;
- To adopt an integrated approach to soil quality management; and
- To manage, prevent, reduce and control soil pollution problems arising from a range of other sources, for example, from the construction camp site brought on by the waste, hazardous material, and chemical storage facilities.

THIS IWQQMMP ADDRESSES THE FOLLOWING THREE PHASES OF THE DEVELOPMENT:

- Pre-construction planning phase;

- Construction phase; and
- Operational phase.

MONITORING

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

These role players may include the delegated environmental authorities (A), Waterfall Investment Company (WIC), the Environmental Control Officer (ECO), Project Manager (PM), Contractors (C), and the Environmental Site Officer (ESO), Landowners, interested and affected parties and the relevant environmental and project specialists are also important role players.

ROLES AND RESPONSIBILITIES

- **APPLICANT – BALWIN PROPERTIES LIMITED IS RESPONSIBLE FOR THE FOLLOWING:**
 - Ensuring that the engineer and contractors comply with the approved IWQQMMP, EMPr, conditions contained within the Environmental Authorisation and conditions contained in the S21 WUL issued by the DWS.
 - Appoint an Independent Control Officer (ECO) for the duration of the pre-construction and construction phases.
 - Ensuring compliance with the provisions for duty of care and remediation of damage in accordance with section 28 of the National Environmental Management Act (NEMA), (No. 107 of 1998) and its obligations regarding the control of emergency incidents in terms of Section 30 of NEMA.
 - Notifying DEA of any incident as defined in subsection 30(1)(a) of NEMA.
- **PROJECT MANAGER –IS RESPONSIBLE FOR THE FOLLOWING:**
 - Appointing the appropriately qualified contractor to co-ordinate, supervise and expedite different action plans.
 - Ensuring adherence to the DEA's conditions of authorization and any other laws and standards relevant to the construction of the facility.
 - Ensuring all elements of the work undertaken are properly and competently directed, guided and executed at appointed stages of the project.
 - Ensuring the adherence to statutory safety, health and environment (SHE) standards and ensuring the construction activities comply with the EMPr.
 - Monitoring the site on a daily basis to ensure compliance.
 - Overall responsibility and accountability for the site during the construction phase.

- Avoiding and / or mitigating adverse impacts on the environment by the appropriate design and construction.
- Ensuring transparency in their operation and environmental management of the site.
- Managing the contractors compliance and ensure documentation management.
- Ensuring that the contractor has a copy of the EMPr and all agreed Method Statements.

- **CONTRACTORS - RESPONSIBLE FOR THE FOLLOWING:**
 - Managing and operating their activities with due care and diligence.
 - Complying with all elements of the EMPr.
 - Ensuring that stakeholder interest is reported to the ECO.
 - Maintaining relevant documentation for review by the ECO.
 - ECO - (Environmental Control Officer) is responsible for the following:
 - Determining the conformance of the site with the EMPr criteria and compliance with the conditions of the EMPr.
 - Liaising with the DEA and I&APs, if required.
 - Identification of possible areas of improvement during construction.
 - Undertaking on-going monitoring of the construction site through regular site visits and record key findings. This includes photographic monitoring of the construction site. The frequency of these visits will be determined by the progress and complexity of the project.
 - Advising the Project Manager and the contractors on environmental matters during the construction phase of the development.
 - Monitoring implementation of the EMPr by the contractor.
 - Advising the project manager on environmental impacts and provide appropriate recommendations to address and rectify these matters.
 - Ensuring that the conditions stipulated in the EA and any other laws and standards relevant to the construction are being complied with.

- **ENVIRONMENTAL CONTROL OFFICER (ECO)**
 - The ECO shall ensure that the contractors are aware of all the specifications pertaining to the project.
 - Any damage to the environment must be repaired immediately after consultation between the ECO, Developer, Consulting Engineer and/ or any other relevant professional consultant and Contractor. If immediate action is not possible, timeframes must be determined and supplied to the ECO and temporary measures must then be implemented to avoid any damage and/ or any further damage to the environment.

- The ECO shall ensure that the developer staff and/or contractor are adhering to all stipulations of the IWQQMMP.
 - The ECO shall be responsible for monitoring the IWQQMMP throughout the project by means of site visits, meetings and written correspondence. This monitoring aspect should be documented as part of the site meeting minutes.
 - The ECO shall monitor the implementation of an environmental training program.
 - A post construction environmental audit is to be conducted to ensure that all conditions in the IWQQMMP have been adhered to.
- **ENVIRONMENTAL SITE OFFICER (ESO)**
 - The applicant must appoint an Environmental Site Officer (ESO) for general assistance with daily compliance monitoring. The ESO can be an employee of the applicant and must monitor the day-to-day construction and operating processes.

- **CONTRACTOR (C):**

The contractors shall be responsible for ensuring that all activities on site are undertaken in accordance with the environmental provisions detailed in this document and that the sub-contractor and laborers are duly informed of their roles and responsibilities in this regard. The contractor will be required, where specified to provide a method statement setting out in detail how the management actions contained in the IWQQMMP will be implemented. The contractors and appointed sub-contractors will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the environmental regulations.

- **AUTHORITY (A):**

The authorities are the relevant environmental departments that issued the Environmental Authorization, the Water Use licenses and that approved all the guidelines and plans (including the IWQQMMP) to be implemented during the development phases (pre-construction, construction and operational phases) of the proposed abattoir expansion and upgrading process.

In order to ensure compliance with the relevant guidelines and plans (including the IWQQMMP), the relevant authorities must review the monthly audit and/ or compliance reports compiled and submitted by the ECO. In the case of non-compliance, the relevant authorities must make remediation recommendations or take the necessary action to prevent any damage and/ or further damage to the environment. The relevant authorities should also undertake regular site visits. In the case of this project, the relevant authorities are the Gauteng Department of Agriculture and Rural Development (GDARD) and the Department of Water and

Sanitation (DWS). DWS will mainly oversee compliance with the requirements of the water license that were issued and with the IWQQMMP, and GDARD will mainly oversee compliance with the Record of Decision (RoD) and the EMP.

LINES OF COMMUNICATION

The ECO in writing should immediately report any breach of the IWQQMMP and the Conditions of the Section 21 WUL issued to the Project Manager. The Project Manager should then be responsible for rectifying the problem on-site after discussion with the contractor. Should this require additional cost, then WIC should be notified immediately before any additional steps are taken.

REPORTING PROCEDURES TO THE DEVELOPER

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

SITE INSTRUCTION ENTRIES

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

ESO (ENVIRONMENTAL SITE OFFICER) DIARY ENTRIES

Each of these books must be available in duplicate, with copies for the Project Manager and WIC. These books should be available to the authorities for inspection or on request. All spills are to be recorded in the ESO's diary.

METHODS STATEMENTS

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

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

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

RECORD KEEPING

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

The following list of contacts must be completed, printed and made clearly visible on the site:

NAME	DESIGNATION	ORGANISATION	CONTACT NUMBER
Rodney Gray	Applicant Representative	Balwin Properties Limited	011 4502818
Lizelle Gregory	Independent Environmental Practitioner	Bokamoso Environmental Consultants & Landscape Architects	012 346 3810
	Environmental Control Officer	Bokamoso Environmental Consultants & Landscape Architects	012 346 3810
	DEA Official	DEA (National)	012 399 9372
	GDARD Official	GDARD Official	
	Local Municipality	City of Tshwane Metropolitan Municipality	012 358 9999
	DWS Official	DWS	012 323 4472
	Project Engineer	Civil Concepts	012 460 0008
	Fire Department		012 310 6300
	Emergency Response		012 358 2124
	Police	SAPS	10111 – General 012 812 9000 - Mamelodi
	Emergency Spill Response	Abzorbit (24 Hour response)	24 hr Emergency Response 083 269 8790 083 2536618
	Solid Waste	Kwaggasrand Landfill	012 386 9200

6. INTEGRATED WATER QUALITY AND QUANTITY MANAGEMENT AND MONITORING PLAN

WATER MANAGEMENT DURING THE PRE-CONSTRUCTION / PLANNING PHASE		
General	Construction activities should preferably take place during the winter months, should this not be possible construction activities should take place in phases in order to prevent large exposed areas that will cause an increase in the speed of surface water.	ESO, Contractor, Sub-contractor
	Develop a management plan to ensure a clean-water environment during all phases of the project. The service of a suitably qualified engineer is essential in the planning phase.	Civil Engineer
	Address the concerns and complaints of the affected parties regarding the ground water issues. <ul style="list-style-type: none"> • All remedial action should be done in close liaison with the Department of Water and Sanitation (DWS). • Should an accidental spill occur, construction activities should be ceased temporarily, until the spill has been cleaned up • The liabilities and proposed preventative and remedial actions will also have to be quantified. Ensure that all surface water and storm water related EMP's are adhered to.	Applicant, Contractor, ECO
Water Management of Surface Water	All contractors that are employed on site are to be made aware of their responsibilities with regard to water pollution prevention according to the requirements of the National Water Act, 1998 (Act 36 of 1998).	Applicant, Contractor, ECO
	Plan to ensure that there is an effectiveness of measures to prevent pollution of surface water bodies.	ECO
	Take water samples of water bodies that will receive surface water run-off from the study area prior to the construction phase. This information will act as baseline information for the construction and operational phases.	Applicant, Contractor, ECO
	No raw sewage or other pollutants such as plastic, oil, cement, etc. will be allowed to pollute water.	Applicant, Contractor, ECO
	Bio-swale and bio-filters could be installed to minimize the risk of pollutants entering the natural drainage system of the area.	Applicant, Contractor, ECO
	Attenuation ponds and energy dissipaters must be installed on the study area to break the speed of the water and to act as siltation ponds.	Applicant, Contractor, ECO
	All excess runoff structures must end up in the infiltration structures (thereby ensuring maximum groundwater recharge).	Civil Engineer
	Plan to slope ground surfaces in such a way that no ponding occurs.	Engineer, Contractor, ECO
	The engineer must place emphasis upon the design of drainage and retention systems that provide for efficient use of water quality. Drainage and storm water retention systems should, when possible, be incorporated.	Civil Engineer

Surface Water – Storm Water Management	A Storm Water Management Plan indicating the management of all surface runoff generated as a result of the development prior to entering any natural drainage system or wetland, must be submitted and approved by the local authority and DWS.	Applicant
	The SWMP should be designed in a way that aims to ensure that post development runoff does not exceed predevelopment values in: <ul style="list-style-type: none"> ▪ Peak discharge for any given storm; ▪ Total volume of runoff for any given storm; ▪ Frequency of runoff; and ▪ Pollutant and debris concentrations reaching water courses. 	Civil Engineer
	Design all storm water structures (and other surface water flow modifications) in such a manner that the impact on the natural systems is minimized. Keep in mind that increased runoff invariably results from increased bare surfaces.	Civil Engineer
	When storm water planning is done, every attempt possible should be made to keep the post construction and pre-construction flows similar.	Civil Engineer
	Storm water outlets shall be correctly designed to prevent soil erosion. Construction guidelines shall be provided for the prevention and restriction of erosion and siltation.	Civil Engineer
	It is imperative that the development should be constructed in such a way that minimum velocities in storm water runoff are created.	Civil Engineer
	Adequate surface and sub-surface drainage should be provided prior or during development of the site to ensure that no build-up of storm water will occur.	Civil Engineer
Water Management of Underground Water	Ground water contamination and/ or pollution is a preliminary issue identified, and it is imperative that it be monitored as there could be other water bodies that are dependent on it as a source of water that feeds into their system.	Applicant, ECO
	Ensure that all activities that may possibly affect ground water are performed in accordance with the requirements of the National Water Act, 1998 (Act 36 of 1998), DWS and the Local Authority.	Applicant
	Plan for adequate chemical toilets to be used by contractors during the construction phase, and these toilets are to be placed at least a 100m from the edge of a watercourse.	Contractor, ECO
	The storage and handling of lubricants, oils, paint and material such as cement must be provided for as part of the different contractor's contracts. Specially demarcated and secure storage facilities must be provided for and such storage areas should be clearly illustrated on the master layout plan.	ECO
WATER MANAGEMENT DURING THE CONSTRUCTION PHASE		
Water Management of Surface Water	Take water samples of water bodies that will receive surface water during the construction phase on a monthly basis. These samples will be compared with baseline samples taken during the planning phase and monthly samples taken during the construction phase to detect	Applicant, ECO, ESO

	<p>surface water pollution. Consult with DWS and the contractor if water pollution is detected and put an action and/ or a rehabilitation plan in action.</p>	
	<p>Ensure that contractors are aware of their responsibilities as far as water pollution is concerned in terms of the requirements of the National Water Act, 1998 (Act 36 of 1998). It will be imperative to monitor their activities. It is suggested that a penalty clause be inserted in the contracts to enable the applicant to take the necessary rehabilitation measures in case of non-compliance.</p>	Applicant, ESO, ECO, Contractor
	<p>Maintain the surface water management infrastructure. The section of the SWMP that supplies guidelines and specifications for temporary storm water management during the construction phase must be implemented.</p>	Applicant, Contractor
Water Management of Surface Water – Storm Water Management	<p>A SWMP must be compiled for the proposed development. This section of the report must address the management of all surface runoff generated as a result of the construction phase prior to entering any natural drainage system or wetland, and taking cognizance that storm water must be treated to an acceptable level, prior entering the water course.</p>	Applicant, Engineer
	<p>Surface storm water generated as a result of construction phase must not be channeled directly into any natural drainage system or wetland.</p>	Engineer
	<p>Where necessary, temporary storm water diversion measures are recommended to control peak flows during thunder storms.</p>	Civil Engineer
Water Management of Underground Water	<p>Ensure that all construction activities that may possibly affect ground water are performed in accordance with the requirements of the National Water Act, 1998 (Act 36 of 1998), DWS and the Local Authority.</p>	Contractor, ECO
	<p>Ensure that adequate chemical toilets are available and are used by contractors during the construction phase - the provision and maintenance of which must form part of the contractor's liabilities.</p>	ECO
	<p>The storage and handling of lubricants, oils, paint, and material such as cement must be provided for as part of contractor's contracts. Specifically demarcated and secure storage facilities must be used.</p>	ECO
	<p>Construct the disposal from hard surfaces in such a manner that the water can infiltrate into the underground water without causing surface erosion.</p>	Contractor, ECO
	<p>After mitigation and/ or preventative measures are implemented ground water monitoring must take place on a twice weekly basis to determine the effectiveness of the action and/ or emergency plan.</p>	ECO
WATER MANAGEMENT DURING THE OPERATIONAL PHASE		
Solid Waste Management (to Prevent soil and Groundwater contamination) Liquid waste management	<p>Removal and storage of solid waste Solid waste will be stored in receptacles provided on site and will be removed on a weekly basis to a registered landfill site.</p>	ECO, Applicant
	<p>Removal of liquid waste - Liquid waste (especially that is hazardous) will be removed immediately after usage on-site, stored in appropriate containers and be carted to a registered site to</p>	ECO, Applicant

	dispose of in an approved manner. - It is critical to ensure that these containers are in a secure, safe and weather proof storage facility, underlain by a banded concrete slab to protect against soil and water pollution.	
Fuel Storage	- Fuel containers exceeding 200 litres capacity should be stored in a banded area with 110% capacity. -Fuel containers should be stored in a secure weatherproof building or within a secondary containment compound. Above and underground fuel storage installations should adhere to the relevant SABS specifications.	ECO, Applicant
Water Management of Surface Water	The water quality of the water bodies to which surface water drains must be tested bi-annually for one year after completion of construction. If the water quality proves to be stable, the surface water quality monitoring intervals can be reduced to once a year for the remainder of the operational phase.	Applicant
	Ensure that all concerned are aware of all aspects regarding the integrity of the water environment. Enforce if indispensable.	Applicant
	Maintain the surface water management infrastructure.	Applicant
	The management of water quality variables such as temperature, turbidity, pH, electrical conductivity, suspended solids, total dissolved solids, to name a few.	Applicant
Water Management of Surface Water – Storm Water Management	A storm water management plan must be compiled for the proposed development. A comprehensive storm water management plan indicating the management of all surface runoff generated as a result of the development (during both the construction and operational phases) prior to entering any natural drainage system or wetland, must be submitted and approved by the local authority and DWS.	Applicant
Water Management of Underground Water	Monitor the water quality, water levels and abstraction volumes of the sampling points. <ul style="list-style-type: none"> Maintain the groundwater water monitoring network. 	Applicant, ECO
Water Management of Underground Water	Continue to treat all operational activities that may possibly affect ground water in accordance with the requirements of DWS and the Local Authority.	Applicant
	Maintain the disposal systems that originate on hard surfaces in order to allow the water to infiltrate into the underground water without causing surface erosion.	Applicant
	Routine monitoring of water levels, rainfall figures and water quality is strongly recommended and should strictly be adhered to. This data will form the basis from which any changes in the groundwater regime are recognized.	Applicant
	Hydro geological monitoring data should be evaluated bi-annually by a qualified hydro geologist.	Applicant, ECO
	A Groundwater Management Plan with relevant Groundwater Monitoring and Reporting Protocol should be established and calibrated annually.	Applicant, ECO

7. PROPOSED MONITORING REQUIREMENTS

CLASS	PARAMETER	FREQUENCY	MOTIVATION
Physical	Static groundwater levels	Monthly	-Time dependant data is required to understand the groundwater flow dynamics of the site. -An anomaly in static water levels caused by mounding below the drainage field may give early warning to spillages or leakages from lined or unlined facilities.
Chemical	Major chemical parameters: Ca, Mg, Na, K, NO ₃ , NH ₄ , SO ₄ , PO ₄ , Cl, Fe, Mn, F, Alkalinity, pH, EC, TDS, COD, BOD.	Quarterly (Jan., Apr., Jul., Sept) May be reduced to biannual (April & Sept.) as more data becomes available)	-Background information is crucial to assess impacts during operation and thereafter. -Changes in chemical composition may indicate areas of groundwater contamination and be used as an early warning system to implement management or remedial actions. Requirement of the Water Use Licence.

8. MONITORING PLAN

MONITORING PARAMETER	BASELINE INFORMATION	IMPACT	TARGET	INDICATOR	RESPONSIBLE OFFICIAL	FREQUENCY OF MONITORING	PROGRESS	CORRECTIVE ACTION
WATER QUALITY								
Ph	The information for water quality is still to be provided. Table to be updated upon receipt of information.							
EC								
TDS								
SO4								
K								
Al								
Fe								
Mn								
Po4								
NH4								
NO3								
Alkalinity								
Faecal coliforms								
Temperature								
Suspended solids								
Dissolved oxygen								
Turbidity								

WATER QUANTITY								
Flow regime		Altered flow regime and/ hydrology	To control the surface water flows	No alteration of surface water flows No aquatic biota affected by altered surface water flows Crossings must ensure that the creation of turbulent flow in the system is reduced in order to counteract downstream erosion No support pillars must be constructed within the active drainage lines	Contractor Developer Engineer	Monthly	No sign of aquatic biota affected by the altered surface water flows	Re-check the effectiveness of the storm water management plan and drainage measures to ensure that no negative implications are posed on the wetland through fluctuating flow patterns
			To control and prevent an altered surface water flow due to trench excavations and sub-soil mounds	Appropriate management and no signs of severely altered flows	Engineer Contractor	Daily	Appropriate and effective storm water management	Check storm water design and trench depth
CHARACTERISTICS								
Flood line change effects		Drainage lines	To ensure the protection of the ecological value of the drainage lines	Guidelines implemented	Contractor Engineer	When required	Qualified engineer appointed to confirm the 1: 100 year flood line (pre-construction and	Confirmation of the 1: 100 year flood line must be checked at least twice a year

							post-construction	
Storm water measure efficiency		Appropriate storm water design	To prevent and restrict erosion, siltation and groundwater pollution	Compilation and approval of storm water management plan	Engineer Individual Developer	-	No significant signs of erosion, siltation and ground water pollution	Re-check the effectiveness of the storm water management plan and the design of structures
Erosion control measure efficiency		Erosion and siltation	To prevent erosion and siltation	No erosion scars, no topsoil loss, all damped and damaged areas successfully rehabilitated	Contractor, ESO	Monitor daily	No visible signs of erosion scars, loss of topsoil, and areas are successfully rehabilitated	Check that all mitigation measures are effectively working, such as storm water diversion measures, topsoil stockpiles, etc.
BIO-MONITORING								
Macro and micro-invertebrates (biota)		Adverse effect on aquatic biota	To prevent an adverse effect on aquatic biota due to rubble dumping near the wetland	Changes in behaviour of aquatic biota	Contractor		No adverse effect recorded and monitored	Strict compliance to control rubble dumping

<p>Riparian vegetation</p>		<p>Damage brought about to the riparian system and the drainage lines</p>	<p>To protect the wetland and the riparian system from the proposed construction and operational activities</p>	<p>The recommended buffer zone allocated by the wetland specialist must be implemented and conserved, and the site layout plan should correspond with the buffer</p> <p>Adequate storm water management must be implemented to counteract bank and riparian zone erosion</p> <p>Upon the completion of construction activities, the site is to be rehabilitated to an acceptable level that permits the ecosystem to flourish and in accordance to the rehabilitation plan</p> <p>Alien invasive species are to be eradicated as per the structured program</p>	<p>Engineer Developer Landscape Architect</p>	<p>Bi - weekly</p>	<p>75% establishment of riparian vegetation</p>	<p>Ensure that sensitive areas are strictly demarcated</p> <p>Rehabilitate/cover, where possible, exposed areas immediately after construction</p>
<p>Biological toxicity</p>		<p>Soil and water pollution caused by the spillage of construction materials</p>	<p>To ensure that contaminated soils and water quality are addressed</p>	<p>No pollution of the environment</p>	<p>Contractor ESO</p>	<p>Daily</p>	<p>No water and soil contamination</p>	<p>Ensure that the storage areas for materials and chemicals are appropriately</p>

								sealed off
Geomorphology/fluvial geomorphology		Stability of structures and restriction of land use due to geology	To ensure that precaution is implemented during trench excavations	Signage boards are bright and clear Clearly demarcated and/ or co-ordained off areas with a fence or a barrier tape	Individual developer Contractor Engineer		No reporting of incidents related to trench excavations	The responsible official is to ensure that the trenches are strictly demarcated and no person is permitted to enter that area or the surrounding without permission
			To ensure the stabilization of channel banks through significant engineering intervention		Engineer		No reported incidents of river banks collapsing	Appropriate and feasible bank stabilization measures approved by a qualified engineer and adequate vegetation cover

Appendix 4: Specialist Reports



RIVERWALK BULK SERVICE STATEMENT

C2142/BSS
JANUARY 2016



CIVILS

1. INTRODUCTION

River Walk, previously known as African Renaissance, is situated on part of the remainders of portions 6 and 241, and portion 138 of the Farm Zwartkoppies No 364-JR.

It is bounded by:

- K22 to the north;
- A tributary of the Pienaars River to the east;
- N4 to the south; and
- Savannah Estate to the west.

The previous township application was approved for 4500 low to medium income residential units. Refer to the approved conditions of establishments attached as **Annexure A**.

The new developer, Balwin Properties Pty (Ltd), purchased the land with the intent to develop medium to high income residential, school and a local retail centre. This report addresses the intended developments serviceability.

2. DEVELOPMENT INFORMATION

Development Type - Mixed Use – Residential, School, Retail, etc.
Property size: - 110.915 ha

For the intended land use refer to tables below.

Intended Land Use: Total

Land Use	No. of Units / Area	Inception Phase	First Phase
Retail (Centre)	12 500 m ²		
Private School	1 800 Pupils	400 Pupils	
Residential	6 500 Units	500 Units	750 Units

The development will be divided into 8 individual townships. Refer to the proposed development layout in **Annexure B**.

3. WATER SUPPLY

A GLS Assessment was conducted for the entire development addressing the capacity of the bulk water supply. It was confirmed that the development falls within the Vaal River basin which is currently supplied by Rand Water pipelines.

3.1 Water Demand

The total water demand initially allowed for in the masterplan = 884 kℓ /day whilst the proposed development will total 4 130 kℓ/day at a peak flow of 191 ℓ/s. Please refer to the GLS report for method of calculation.

The estimated water demand for the inception phase of a school for approximately 400 pupils and 500 residential units will be 337 kℓ/day, well below the initial 884 kℓ /day in the masterplan.

A further 910 units can be developed before the demand exceeds the initial daily demand.

3.2 Bulk Supply

The development will form part of the RW Bronberg Direct 11 (Zwartkoppies) supply zone.

A connection for the development will be to an 855 mm ø Rand Water pipeline which is currently experiencing high velocities to the order of 3 m/s. A second parallel system of a 1500 mm ø pipeline is in planning.

It was suggested that Rand Water be contacted to update the water volume requirements for the development. The proposed phases will also need to form part of the discussion as the proposed first phase do not exceed the current demand in the masterplan and Rand Water has been informed of the water demands.

3.3 Connection and Network

According to GLS a 450 mm ø with a PRV connection will be provided to the 855 mm ø pipeline. Refer to correspondence from Rand Water confirming the connection and associated cost.

The 450 mm ø will then run eastwards to the new main entrance and follow the main road south towards the first entrance to the Retail Centre. After the Retail connection the pipe size reduces to 355 mm ø, 315 mm ø and finally 250 mm ø to supply the last two proposed townships.

A 200 mm ø pipeline will however continue further east across the natural stream for the connection of Portion 19, also a future residential portion east of the tributary. Also refer to the diagrammatic proposed water network in **Annexure C**.

A wadiso model will be provided at detailed service report stage for confirmation of element sizes.

4. SEWERAGE

As for water, an assessment was conducted by GLS to address the capacity of the existing sewer network.

4.1 Sewer Demand

The total sewer demand for the completed development is calculated at 3 628 kℓ/day with a peak flow of 55 ℓ/s compared to the initial 605 kℓ/day. Please refer to the GLS report for method of calculation.

The estimated sewer demand for the inception phase of the school for approximately 400 pupils and 500 residential units will also total 337 kℓ/day. A further 450 units can be developed before exceeding the initial outflow.

4.2 Sewer Drainage Area

The development will fall in the Baviaanspoort WWTP (Waste Water Treatment Plant) drainage area.

4.3 Bulk Network Capacity

According to GLS the design capacity of Baviaanspoort WWTP is almost fully reached by average flow and expansion of the plant should be considered. Reference is made to phase 2 and 4 in the report and trust the municipality will pursue the matter.

An existing 315 mm ø line running south to north along the western side of the Pienaars River tributary must be upgraded to a 675 mm ø pipe.

4.4 Sewer Network and Connections

The proposed school township in the north western corner will drain to an existing outfall sewer pipe which drains from Savannah Estate in the west and crosses the K22 to the main outfall along the Pienaars River.

A township immediately south, called The Blyde, will also be the inception and first phase as described in the development info. These townships will be serviced by a 250 mm ø uPVC running north along the main road until the K22 where it will turn east towards the main outfall sewer. A portion of the retail development will also drain to this pipeline.

Townships The Eland, Kowie, Tamboti and Berg will drain to a 315 mm ø collector that runs from south to north within the public open space until it connects to the main outfall sewer.

The Sabie and a portion of The Berg will connect to the new 675 mm ø along the eastern boundary. Refer to drawing in **Annexure D**.

5. STORMWATER

5.1 Floodlines

The property is subjected to a floodline as indicated on the township layout included in **Annexure E**.

5.2 Stormwater Drainage

The design guidelines of City of Tshwane will be used to provide a stormwater reticulation network for the 1:2 and 1:20 year recurrence periods.

5.2.1 External Stormwater Systems

There are two stormwater culverts draining under the N4 towards the property. Both culverts will be intercepted and accommodated within the proposed drainage network.

5.2.2 Municipal Network

All systems within the main road reserve will be considered as municipal systems.

Each township will be provided with a 1:20 year stormwater connection as indicated on the attached drawing included in **Annexure E**.

There are 4 drainage systems:

1. K 22 Culverts.

Only the school property drains towards the K22 with outlets to the natural stream on the northern side of the road.

Two new culverts will be constructed for draining this portion of the development. This will be completed during the upgrading of the K22, which also forms part of the Riverwalk scope of work.

2. The Blyde and Access Road.

The Blyde will be the first phase of development with relevant road upgrades. The proposed system drains the entire The Blyde along the access road and eventually along the boulevard towards the K22. The network will commence at the N4 with a system then parallel within a 3 m wide servitude towards The Boulevard.

A median drainage system is proposed up to the most northern end of the boulevard until it turns east towards the natural stream with an outlet at a daylight position.

3. Open Drainage along Private Open Space.

An open space is planned approximately in the middle of the development in a south – north direction. This provides a good opportunity for flow in open channel / landscaped furrow that will have connections from adjacent developments.

This will commence at a culvert under the N4 and flow towards the low point of the boulevard. A 50 year culvert will be provided at this low point.

All run-off upstream of the boulevard will either be treated within the road or proposed median drainage network. This network will then connect to the low point culvert.

The vegetated low point will then be shaped and erosion protection will be provided. It will disperse into an existing farm dam, from where it will have a formalised outlet to the natural stream.

4. Drainage Adjacent to Floodline

All developments and the remainder of the boulevard will drain either in pipe systems or overland to the floodline with various outlet positions as indicated.

A full Stormwater Masterplan will be compiled in accordance with City of Tshwane standards.

Outlets to the natural stream, where possible, will be constructed with litter and sediment traps. A water use licence (WULA) will be applied for at each of the outlets as required by the water act.

6. TRAFFIC AND ACCESS

A full Traffic Impact Study has been compiled for the development and will be submitted to relevant authorities. Due to the proposed access from the K22 which is an approved Provincial route but falls under SANRAL's jurisdiction, both departments will be involved. Once approved all upgrades and phasing will be done accordingly. Below is a synopsis of the current findings and proposals.

6.1 Masterplan

The most recent masterplan included for all major development in the area, especially the Hazeldean Node. Refer to an extract from the Masterplan with Riverwalk included (**Annexure F**). Also refer the proposed access routes.

As it stands Riverwalk will be responsible for the Pink, Orange and Green highlighted items of the Road Masterplan extract in **Annexure F**, although Riverwalk will not fully fund the Green highlighted item. The Pink and Green sections will be typically be funded by special contributions.

The Hazeldean developer / Abland will be responsible for the items highlighted in Purple, Blue and Yellow.

6.2 Trip Generation

Development trips generated by the development are:

	Total	Inception	Phase 1
AM Peak hour	5 143	535	478
PM Peak hour	5 363	360	478
Sat Peak hour	3 407	136	255

6.3 Access

This development integrates with the road masterplan of the area. Originally it was served with an access within the boundaries of Savannah Estate, but this was approved and constructed as a security complex.

Subsequently a new intersection on the K22 is being investigated approximately 450 m east of the Savannah Estate intersection. Its position is currently being discussed with SANRAL and will soon be finalised.

This intersection will be built on the final double carriageway position of the K22, where after the road will taper to a single carriageway just before the Pienaars River Bridge. This intersection will be linked via a 4 lane boulevard with a future class 3 road to the east. The latter crosses the N4 and links with K34 – Graham Road as well as a link to the PWV17.

Abland the developer of the Hazeldean node will be responsible for the PWV17 interchange on the N4, part of the PWV17 and the class 3 linking to Graham Road.

6.4 Individual Access

Each individual township will obtain access via a double circle. The school property will have a line of no access for a minimum of 500 m from the K22 provincial road boundary.

6.5 Phasing

The inception phase will obtain access from the existing single carriageway and new intersection on the K22. It is the intention to commence with the doubling of the K22 simultaneously with the inception phase.

Preliminary assessments indicate that once completed the double carriageway K22 and intersection can accommodate up to 2000 units and a 1000 pupil school.

The remainder of the development will require the completed boulevard, class 3 link across the N4 and linkage to the PWV17 interchange.

Refer to the attached masterplan (**Annexure F**) and indicated phasing.

6.6 Non-Motorised Transport (NMT)

As the development intent is mixed use, a major focus will be on NMT to ensure secure pedestrian and cycle movement between residences, the school and the retail centre.

Combined sidewalk and cycle paths will be provided with sufficient crossings at intersections.

A further element is a NMT Bridge to allow for safe crossing.

Yours Faithfully,



WERNER STANDER
CIVIL CONCEPTS (PTY) LTD



**RIVERWALK
BULK CIVIL ENGINEERING SERVICES STATEMENT (PHASE 1)**

ANNEXURES

ANNEXURE A



KUNGWINI LOCAL MUNICIPALITY

DEPARTMENT SERVICE DELIVERY

P O BOX 40 BRONKHORSTSPRUIT 1020
TEL: (013) 932 6333 FAX: (013) 935 1311
SHERE OFFICE TEL: (012) 809 0563 FAX: (012) 809 0871

ENQUIRIES: T S DHLAMINI

5 March 2008

SFP Town Planning
P O Box 908
GROENKLOOF
0027

Sir

PROPOSED TOWNSHIP ESTABLISHMENT: AFRICAN RENAISSANCE LIFESTYLE ESTATE

The abovementioned refers.

The application for township establishment has been approved in terms of section 98(1) of the Town Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986), subject to the conditions as contained in the attached Annexure (Conditions of Establishment). Your attention is however kindly drawn to the fact that my Council in terms of section 98(5) of the abovementioned Ordinance reserves the right to amend or nullify any of the rights under which the approval was granted or may add any additional conditions prior to the publication of the notice in terms of which the township will be proclaimed as an approved township.

Should you wish to make any comments or to object to the attached conditions, such comments or objection must reach this office within 4 weeks of the date hereof. Comments or objections will thereafter only be considered in very special circumstances.

Your attention is drawn thereto that the layout plan was only approved after very careful consideration. Although section 100 of the Ordinance provides for the approval by my Council for the amended of a layout plan, it must be stressed that it shall only be sanctioned in exceptional circumstances. Any request in this regard must be motivated with full reasons of why it is necessary to amend the plan and the reason why it was not requested at an earlier stage.

Kindly take note that the provisions of section 101 of the Ordinance must be complied within 12 months from the date of this approval, or such extended period as approved by Council, failing which the application will lapse. It is therefore in your own interest to immediately take the necessary steps to comply with the pre-proclamation conditions due thereto that my Council will not condone any default, unless proof can be submitted that steps were indeed taken immediately after this date to comply with the conditions and further that due to circumstances beyond your control the matters could not be completed timorously.

Kindly bring the following important matters to our client's attention:

1. the applicant shall provide all necessary servitudes in conjunction with an approved services Layout Plan for the proposed township;
2. an appropriate services agreement must be entered into by and between the Council and the applicant and the applicant is responsible for the service costs for extension/provision of the civil engineering and electrical services as well as the necessary parks contribution in terms of applicable Council policy. These amounts are payable on the date set out by the Council. All aspects regarding these services must be clarified with the Strategic Executive Officer: Service Delivery.
3. the Council reserves the rights to lay down further or amended conditions as deemed necessary or if the layout is amended; and
4. compliance with conditions of external institutions/departments is the responsibility of the developer.

Kind regards



**J.S GOMBA
MUNICIPAL MANAGER**

STATEMENT OF CONDITIONS UNDER WHICH THE APPLICATION MADE BY LIVING 4 U DEVELOPMENTS (PTY) LIMITED (HEREINAFTER REFERRED TO AS THE APPLICANT) IN TERMS OF THE PROVISIONS OF PART C OF THE TOWN-PLANNING AND TOWNSHIPS ORDINANCE, 1986 (ORDINANCE 15 OF 1986), FOR PERMISSION TO ESTABLISH A TOWNSHIP ON PART OF THE REMAINDER OF PORTION 6 OF THE FARM ZWARTKOPPIES NO 364-JR, HAS BEEN GRANTED

1. CONDITIONS TO BE COMPLIED WITH PRIOR TO THE DECLARATION OF THE TOWNSHIP IN TERMS OF THE PROVISIONS OF SECTION 103 OF THE TOWN-PLANNING AND TOWNSHIPS ORDINANCE, 1986 (ORDINANCE 15 OF 1986) (HEREINAFTER REFERRED TO AS ORDINANCE 15 OF 1986)

1.1 PROVISION AND INSTALLATION OF SERVICES

The applicant shall make the necessary arrangements with the Municipality for the provision and installation of water, electricity and sanitation as well as the construction of roads and stormwater drainage in the township.

1.2 CANCELLATION OF EXISTING CONDITIONS OF TITLE

The applicant shall at his own expense have the following conditions and servitudes cancelled or have the township area freed there from:

Conditions 1, (1.1), (1.2), (1.3), (1.4), (1.5), 2, (2.1), (2.2), (2.3), (2.4), 3, 5 in Deed off Transfer T106850/2007.

1.3 GENERAL

(a) The applicant shall satisfy the Kungwini Local Municipality that –

- (i) the relevant amendment scheme (in terms of section 125 of Ordinance 15 of 1986) is in order and may be published simultaneously with the declaration of the township an approved township;
- (ii) satisfactory access is available to the township and that a public street system is available to all erven in the township;
- (iii) a satisfactory traffic impact assessment has been submitted;
- (iv) the portions of the road reserves adjoining the proposed township, and which are required for the proper installation and maintenance of the Municipality's services, has been acquired by the township owner;
- (v) the name of the township has been approved;

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
In terms of
THE TOWN PLANNING AND TOWNSHIPS
ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY

APPROVED

In terms of

THE TOWN PLANNING AND TOWNSHIPS ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

- (vi) the consent from the holder(s) of the mineral rights has been obtained for the establishment of the township;
 - (vii) all servitudes in accordance with the services report must be indicated on the Township Layout Plan and registered by the developer.
 - (viii) The relevant administrative decision of the Gauteng Department of Agriculture, Conservation and Environment has been obtained in terms of the provisions of the Environment Conservation Act, Act 73 of 1989 or the national Environmental management Act, 107 of 1998 as the case may be and that any condition under which such administrative decision has been granted will be incorporated in the conditions of establishment of the proposed township, at the cost of the applicant.
 - (ix) That a signed services agreement in respect of electricity be obtained from the CTMM confirming the availability of electricity per phase.
- (b) The applicant shall comply with the provisions of sections 72, 75 and 101 of Ordinance 15 of 1986.

2. CONDITIONS OF ESTABLISHMENT (CONDITIONS WHICH WILL BE APPLICABLE TO THE APPROVED TOWNSHIP IN TERMS OF SECTION 103 OF ORDINANCE 15 OF 1986)

2.1 NAME

The name of the township shall be African Renaissance Township.

2.2 DESIGN

The township shall consist of erven and streets as indicated on Layout Plan F1216/2.

2.3 DISPOSAL OF EXISTING CONDITIONS OF TITLE

All erven shall be made subject to existing conditions and servitudes, including the reservation of mineral rights, but excluding –

- a) the following servitude which affects the township:

4. Die Eiendom hierby getransporteer is onderhewig aan 'n Serwituut van Deurgangsreg ten gunste van die STADSRAAD VAN PRETORIA, vir ge geleiding van Elektrisiteit deur middel van lugrade en ondergrondse kables, soos meer ten volle sal blyk uit notariële Akte Nr. 1090/1961S, geregistreer op dei 7de dag van September 1961.

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY

APPROVED

In terms of

THE TOWN PLANNING AND TOWNSHIPS ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

6. Kragtens **Notariële** Akte K 699/93-S is die reg aan ESKOM verleen om elektrisiteit oor die hierinvermelde eiendom te vervoer, tesame met bykomende regte en onderworpe aan voorwaardes, soos meer volledig sal blyk uit gesegde akte en kaart.
7. Kragtens **Notariële** Akte van kansellasië No. K 6631/93S gedateer 8 September 2003 word Notariële Akte van Serwituut no. K 1223/56S soos vermeld in voorwaarde 6.C gedeeltelik gekanselleer, soos aangedui deur Lyn ABA op kaart L.G. No. A3090/92 daarby aangeheg en verder meer volledig sal blyk uit gemelde Notariële Akte van kansellasië.
8. Die volgende serwitute is onteien en gesedeer aan die Stadsraad van Pretoria K6632/93S.
 - 8.1 'n Serwituut vir Rioolpypleiding 6 meter wyd soos aangedui deur lyn ABCDEFGH op Kaart S.G. No. A9236/92.
 - 8.2 'n Serwituut vir Rioolpypleiding 2 meter wyd soos aangedui deur lyn HJKLM op kaart S.G. No. A9236/92.
 - 8.3 'n Serwituut vir Rioolpypleiding 2 meter wyd soos aangedui deur lyn NPQRS op kaart S.G. No. A9236/92.
9. Kragtens **Notariële** Akte K 658/95S gedateer 23 Januarie 1995 is binnegemelde eiendom onderhewig aan 'n ewigdurende reg om water te neem en te voer oor en deur, deur middel van pypleidings binne stroke grond 3636 vierkante meter en 1695 vierkante meter groot soos aangedui deur die figure ABCDa Mid River bEFGH en ABCD op serwituutkaarte no L.G. No. A. 72/1993 en 73/1993 met bykomende regte ten gunste van RANDWATER soos meer volledig sal blk uit gemelde Notariële Akte.
10. Kragtens Notariële Akte No. K 3355/03 S gedateer 28 April 2003 is die eiendom onderhewig aan n 3 (Drie) meter wyd Rioolserwituut aangetoon op diagram 8160/02 deur figuur ABCDERGHA 873 vierkante meter ten gunste van die Trust soos meer volledig sal blyk uit gemelde Notariële Akte.

2.4 REMOVAL OR REPLACEMENT OF MUNICIPAL SERVICES

Should it become necessary to move or replace any existing municipal services as a result of the establishment of the township, the cost thereof shall be borne by the township owner.

2.5 DEMOLITION OF BUILDINGS AND STRUCTURES

When required by the Kungwini Local Municipality to do so, the township owner shall at his own expense cause to be demolished to the satisfaction of the Municipality all existing buildings and structures situated within building line reserves and side spaces or over common boundaries, or dilapidated structures.

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
In terms of
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ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

2.6 REMOVAL OF LITTER

The township owner shall at his own expense have all litter within the township area removed to the satisfaction of the Kungwini Local Municipality, when required to do so by the Municipality.

2.7 REMOVAL AND/OR REPLACEMENT OF TELKOM SERVICES

Should it become necessary to remove and/or replace any existing TELKOM services as a result of the establishment of the township, the cost thereof shall be borne by the township owner.

2.8 COMPLIANCE WITH CONDITIONS IMPOSED BY GDACE

The township owner shall at his own expense comply with all the conditions imposed by the Gauteng Department of Agriculture, Conservation and Environment, as well as any other applicable provisions, in terms of the provisions of the Environment Conservation Act, 73 of 1989 or the National Environmental Management Act, 107 of 1998 as the case may be.

2.9 NATIONAL HERITAGE RESOURCE ACT

The township owner shall at his own expense comply with the provisions of the National Heritage Resource Act, 25 of 1999 and that any conditions that may affect the township are incorporated in these conditions as amendments to these conditions.

3. CONDITIONS OF TITLE

3.1 THE ERVEN MENTIONED BELOW SHALL BE SUBJECT TO THE CONDITION AS INDICATED, LAID DOWN BY THE KUNGWINI LOCAL MUNICIPALITY IN TERMS OF THE PROVISIONS OF THE TOWN-PLANNING AND TOWNSHIPS ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

3.1.1 ALL ERVEN

- (a) The erf shall be subject to a servitude, 3m wide, for municipal services (water, sewer, electricity and stormwater) (hereinafter referred to as "the services"), in favour of the Municipality / Section 21 Company / Body Corporate along any tow boundaries, excepting a street boundary and, in the case of a panhandle erf, an additional servitude for municipal purposes, 2m wide, over the entrance portion of the erf, if and when required by the Municipality: Provided that the Municipality may waive any such servitude.

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
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(b) No buildings or other structures may be erected within the aforesaid servitude area and no trees with large roots may be planted within the area of such servitude or within a distance of 2m from it.

(c) The Kungwini Local Municipality shall be entitled to temporarily deposit on the land adjoining the aforesaid servitude, any material it excavates during the laying, maintenance or removal of such services and other works which in its discretion it regards necessary, and furthermore the Kungwini Local Municipality shall be entitled to reasonable access to the said property for the aforesaid purpose, subject to the provision that the Kungwini Local Municipality shall make good any damage caused during the laying, maintenance or removal or such services and other works.

4. CONDITIONS WHICH, IN ADDITION TO THE EXISTING PROVISIONS OF THE RULING TOWN-PLANNING SCHEME, HAVE TO BE INCORPORATED IN THE PERI URBAN AREAS TOWN PLANNING SCHEME, 1975 IN TERMS OF SECTION 125 OF ORDINANCE 15 OF 1986.

4.1 ERVEN 1 - 142

1	Use Zone	I Residential 1
2	Uses permitted	Dwelling House
3	Uses with consent	Table D, Column 4
4	Uses not permitted	Table D, Column 5
5	Definitions	Clause 2
6	Density	One Dwelling per 400m ²
7	Coverage	50% for double storeys and 60% for single storeys
8	Height	2 storeys
9	Floor space ratio	1.0 for Double Storeys and 0.6 for Single Storeys
10	Site Development Plan and landscape development plan	If required by the Municipality
11	Building lines	3 Meters along street boundaries and 2 meters along side boundaries and 5 meters along the golf course.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	Not applicable
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	Must be accommodated on site
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	As per the requirement of the Local Authority
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality

		without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the City of Tshwane Metropolitan Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General:		
1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.2 ERVEN 143 – 157

1	Use Zone	IX Special
2	Uses permitted	Dwelling Units
3	Uses with consent	See Annexure
4	Uses not permitted	See Annexure
5	Definitions	See Annexure
6	Density	Not applicable
7	Coverage	As per Site Development Plan
8	Height	2 storeys
9	Floor space ratio	As per Site Development Plan
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality:
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures ENDORSEMENT	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be
It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.		

KUNGWINI LOCAL MUNICIPALITY
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		mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General:		
1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.3 ERVEN 160 -- 175

1	Use Zone	IX Special
2	Uses permitted	Dwelling Units
3	Uses with consent	See Annexure
4	Uses not permitted	See Annexure
5	Definitions	See Annexure
6	Density	Not applicable
7	Coverage	As per Site Development Plan
8	Height	3 storeys
9	Floor space ratio	As per Site Development Plan
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
ENDORSEMENT		
It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.		
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected

		or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General:		
1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.4 ERVEN 158, 159, 176 – 179

1	Use Zone	IX Special
2	Uses permitted	Dwelling Units
3	Uses with consent	See Annexure
4	Uses not permitted	See Annexure
5	Definitions	See Annexure
6	Density	Not applicable
7	Coverage	As per Site Development Plan
8	Height	3 storeys plus loft
9	Floor space ratio	As per Site Development Plan
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
<p>ENDORSEMENT</p> <p>It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.</p>		

20 General:

1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.

4.5 ERVEN 180 - 197

1	Use Zone	IX Special
2	Uses permitted	Dwelling Units
3	Uses with consent	See Annexure
4	Uses not permitted	See Annexure
5	Definitions	See Annexure
6	Density	Not applicable
7	Coverage	As per Site Development Plan
8	Height	4 storeys plus loft
9	Floor space ratio	As per Site Development Plan
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.

ENDORSEMENT

20 General:
It is hereby certified that all the conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.
Kungwini Local Municipality
have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
In terms of
THE TOWN PLANNING AND TOWNSHIPS
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4.6 ERF 198

1	Use Zone	V Business 1
2	Uses permitted	Shops, Business Buildings, Offices, Professional Offices, Places of Refreshment, Places of Entertainment, Community Hall, Dwelling Units except on ground floor
3	Uses with consent	Table D, Column 4
4	Uses not permitted	Table D, Column 5
5	Definitions	Clause 2
6	Density	Not applicable
7	Coverage	60%, the provisions of Clause 30(f) of the Scheme excluded
8	Height	3 storeys
9	Floor space ratio	1,8
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the site development plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the site development plan
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the City of Tshwane Metropolitan Municipality.
ENDORSEMENT		
If the above conditions imposed by the Kungwini Local Municipality have been complied with.		Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.

KUNGWINI LOCAL MUNICIPALITY
 APPROVED
 In terms of
 THE TOWN PLANNING AND TOWNSHIPS
 ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

20 General:

1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.

4.7 ERF 199

1	Use Zone	VI Business 2
2	Uses permitted	Shops, Business Buildings, Offices, Professional Offices.
3	Uses with consent	Table D, Column 4
4	Uses not permitted	Table D, Column 5
5	Definitions	Clause 2
6	Density	Not applicable
7	Coverage	60%,
8	Height	2 storeys
9	Floor space ratio	1,2
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the site development plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the site development plan
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the City of Tshwane Metropolitan Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
<p>ENDORSEMENT</p> <p>It is hereby certified that all the conditions imposed by the Kungwini Local Municipality in addition to the above have been complied with.</p>		<p>1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.</p>

KUNGWINI LOCAL MUNICIPALITY
 APPROVED
 In terms of
 THE TOWN PLANNING AND TOWNSHIPS
 ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

4.8 ERF 200

1	Use Zone	IX Special
2	Uses permitted	Self Storage and / or Business which will inter alia include offices
3	Uses with consent	See Annexure
4	Uses not permitted	See Annexure
5	Definitions	See Annexure
6	Density	Not applicable
7	Coverage	As per Site Development Plan
8	Height	2 storeys
9	Floor space ratio	As per Site Development Plan
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality:
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General:		
1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
 APPROVED
 in terms of
 TOWN PLANNING AND TOWNSHIPS
 ACT, 1986 (ORDINANCE 15 OF 1986)

4.9 ERF 201

1	Use Zone	IX Special
2	Uses permitted	Crechè and or pre-school
3	Uses with consent	See Annexure
4	Uses not permitted	See Annexure
5	Definitions	See Annexure
6	Density	Not applicable
7	Coverage	As per Site Development Plan
8	Height	1 storeys
9	Floor space ratio	As per Site Development Plan
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
 APPROVED
 In terms of
 THE TOWN PLANNING AND TOWNSHIPS
 ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

4.10 ERF 202

1	Use Zone	IX Special
2	Uses permitted	Special for recreational purposes which will inter alia include a soccer field, tennis courts and children play park
3	Uses with consent	Any such other uses as approved by the Municipality
4	Uses not permitted	Not other uses permitted
5	Definitions	See Annexure
6	Density	Not applicable
7	Coverage	Not applicable
8	Height	Not applicable
9	Floor space ratio	Not applicable
10	Site Development Plan and landscape development plan	Not applicable
11	Building lines	As per Town Planning Scheme
12	Parking requirements	As per Town-Planning Scheme
13	Paving of traffic areas	As required by the Local Municipality.
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	Not applicable
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	To the satisfaction of the Local Authority
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.11 ERF 203

1	Use Zone	IX Special
2	Uses permitted	Golf Club House and subservient uses and/or Residential 4
3	Uses with consent	Such uses as the Local Authority may deem as compatible
4	Uses not permitted	See Annexure
5	Definitions	See Clause 2
6	Density	Not applicable

ENDORSEMENT
It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
In terms of
THE TOWN PLANNING AND TOWNSHIPS
ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

7	Coverage	As per Site Development Plan for the Golf Club House and for residential 40%
8	Height	For the Club House 2 storeys and for residential 3 storeys.
9	Floor space ratio	As per Site Development Plan for the golf club house and 0,6 for the residential component.
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.12 ERF 205

1	Use Zone	IX Special
2	Uses permitted	Hotel and subservient uses and/or Residential 4
3	Uses with consent	Such uses as the Local Authority may deem as compatible and subservient ENDORSEMENT
4	Uses not permitted	See Annexure
5	Definitions	See Clause 2
6	Density	Not applicable

KUNGWINI LOCAL MUNICIPALITY

APPROVED
 In terms of
THE TOWN PLANNING AND TOWNSHIPS
ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

7	Coverage	As per Site Development Plan for the Hotel and for residential 40%
8	Height	For the Hotel as per site development plan and for residential 3 storeys.
9	Floor space ratio	As per Site Development Plan for the hotel and 0,6 for the residential component.
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.13 ERF 204

1	Use Zone	IX Special
2	Uses permitted	For Conference Facility including subservient uses as well as place of amusement and / or Residential 4
3	Uses with consent	Such uses as the Local Authority may deem as compatible and subservient
4	Uses not permitted	See Annexure
5	Definitions	See Clause 2

ENDORSEMENT
It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
In terms of
THE TOWN PLANNING AND TOWNSHIPS
ACT, 1986 (ORDINANCE 15 OF 1986)

6	Density	Not applicable
7	Coverage	As per Site Development Plan for Conference Facility and for residential 40%
8	Height	For the Conference Facility as per site development plan and for residential 3 storeys.
9	Floor space ratio	As per Site Development Plan for Conference Facility and 0,6 for the residential component.
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan, unless otherwise determined by the Kungwini Local Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality, shall be submitted to the Municipality for approval prior to the submission of building plans. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	In accordance with the Site Development Plan.
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	In accordance with the Site Development Plan
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	In accordance with the Site Development Plan
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	In accordance with the Site Development Plan.
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.14 ERVEN 206

1	Use Zone	IX Special
2	Uses permitted	For mashie course including subervient uses
3	Uses with consent	Not applicable
4	Uses not permitted	Not applicable
5	Definitions	See Clause 2

ENDORSEMENT
It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
In terms of
TOWN PLANNING AND TOWNSHIPS
NANC 1986 (ORDINANCE 15 OF 1981)

6	Density	Not applicable
7	Coverage	Not applicable
8	Height	Not applicable
9	Floor space ratio	Not applicable
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan may be required by the Kungwini Local Municipality. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	As per Town Planning Scheme
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	As per Town Planning Scheme
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality:
15	Loading and off-loading facilities	As per Town Planning Scheme
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	As per Town Planning Scheme
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.15 ERVEN 207, 208 & 209

1	Use Zone	IX Special
2	Uses permitted	For 18 hole golf course including subservient uses
3	Uses with consent	Not applicable
4	Uses not permitted	Not applicable
5	Definitions	See Clause 2
6	Density	Not applicable
7	Coverage	Not applicable
8	Height	Not applicable
9	Floor space ratio	Not applicable
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan may be required by the Kungwini

ENDORSEMENT
It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
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ORDINANCE, 1986 (ORDINANCE 15 OF 1986)

		Local Municipality. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	As per Town Planning Scheme
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	As per Town Planning Scheme
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	As per Town Planning Scheme
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	As per Town Planning Scheme
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.16 ERVEN 210 & 211

1	Use Zone	XIV Special
2	Uses permitted	Access, access control and engineering services
3	Uses with consent	None
4	Uses not permitted	All other uses
5	Definitions	Not applicable
6	Density	Not applicable
7	Coverage	In accordance with the site development plan
8	Height	In accordance with the site development plan
9	Floor space ratio	In accordance with the site development plan
10	Site Development Plan and landscape development plan	1. A site development plan and a landscape development plan, unless otherwise determined by the Municipality, compiled by a person suitably qualified to the satisfaction of the Municipality for approval prior to the submission of building plans. 2. The landscaping in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued

ENDORSEMENT
It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED
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		maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	All other building lines shall be in accordance with the approved site development plan.
12	Parking requirements	According to the Municipality.
13	Paving of traffic areas	(a) All parts of the erf upon which motor vehicles may move or park, shall be provided with a permanent dust-free surface, which surface shall be paved drained and maintained to the satisfaction of the Municipality (b) The access road over the erf shall be paved or tarred to the satisfaction of the City of Tshwane Metropolitan Municipality. This condition does not have to be complied with for purposes of registration in the Deeds Office
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality.
15	Loading and off-loading facilities	Shall take place on the property to the satisfaction of the City of Tshwane Metropolitan Municipality.
16	Turning facilities	Not required.
17	Physical barriers	Not required
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the City of Tshwane Metropolitan Municipality.
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of municipal by-laws for outdoor advertising.
20 General:		
1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.17 ERVEN 212 - 221

1	Use Zone	XXIV Private Open Space
2	Uses permitted	Dwelling houses and private clubs
3	Uses with consent	Table D, Column 4
4	Uses not permitted	Table D, Column 5
5	Definitions	Clause 2
6	Density	Not applicable
7	Coverage	Not applicable
8	Height	Not applicable
9	Floor space ratio	Not applicable
10	Site Development Plan and landscape development plan	Not applicable
11	Building lines	Not applicable
12	Parking requirements	Not applicable
13	Paving of traffic areas	Not applicable

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED

In terms of
TOWN PLANNING AND TOWNSHIPS
ACT, 1977 (ORDINANCE 15 OF 1986)

14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality:
15	Loading and off-loading facilities	Not applicable
16	Turning facilities	Not applicable
17	Physical barriers	Not applicable
18	Health measures	Not applicable
19	Outdoor advertising	Not applicable
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.		

4.18 ERF 227

1	Use Zone	IX Special
2	Uses permitted	For golf driving range
3	Uses with consent	Not applicable
4	Uses not permitted	Not applicable
5	Definitions	See Clause 2
6	Density	Not applicable
7	Coverage	Not applicable
8	Height	Not applicable
9	Floor space ratio	Not applicable
10	Site Development Plan and landscape development plan	(1) A site development plan and a landscape development plan may be required by the Kungwini Local Municipality. (2) The landscaping, in terms of the landscape development plan, shall be completed by completion of the development or any phase thereof. The continued maintenance of the landscape development shall be to the satisfaction of the Municipality.
11	Building lines	As per Town Planning Scheme
12	Parking requirements	As per town-Planning Scheme
13	Paving of traffic areas	As per Town Planning Scheme
14	Access to the erf	Entrances to and exits from the erf shall be sited, constructed and maintained to the satisfaction of the Municipality:
15	Loading and off-loading facilities	As per Town Planning Scheme
16	Turning facilities	All parts of the erf upon which motor vehicles are allowed to move or park, shall be provided with a permanent dust-free surface, which surface shall be paved, drained and maintained to the satisfaction of the Municipality.
17	Physical barriers	As per Town Planning Scheme
18	Health measures	1. Any requirements for air pollution-, noise abatement- or health measures set by the Municipality shall be complied with to the satisfaction of the Municipality without any costs to the Municipality. 2. No air-conditioning units or compressors may be mounted to the exterior walls of buildings without the prior consent of the Kungwini Local Municipality.
ENDORSEMENT		
It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.		
19	Outdoor advertising	Advertisements and/or sign boards shall not be erected or displayed on the erf without the written consent of the Municipality first being obtained in terms of

	municipal by-laws for outdoor advertising.
20 General: 1. In addition to the above conditions the erf and buildings thereon are further subject to the general provisions of the Peri Urban Areas Town-Planning Scheme, 1975.	

Our Ref.: F1216 Proper Cond Est 13 Feb 2008

ENDORSEMENT

It is hereby certified that all the conditions imposed by the Kungwini Local Municipality have been complied with.

KUNGWINI LOCAL MUNICIPALITY
APPROVED 
 In terms of
THE TOWN PLANNING AND TOWNSHIPS
ORDINANCE, 1986 (ORDINANCE 15 OF 1986)



**RIVERWALK
BULK CIVIL ENGINEERING SERVICES STATEMENT (PHASE 1)**

ANNEXURES

ANNEXURE B



**RIVERWALK
BULK CIVIL ENGINEERING SERVICES STATEMENT (PHASE 1)**

ANNEXURES

ANNEXURE C

NOTES AND SPECIFICATIONS

- ALL BELMOUTH RADII TO BE 10m UNLESS OTHERWISE SHOWN.
- ALL ROADS TO BE PROVIDED WITH KERBSIDING ACCORDING TO TYPICAL DETAILS AND LEGEND BELOW.
- P.I. COORDINATES AND RADII INDICATED ARE ON THE CENTERLINE OF THE ROAD
- ROAD CLASSIFICATION:
 - 7.4m ROAD: ROAD CLASS 4.
 - 5.0m ROAD: ROAD CLASS 5A.
 - 4.5m ROAD: ROAD CLASS 5B.
 - 4.0m ROAD: ROAD CLASS 6.
- ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS SPECIFICATION.
- ALL DIMENSIONS ARE IN METERS. (UNLESS OTHERWISE SPECIFIED)
- DO NOT SCALE FROM THESE DRAWINGS.
- ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
- ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD CTM/D DETAIL DRAWINGS.
- THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS (IF APPLICABLE).
- THE CONSULTANT IS IN CONJUNCTION WITH THE ENGINEER TO PROVIDE THE SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
- THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY MANAGER OF THE TRANSPORT AND ROADS DEPARTMENT, IN NO WAY REMOVES ANY RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
- THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES AND STANDARDS OF THE TRANSPORT AND ROADS DEPARTMENT AND THE TRANSPORT AND ROADS DEPARTMENT HAVE BEEN MET AND ARE COMPLIED WITH.
- ALL LEVELS OF EXISTING SERVICES ARE TO BE CHECKED AND VERIFIED ON SITE AND SUBMITTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF THE CONSTRUCTION.

LEGEND:

- EXISTING 855mm RW PIPELINE
- NEW 200mm uPVC WATER LINE
- NEW 250mm uPVC WATER LINE
- NEW 315mm uPVC WATER LINE
- NEW 355mm uPVC WATER LINE
- NEW 450mm STEEL WATER LINE
- NEW PRV WATER VALVE
- NEW END CAP

DEVELOPER DETAIL

ARCHITECT'S DETAIL

NO.	DATE	APPROVED	DESCRIPTION	PAK
A	25-01-2016		ISSUED FOR INFORMATION	

AMENDMENTS

NO.	DATE	APPROVED	DESCRIPTION	PAK

DESIGN CHECKED BY

DESIGNER

PROJECT STATUS

PROJECT ENGINEER (CONSULTANT)

CONSULTANT DETAIL

CONSULTING CIVIL AND STRUCTURAL ENGINEERS

CIVIL CONCEPTS

P.O. BOX 36148, Merivale Park 0102
 TEL: (012) 460-0008
 FAX: (012) 460-0005
 E-MAIL: mail@civilconcepts.co.za

CITY OF TSHWANE

TRANSPORT DEPARTMENT

EXECUTIVE DIRECTOR

M. P. Lelutha
 DIRECTOR GENERAL
 P.O. BOX 1409
 PRETORIA
 0001

RIVERWALK

PORTION 241 OF THE FARM

ZWARTKOPPIES No. 364-JR

WATER LAYOUT

(SERVICE REPORT)

CONTRACT No.: C2142

PROJECT No.: C2142

DATE: JANUARY 2016

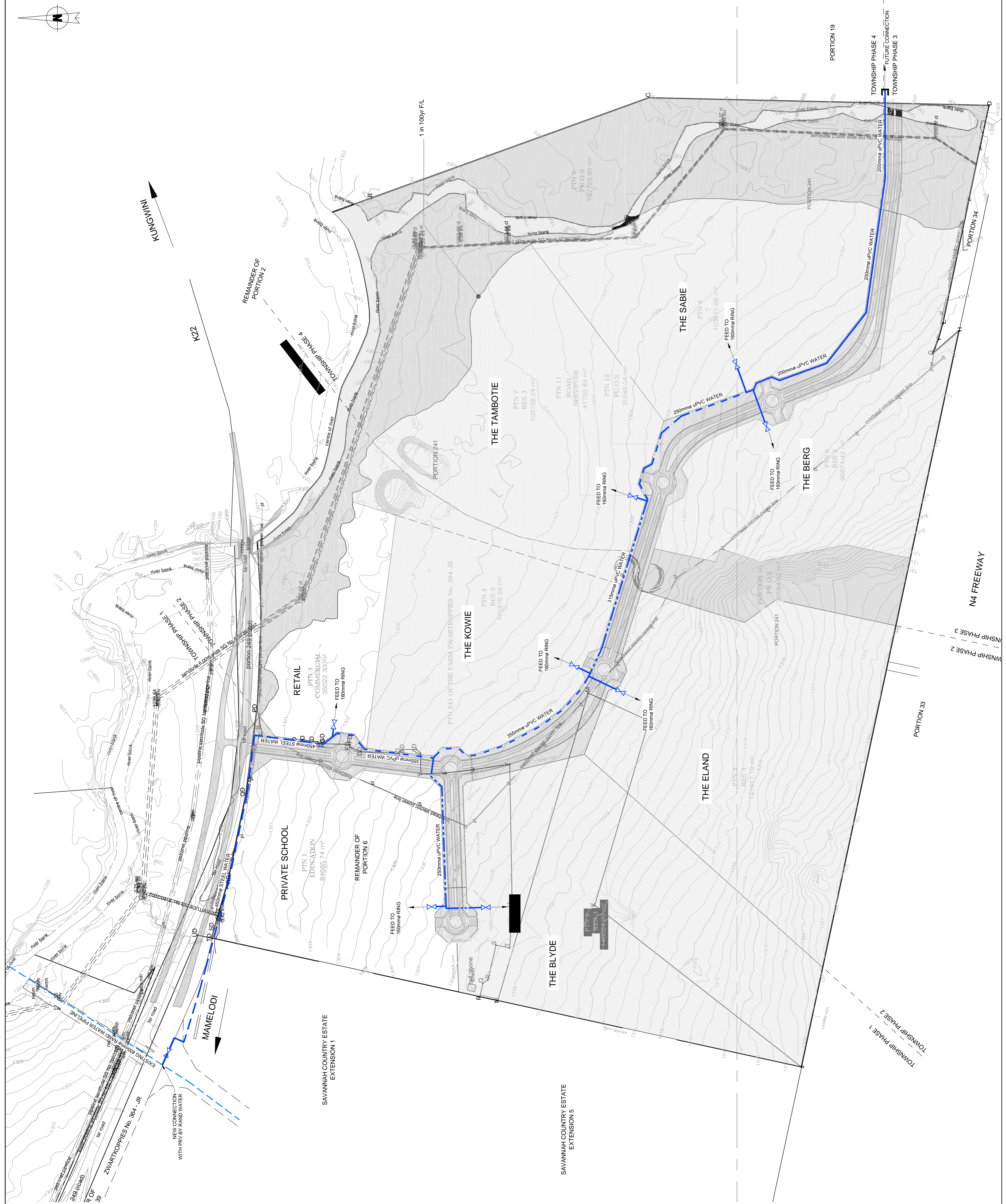
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ORIGINAL PAPER SIZE: A1

DRAWING No.: C2142-SR-004

SHEET No.: A1

REVISION:





**RIVERWALK
BULK CIVIL ENGINEERING SERVICES STATEMENT (PHASE 1)**

ANNEXURES

ANNEXURE D



**RIVERWALK
BULK CIVIL ENGINEERING SERVICES STATEMENT (PHASE 1)**

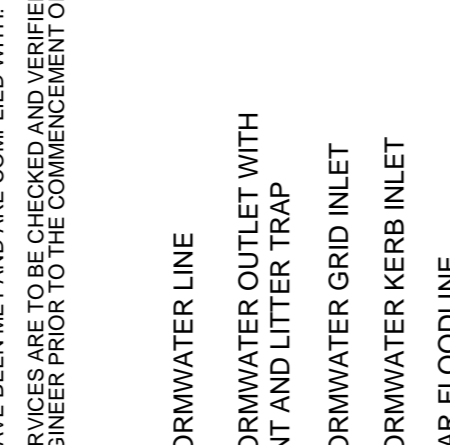
ANNEXURES

ANNEXURE E

- ### NOTES AND SPECIFICATIONS
- ALL BELLMOUTH RADII TO BE 10M UNLESS OTHERWISE SHOWN.
 - ALL ROADS TO BE PROVIDED WITH KERBS/EDGING ACCORDING TO TYPICAL DETAILS AND LEGEND BELOW.
 - P.I. COORDINATES AND RADII INDICATED ARE ON THE CENTERLINE OF THE ROAD.
 - ROAD CLASSIFICATION:
 5.5m ROAD: ROAD CLASS 5A
 5.0m ROAD: ROAD CLASS 5B
 4.5m ROAD: ROAD CLASS 5C
 4.0m ROAD: ROAD CLASS 5D
 3.5m ROAD: ROAD CLASS 5E
 3.0m ROAD: ROAD CLASS 5F
 2.5m ROAD: ROAD CLASS 5G
 2.0m ROAD: ROAD CLASS 5H
 1.5m ROAD: ROAD CLASS 5I
 1.0m ROAD: ROAD CLASS 5J
 0.5m ROAD: ROAD CLASS 5K
 0.0m ROAD: ROAD CLASS 5L
 ALL MATERIALS AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS SPECIFICATION.
 - ALL DIMENSIONS ARE IN METERS (UNLESS OTHERWISE SPECIFIED).
 - DO NOT SCALE FROM THESE DRAWINGS.
 - ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
 - ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005 AND THE STANDARD CTM DETAIL DRAWINGS.
 - THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS (IF APPLICABLE).
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, SERIES 4.
 - THE SIGNATURE OR INITIALS ON THIS DRAWING OF ANY MANAGER OF THE RESPONSIBILITY WHATSOEVER FROM THE CONSULTANT.
 - THE CONSULTANT REMAINS RESPONSIBLE TO ENSURE THAT ALL THE GUIDELINES STANDARD DRAWINGS STANDARDS AND SPECIFICATIONS OF THE TRANSPORT DEPARTMENT ARE FOLLOWED.
 - ALL LEVELS OF EXISTING SERVICES ARE TO BE CHECKED AND RECORDED ON SITE AND SUBMITTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF THE CONSTRUCTION.

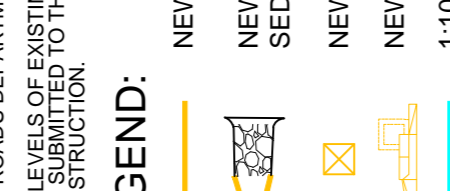
- ### LEGEND:
- NEW STORMWATER LINE
 - NEW STORMWATER OUTLET WITH SEDIMENT AND LITTER TRAP
 - NEW STORMWATER GRID INLET
 - NEW STORMWATER KERB INLET
 - 1:100 YEAR FLOODLINE

DEVELOPER DETAIL



Balina PROPERTIES

ARCHITECTS DETAIL



VTC Architecture
www.vtcgroup.biz

AMENDMENTS

NR.	DATE	APPROVED	ISSUED FOR INFORMATION	DESCRIPTION	PAK
A	25.01.2016				

DESIGN CHECKED BY

DESIGNED	W. STANDER
DRAWN	R. WILBERS
CHECKED	W. STANDER
MANAGED	J.J. CRUICKSHANK

PROJECT STATUS

PROJECT ENGINEER (CONSULTANT)	DATE
DATE	DATE
DATE	DATE
DATE	DATE

INITIALS AND SIGNATURE

PROJECT ENGINEER (CONSULTANT)	SIGNATURE AND P.I. No.	DATE
PROJECT ENGINEER (CONSULTANT)	SIGNATURE AND P.I. No.	DATE

CONSULTANT DETAIL



CIVIL CONCEPTS
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
P.O. BOX 36148, Menlo Park 0102
Tel: (012) 460-0008
Fax: (012) 460-0005
E-Mail: mail@civilconcepts.co.za

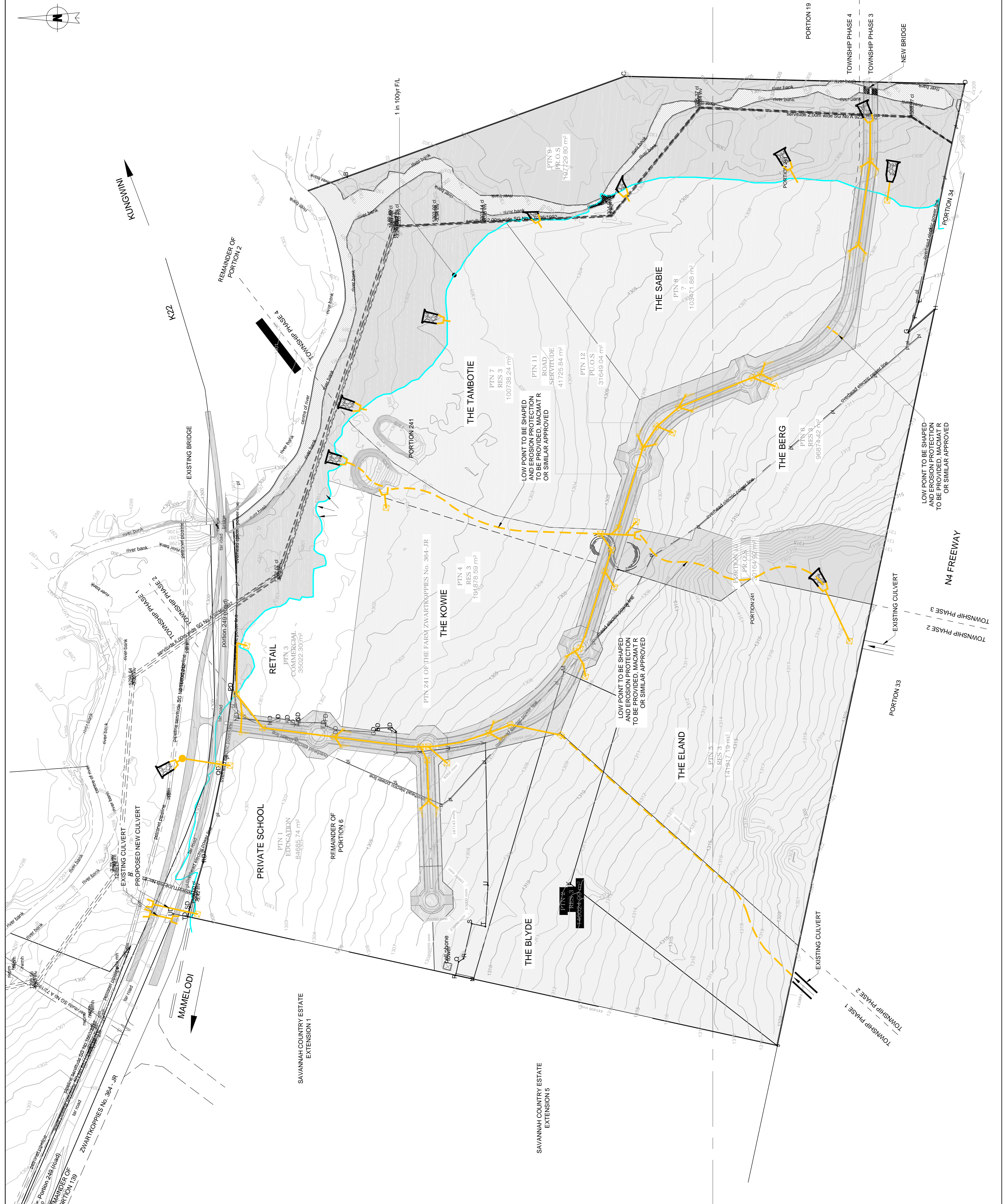
CITY OF TSHWANE

TRANSPORT DEPARTMENT
 Mr. L. V. Kgabane-Pheko
 EXECUTIVE DIRECTOR
 P.O. BOX 1409
 PRETORIA
 0001

LOCATION OF PROJECT:
RIVERWALK
PORTION 241 OF THE FARM
ZWARTKOPPIES No. 364-JR

DESCRIPTION OF PROJECT:
STORMWATER LAYOUT
(SERVICE REPORT)

CONTRACT No.:	PROJECT No.:	DATE:	SCALE:	ORIGINAL PAPER SIZE:
	C2142	JANUARY 2016	1:2500	A1
DRAWING No.:	SHEET No.:			
C2142-SR-002				

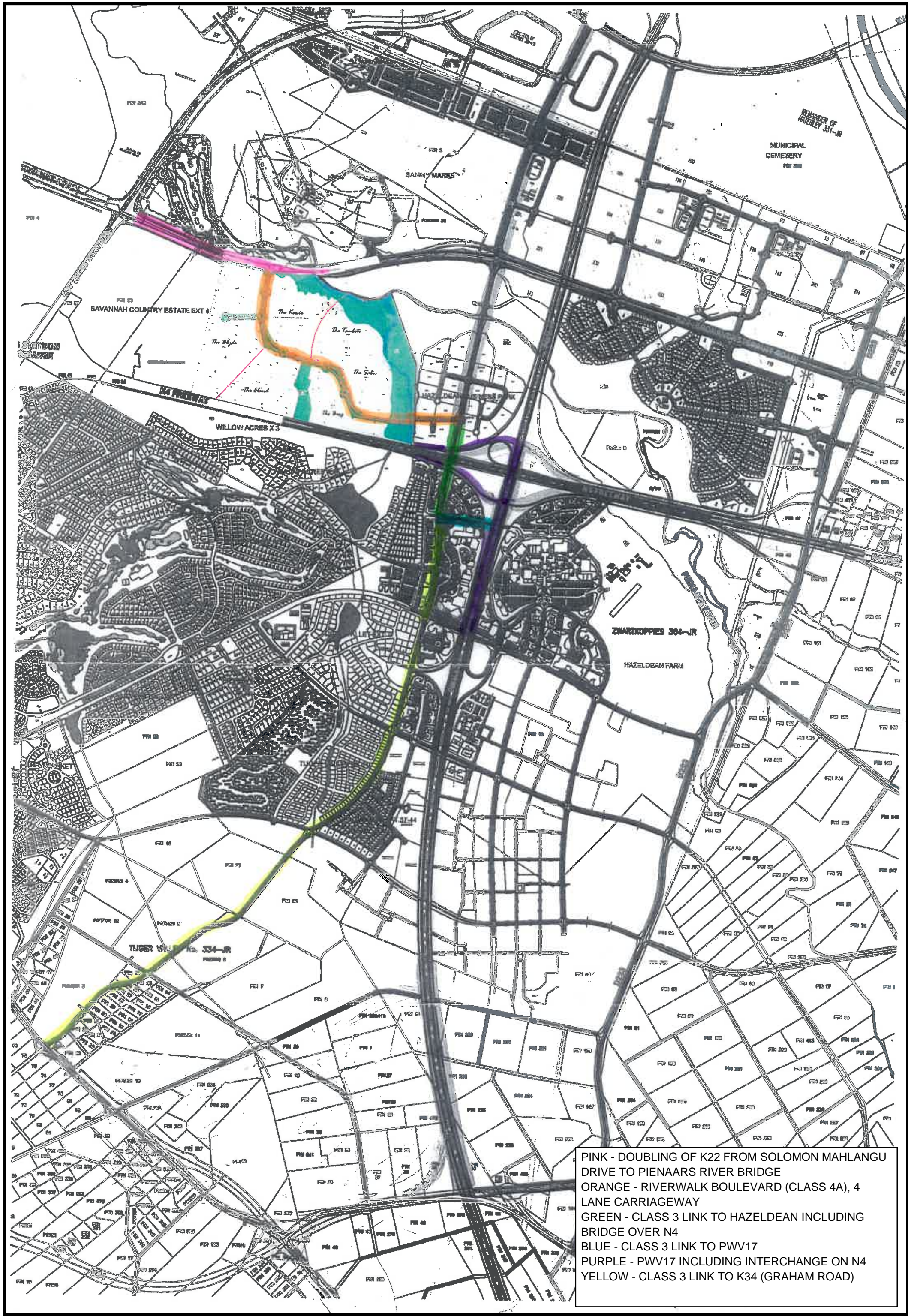




**RIVERWALK
BULK CIVIL ENGINEERING SERVICES STATEMENT (PHASE 1)**

ANNEXURES

ANNEXURE F



PINK - DOUBLING OF K22 FROM SOLOMON MAHLANGU DRIVE TO PIENAARS RIVER BRIDGE
 ORANGE - RIVERWALK BOULEVARD (CLASS 4A), 4 LANE CARRIAGEWAY
 GREEN - CLASS 3 LINK TO HAZELDEAN INCLUDING BRIDGE OVER N4
 BLUE - CLASS 3 LINK TO PWV17
 PURPLE - PWV17 INCLUDING INTERCHANGE ON N4
 YELLOW - CLASS 3 LINK TO K34 (GRAHAM ROAD)



Civil Concepts (Pty) Ltd, Reg Number: 95/12428/07
50, 15th Street, Menlo Park (Cnr 17th Street &
Justice Mahomed (Charles) Street)
PO Box 36148, Menlo Park, 0102
Tel: 012 460 0008, Fax: 012 460 0005
Email: mail@civilconcepts.co.za



Our Reference
C2142/WS/2.9 tvn

Date
23 May 2016

City of Tshwane

**ATTENTION : Mr. A. Scholtz
Ms. H. Sebatana
Ms. A. Vienings**

Dear Sir,

RIVERWALK BULK WATER SUPPLY

Our Bulk Service Statement C2142/BSS dated January 2016 and GLS Assessment Report Central Retic – La Montagne reservoir 2016-01 refers.

We also had several telecoms and e-mails post the initial submission which we would prefer to formalise with this letter.

1. Background

A GLS Assessment was conducted that indicated the proposed water network for the area. It was also a requirement to discuss the availability of bulk water with Rand Water.

Rand Water responded by capping the flow to the development from their existing 855 mm \varnothing Bulk Line to 10 kl/hour and a proposal of 25 mm \varnothing water connection. This is stated as the availability until a future 1500 mm \varnothing pipe has been completed.

Subsequently a master plan meeting was held to discuss the bulk water distribution for the entire area north of the N4 and east of Solomon Mahlangu Drive. In its final stage the Riverwalk development would remain on a direct connection, even with various reservoirs constructed.

In discussions between Mr. Scholtz and Mr. Stander, it was proposed that a zone upstream of the Riverwalk connection be identified for which a reservoir can be constructed by the developer. The capacity that becomes available will be allocated then to Riverwalk. At this stage the La Montagne Reservoir was identified as a possible project.

The concept of the above is still to be presented and accepted by Rand Water.

2. Proposed Way Forward

Due to the magnitude of the development we wish to introduce a phased approach in order to rollout the development as quick as possible.

2.1 Initial Phase

Riverwalk will construct the 450 mm \varnothing supply with the connection to the Rand Water 855 mm \varnothing Bulk Line. This is then installed as per the masterplan with feeder along the K22 and Riverwalk Boulevard towards the first township. Refer to **Annexure A** for the proposed layout.

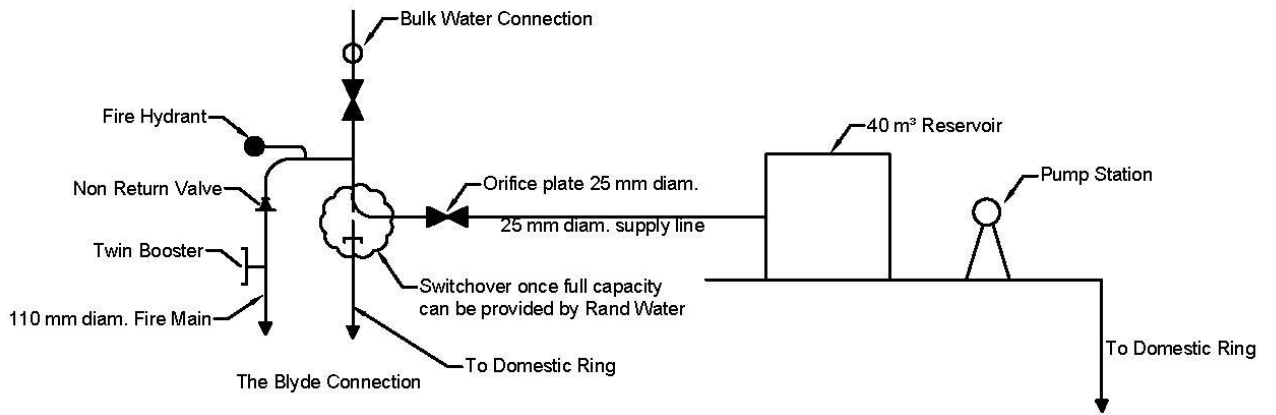
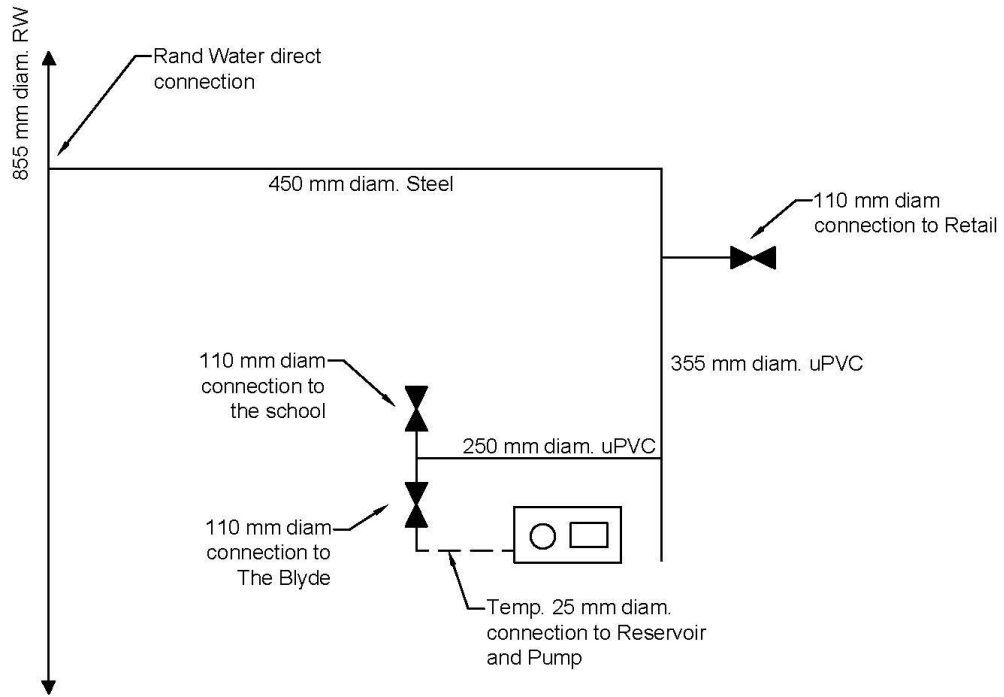
A standard 110 mm \varnothing connection will be provided with a separate t-off for a fire main at the township connection.

A 25 mm \varnothing orifice plate with 25 mm \varnothing pipe will be introduced for a feed to a temporary reservoir and booster pump station within the development.

DIRECTORS:

FWJ Koen PrEng BSc BEng(Hons) MSAICE **TS Kruger** PrEng MEng MSAICE AStructE CEng
HJ van den Berg PrEng B Eng (Civil) **W Stander** Pr Eng BSc(Eng) MSAICE **MM Gounden** PrEng BSc(Eng)MSAICE
MIHT

Refer to diagrammatic layout below of the proposal:



With the 40 m³ Reservoir and 25 mm ø connection allowing 10 kℓ/hour we can serve approximately 400 units.

Our proposed 1st phase will then be capped at 400 units as calculated in the attached reservoir balancing diagram.

The reservoir and pump station constructed for the first phase will remain private property and will be switched over to a rainwater harvesting facility.

2.2 Second Phase

Balwin has instructed the consultant to immediately proceed with the detail design and construction of the identified Reservoir. Details still need to be confirmed, but based on the Masterplan report dated 2016-1 for Central Retic – La Montagne reservoir by GLS the following is concluded and proposed:

- Total required reservoir capacity for Central Retic – La Montagne zone is 22,7 Mℓ.
- Present fully occupied current demand is 7 Mℓ.
- Balwin to construct a 12 Mℓ reservoir to cater for existing and part of future needs.
- Balwin requires only 4.2 Mℓ /day.
- The proposed 12 Mℓ will therefore release sufficient capacity for the entire Balwin development of 190 ℓ/s and the existing 7 Mℓ demand.
- Rectifications, reservoir supply and bulk water connections are then also part of the project to ensure the La Montagne reservoir zone is completely disconnected from the direct supply.

2.3 Remaining Phases

Once the reservoir is completed all of the remaining infrastructure will be implemented as per the masterplan.

We trust you will find this proposal in order and will regard this as part of the Bulk Water solution for the development. We also request that, if in agreement, you give positive comments on the applicable application with the principle of the phased approach. A detailed service agreement will then be compiled for the first and second phases coupled to the relevant subdivided townships.

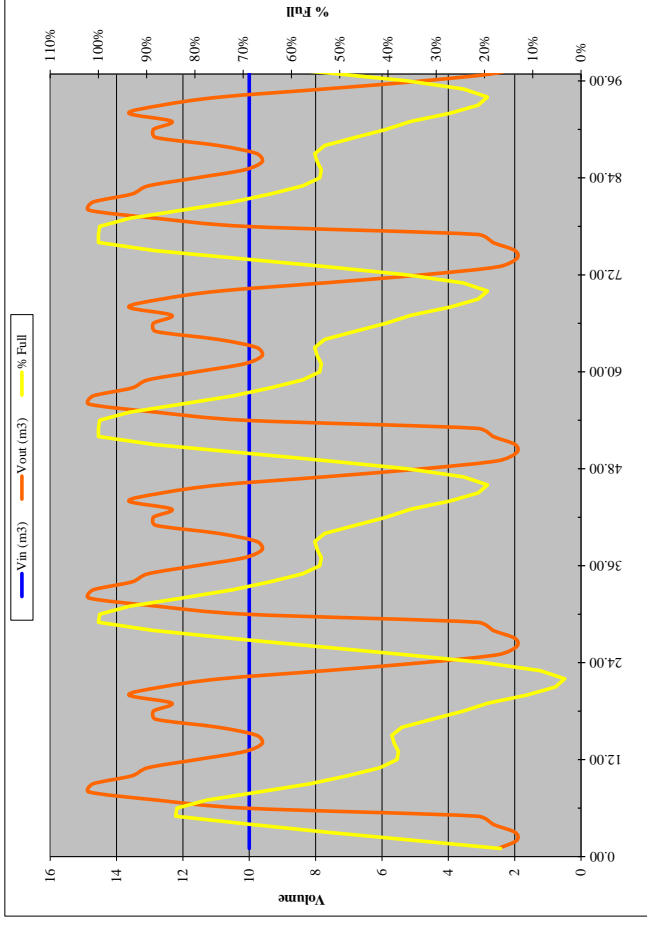
Yours faithfully,



Werner Stander
for Civil Concepts (Pty) Ltd

Total required balancing volume for a reservoir

Time	V _{in} (m ³)	V _{out} (m ³)	D (m ³)	% Full	V _{tot} (m ³)
1,00	10	2	45,00	0%	45
2,00	10	2	37,49	17%	35%
3,00	10	2	29,44	35%	52%
4,00	10	2	21,42	52%	69%
5,00	10	3	14,08	84%	84%
6,00	10	3	7,20	84%	78%
7,00	10	3	10,11	78%	67%
8,00	10	3	14,94	56%	48%
9,00	10	3	19,66	42%	38%
10,00	10	3	23,19	38%	39%
11,00	10	3	26,25	39%	37%
12,00	10	3	27,84	38%	34%
13,00	10	3	27,98	38%	34%
14,00	10	3	27,59	39%	34%
15,00	10	3	27,36	39%	34%
16,00	10	3	28,29	37%	34%
17,00	10	3	28,29	37%	34%
18,00	10	3	34,00	24%	19%
19,00	10	3	36,34	19%	11%
20,00	10	3	39,96	11%	5%
21,00	10	3	42,60	5%	3%
22,00	10	3	43,48	3%	3%
23,00	10	4,8	41,22	8%	20%
24,00	10	4,8	36,00	20%	37%
25,00	10	2	28,49	37%	55%
26,00	10	2	20,44	55%	72%
27,00	10	2	12,42	72%	89%
28,00	10	3	5,08	89%	100%
29,00	10	3	0,00	100%	100%
30,00	10	0,12	0,12	100%	94%
31,00	10	1,3	2,92	94%	75%
32,00	10	1,5	7,75	83%	72%
33,00	10	1,5	12,46	72%	64%
34,00	10	1,4	16,00	64%	58%
35,00	10	1,3	19,05	58%	54%
36,00	10	1,2	20,64	54%	55%
37,00	10	1,0	20,79	54%	55%
38,00	10	1,0	20,17	55%	47%
39,00	10	1,1	21,69	52%	40%
40,00	10	1,3	23,91	47%	35%
41,00	10	1,3	26,80	40%	27%
42,00	10	1,2	29,14	35%	21%
43,00	10	1,4	32,77	27%	19%
44,00	10	1,4	34,02	21%	16%
45,00	10	1,3	35,40	19%	14%
46,00	10	1,1	36,28	19%	12%
47,00	10	8	34,02	24%	36%
48,00	10	5	28,80	36%	53%
49,00	10	2	21,30	53%	71%
50,00	10	2	13,24	71%	88%
51,00	10	2	5,23	88%	100%
52,00	10	3	0,00	100%	100%
53,00	10	3	0,00	100%	94%
54,00	10	10	0,12	100%	75%
55,00	10	13	2,92	94%	72%
56,00	10	15	7,75	83%	64%
57,00	10	15	12,46	72%	58%
58,00	10	14	16,00	64%	54%
59,00	10	13	19,05	58%	54%
60,00	10	12	20,64	54%	47%
61,00	10	11	20,79	54%	40%
62,00	10	10	20,17	55%	35%
63,00	10	10	20,39	55%	27%
64,00	10	10	20,17	55%	21%
65,00	10	11	21,69	53%	19%
66,00	10	13	23,91	47%	16%
67,00	10	12	26,80	40%	14%
68,00	10	14	29,14	35%	12%
69,00	10	14	32,77	27%	11%
70,00	10	13	35,40	21%	10%
71,00	10	11	36,28	19%	24%
72,00	10	8	34,02	24%	36%



Demand Pattern	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	1,08%	0,84%	0,86%	1,15%	1,35%	4,38%	5,54%	6,42%	6,37%	3,86%	3,65%	3,02%	4,16%	4,26%	4,73%	5,53%	5,58%	5,34%	5,90%	5,47%	4,71%	3,33%	2,47%	2,07%
Tot.	100,00%																							
Units	385																							

C27-11

11 December 2015

General Manager: Water and Sanitation
City of Tshwane Metropolitan Municipality
PO Box 6338
PRETORIA
0001

ATTENTION: Mr. Anton Scholtz

Dear Sir,

WATER AND SEWER MASTER PLANS: DEVELOPMENT OF PROPOSED TOWNSHIP/REZONING – RIVER WALK

The attached request from Civil Concepts (Werner Stander) dated 20 October 2015 with regards to accommodating the proposed development in the Tshwane water and sewer systems has reference.

Although the City of Tshwane has water and sewer master plans, you requested this further analysis and report because :

- The development is considered to be a large development (i.e. > than 250 housing units).
- The development has large fire flow requirements (e.g. 20l/s, 25l/s or 50l/s which is usually the case for higher density cluster developments, industry, general business, shopping centres or high-rise flats \geq 4 storeys).
- The development has a **substantially** higher water demand than used in the master plan.
- The reservoir zone in which the development falls is currently experiencing inadequate bulk water system capacity (from Rand Water).
- The drainage area in which the development falls is currently experiencing inadequate bulk sewer system capacity.

This report is a technical report stating upgrades required in the distribution networks in the vicinity of the proposed development. The City of Tshwane engineer (yourself) will accept the report or suggest changes and will make a final decision on works to be implemented by the proposed development.

This analysis and report is based on the 2010 water and sewer master plans which are updated every quarter. The latest master plans used in this analysis were the April 2015 master plans.

All costs shown in this report are year 2015/16 Rand value estimates and **include** 40% surcharge for P&Gs, contingencies and fees but **exclude** VAT.

1 WATER DISTRIBUTION NETWORK

1.1 Water Resource

The City of Tshwane (CoT) straddles two primary water catchments namely: the Crocodile River basin in the west and the Olifants River basin in the east. The dividing line between these two catchments runs in a north-south direction approximately through Cullinan. Water resources in the Crocodile River basin in the west together with imports from the Vaal River basin via the Rand Water system are sufficient to supply CoT reservoirs in this basin. However, water resources in the Olifants River basin in the east are fully committed and cannot supply **additional** water to any existing or future CoT reservoirs without additional Rand Water supply through new pipelines, especially to the Cullinan WTP and Bronkhorstspruit WTP.

The CoT Water Resources Master Plan (2014) indicates that the proposed development is supplied from the water source shown in the table below. From this information it can be seen that this water source is adequate to cater for the proposed development.

Catchment	Water Source	%	Comment
Vaal River basin	Rand Water	100%	The master plan calculates the water volumes required at all Rand Water connections to supply applicable reservoirs. These calculations are supplied by the CoT to Rand Water and the City obtains agreements from Rand Water for these volumes.

1.2 Distribution Zone

The proposed development was taken into consideration in the above mentioned water master plan as part of the African Renaissance 1 and African Renaissance 2 future development areas.

The master plan indicates that the proposed development falls in no water supply zone at present but in the future will form part of the RW Bronberg Direct 11 (Zwartkoppies) supply zone as shown in **Figure 1 (Water)** attached.

1.3 Revised Water Demand

The combined AADD for the proposed development as originally calculated and used in the analysis of the water distribution network in the master plan was 884 kℓ/d.

The revised AADD, peak flow and fire flow calculated for the proposed development and used in the re-analysis of the water distribution network was 4 128 kℓ/d (almost five times higher than the MP) calculated as follows:

	Anticipated Landuse	New Dev. Area (ha)	Density (Units/ha)	FSR	Floor space (ha)	No. of Units	FSR Units	UWD Type	UWD (inc.UAW)	AADD (inc.UAW) (kl/d)	PDDWF incl. Infil. (kl/d)	Water / Sewer Ratio	IPDWF (l/s)	IPWWF (l/s)
NEW DEVELOPMENT														
Res 3	Flats (± 50m ² per unit) + FSR residential	54.508	110			6000		unit	0.60 kl/unit/d	3600	3501	97%	52.4	74.8
Retail	Motor city / retail park as a single zoning (car sale)	2.600		0.50	1.300		130	floor	0.60 kl/100m ² /d	78	52	67%	1.0	1.4
School	School, creche, educational buildings	7.388		0.25	1.847		184.7	floor	0.60 kl/100m ² /d	111	75	67%	1.4	2.0
	Public open space	22.644						area	15.00 kl/ha/d	340	0	0%	0.0	0.0
	Roads	23.122						none	0.00 kl/unit/d	0	0	0%	0.0	0.0
	New Master Plan Total	55.754				6000	315			4128	3628	88%	54.7	78.2

- Peak flow using zone peak hour factor of: 4.0^{\ddagger} = 191.1 l/s
- Fire flow for type: Industrial/Business (moderate risk) = 50 l/s @ 10 m

1.4 Accommodation of Proposed Development in the Existing Water Distribution Network

Accommodation of the proposed development, with its revised AADD, requires implementation of the following additions and adjustments to the *existing* water system as indicated in **Figure 1 (Water)** attached:

1.4.1 Bulk Items

Items required to alleviate existing problems in the bulk water system:

- BBD.11.1 10 m x **450** mm Ø link pipe R 131 000
- BBD.11.2 1 370 m EGL **400** mm Ø PRV to be installed R 311 000

The Rand Water 855 mm Ø pipeline to which the above items will connect is experiencing high velocities (3 m/s) and thus inadequate capacity all the way from the Bronberg command reservoir to the proposed connection point. The City of Tshwane is in contact with Rand Water regarding the construction of a parallel reinforcement pipe of a proposed diameter of 1 500mm. With the proposed development requiring nearly five times the AADD originally considered in the master plan, the water volume requirements given to Rand Water to date will need to be revised.

1.4.2 Reticulation Items

Items required to alleviate existing problems in the water distribution system:

- None

Items required to accommodate the proposed development (excluding fire flow requirements):

- BBD.11.3 450 m x **450** mm Ø main pipe R 1 768 000
- BBD.F11.3a 160 m x **450** mm Ø main pipe R 659 000
- BBD.F11.3b 160 m x **400** mm Ø main pipe R 539 000
- BBD.F11.3c 606 m x **355** mm Ø main pipe R 1 538 000
- BBD.F11.4 180 m x **315** mm Ø main pipe R 401 000
- BBD.F11.7 500 m x 200 mm Ø main pipe R 565 000

Items required to accommodate the proposed development (including fire flow requirements):

- As above.

The proposed connection point to the existing water distribution system is shown in **Figure 1 (Water)** attached.

[‡] Higher peak flow factors might be applicable for internal networks.

1.5 Internal Reticulation

The internal network design on the property of the proposed development is beyond the scope of this report. However, the consulting engineer for the development is required to allow for the fire flow demand as listed in 1.2 above on the internal networks.

For internal network design purposes the water distribution network provides the following energy gradelines (EGLs) at the proposed connection point (see **Figure 1 (Water)**):

			<u>POINT A</u>
• Static EGL	=	1 370	m a.s.l. (68 m)
• Residual EGL	=	1 366	m a.s.l. (64 m)
• Fire Flow EGL	=	1 364	m a.s.l. (62 m)
• Ground Level	=	1 302	m a.s.l.

1.6 Adjustments to the Master Plan

The revised AADD of the proposed development requires the following additions and adjustments to the *master plan* as indicated in **Figure 1 (Water)** attached.

1.6.1 Bulk Items

The AADD for the proposed development needs to be increased fivefold which will increase the water volumes required from Rand Water.

• BBD.11.1	10	m	x	450	mm Ø link pipe	R	131 000
• BBD.11.2	1 370	m	EGL	400	mm Ø PRV to be installed	R	311 000

1.6.2 Reticulation Items

• BBD.11.3	450	m	x	450	mm Ø main pipe	R	1 768 000
• BBD.F11.3a	160	m	x	450	mm Ø main pipe	R	659 000
• BBD.F11.3b	160	m	x	400	mm Ø main pipe	R	539 000
• BBD.F11.3c	606	m	x	355	mm Ø main pipe	R	1 538 000
• BBD.F11.4	180	m	x	315	mm Ø main pipe	R	401 000

2 SEWER NETWORK

2.1 Drainage Area

The proposed development was taken into consideration in the above mentioned sewer master plan as part of the African Renaissance 1 and African Renaissance 2 future development areas.

The master plan indicates that the proposed development falls in the Baviaanspoort drainage area as shown in **Figure 2 (Sewer)** attached. This drainage area drains to the Baviaanspoort WWTP.

2.2 Revised Sewer Flow

The combined peak day dry weather flow (PDDWF) for the proposed development as originally calculated and used in the analysis of the sewer system in the master plan was 605 kℓ/d.

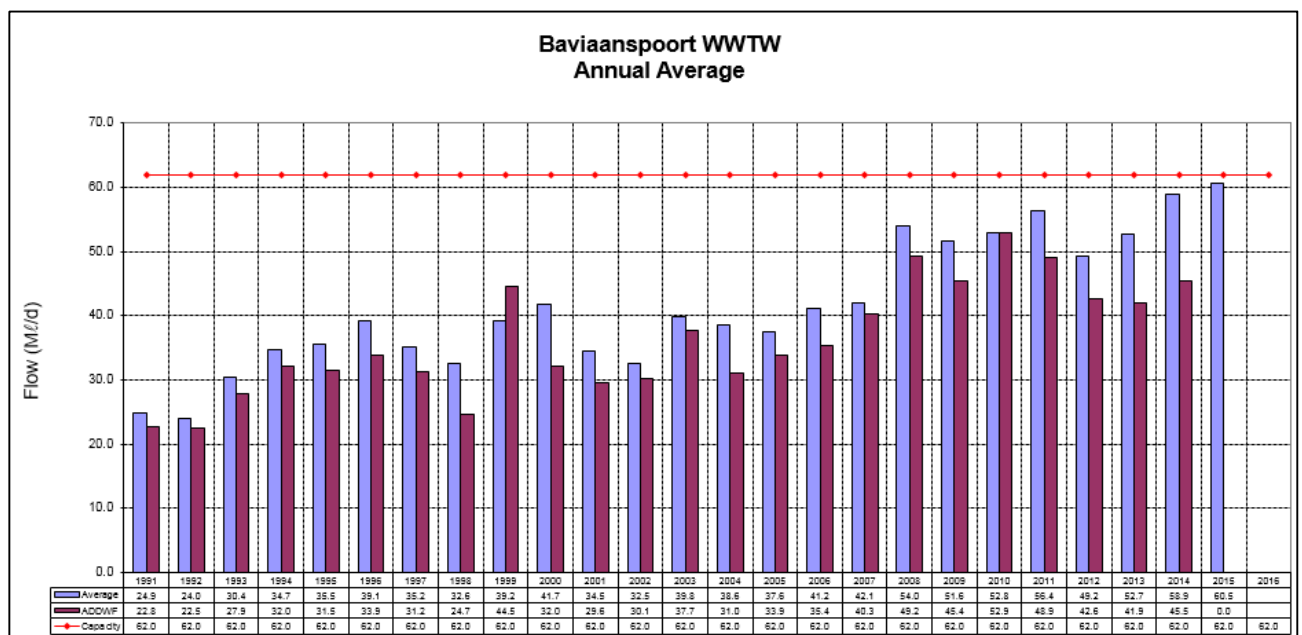
The revised PDDWF calculated for the proposed development and used in the re-analysis of the sewer system was 3 628 kℓ/d with an instantaneous peak dry weather flow (IPDWF) of 54.7 ℓ/s. The design flow, or instantaneous peak wet weather flow (IPWWF), is 78.2 ℓ/s.

2.3 Accommodation of the Proposed Development in the Existing Sewer System

Accommodation of the proposed development, with its revised PDDWF, requires implementation of the following additions and adjustments to the *existing* sewer system as indicated in **Figure 2 (Sewer)** attached:

2.3.1 WWTWs and Outfall Sewer Bulk Items

The graph below shows that the design capacity of the Baviaanspoort WWTP (red line) is close to being reached by the Average Flow (light blue bars). Planning, design and construction expansion work to the Baviaanspoort WWTP thus needs to be commenced.



Items required to alleviate existing problems in the bulk sewer system i.e. WWTPs and outfall sewers:

- BP_043.00b 60 Ml /d Upgrade to existing Baviaanspoort WWTP (phase 2 of 4) R 544 000

Items required to accommodate the proposed development in the bulk sewer system i.e. WWTPs and outfall sewers:

				<u>Design Flow</u>			
• BP_240.07	830	m x	675	mm Ø new pipe to upgrade existing 315 mm Ø outfall sewer	347 l/s	R	5 082 000
• BP_240.06	150	m x	675	mm Ø new pipe to upgrade existing 315 mm Ø outfall sewer	442 l/s	R	1 057 500

2.3.2 Collector and Network Sewer Reticulation Items

Items required to alleviate existing problems in the existing sewer system:

- None

Items required to accommodate the proposed development in the existing sewer system:

- None.

The proposed connection points to the existing sewer system are shown in **Figure 2 (Sewer)** attached.

In **Figure 2 (Sewer)** attached pipes in future development areas are indicated schematically.

2.4 **Adjustments to the Master Plan**

The PDDWF for the proposed development needs to be increased fivefold.

Yours sincerely,



Per: Dr BF Loubser
GLS Consulting

(Report done by: Adie Vienings)

REQUEST TO GLS FROM CONSULTANT

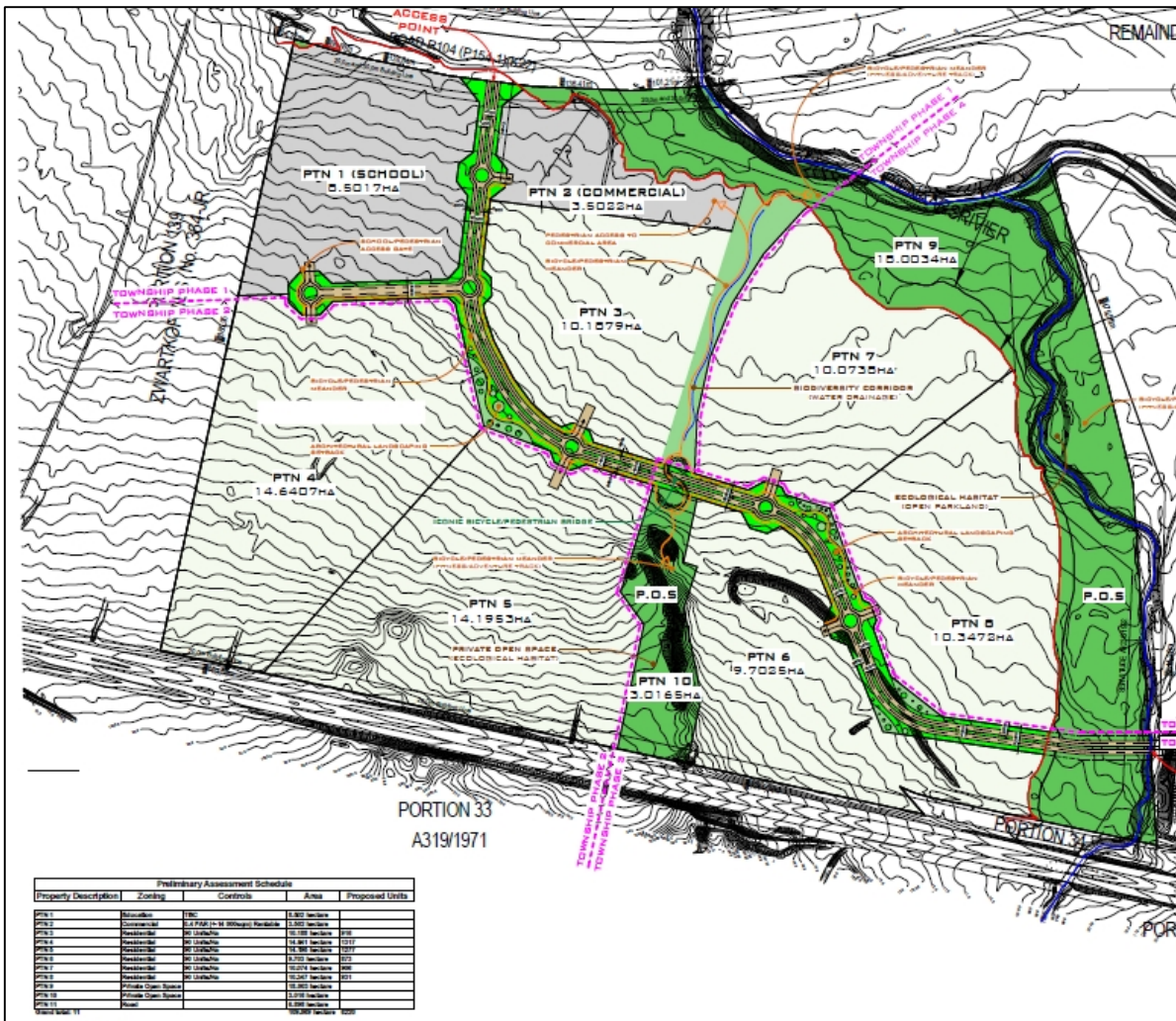
From: Roeline Schutte [mailto:roeline@civilconcepts.co.za]
 Sent: 20 October 2015 09:47 AM
 To: Adie Vienings <adie@gl.s.co.za>
 Subject: RE: Info reqd: African Renaissance 2nd Assessment

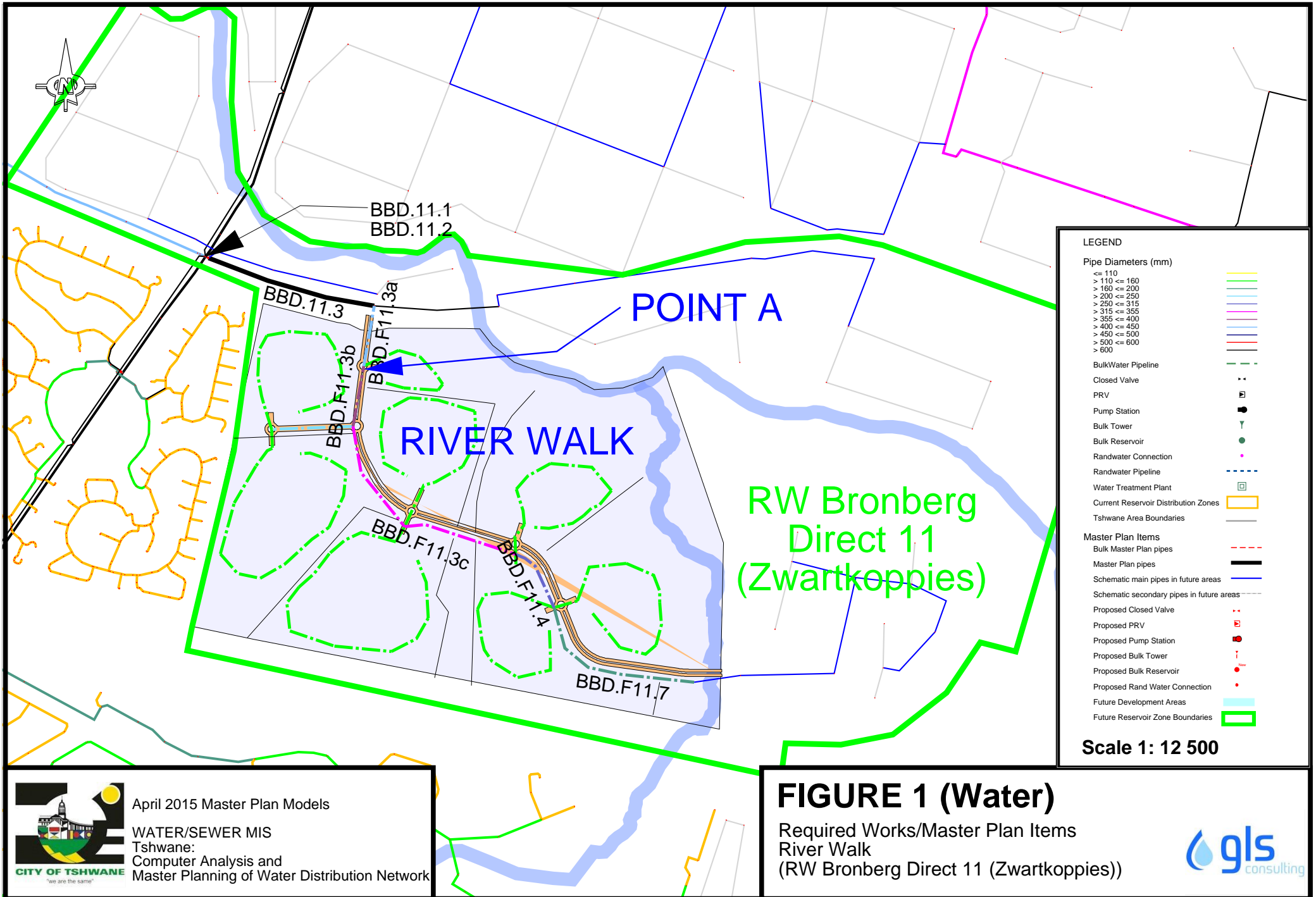
Hi Adie,

Please find attached the layout. This is the only one that we have at the moment.

Kind Regards

Roeline Schutte
PA for Mr W Stander

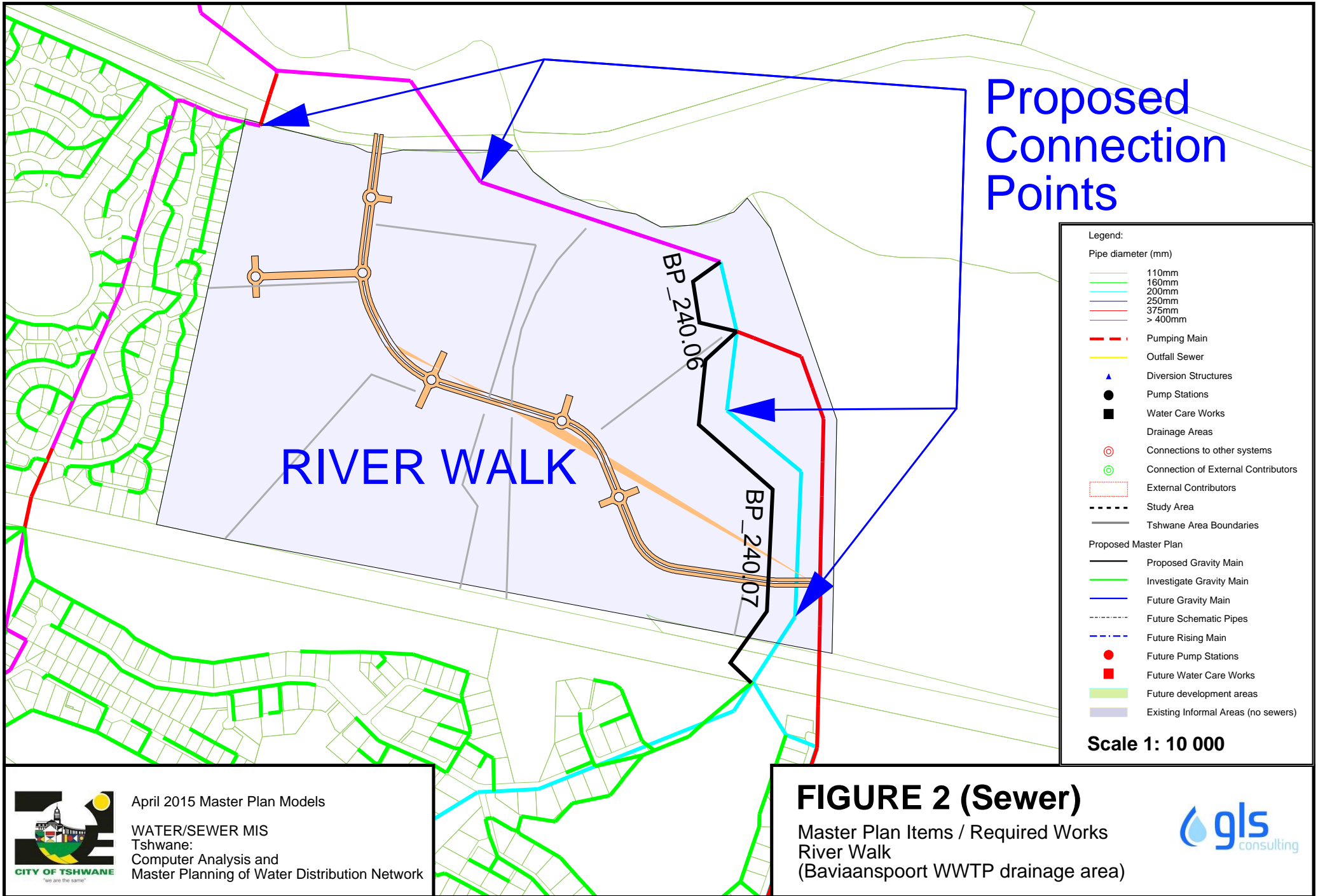




April 2015 Master Plan Models
 WATER/SEWER MIS
 Tshwane:
 Computer Analysis and
 Master Planning of Water Distribution Network

FIGURE 1 (Water)
 Required Works/Master Plan Items
 River Walk
 (RW Bronberg Direct 11 (Zwartkoppies))





Proposed Connection Points

- Legend:**
- Pipe diameter (mm)
- 110mm
 - 160mm
 - 200mm
 - 250mm
 - 375mm
 - > 400mm
- Pumping Main
 - Outfall Sewer
 - Diversion Structures
 - Pump Stations
 - Water Care Works
 - Drainage Areas
 - Connections to other systems
 - Connection of External Contributors
 - External Contributors
 - Study Area
 - Tshwane Area Boundaries
- Proposed Master Plan**
- Proposed Gravity Main
 - Investigate Gravity Main
 - Future Gravity Main
 - Future Schematic Pipes
 - Future Rising Main
 - Future Pump Stations
 - Future Water Care Works
 - Future development areas
 - Existing Informal Areas (no sewers)

Scale 1: 10 000



April 2015 Master Plan Models
 WATER/SEWER MIS
 Tshwane:
 Computer Analysis and
 Master Planning of Water Distribution Network

FIGURE 2 (Sewer)

Master Plan Items / Required Works
 River Walk
 (Baviaanspoort WWTP drainage area)





REPORT

HYDROPEDOLOGY WETLAND IMPACT ASSESSMENT AND MANAGEMENT REPORT:

RIVER WALK DEVELOPMENT, GAUTENG PROVINCE

15 January, 2016

Compiled by:
J.H. van der Waals
(PhD Soil Science, Pr.Sci.Nat.)

Member of:
Soil Science Society of South Africa (SSSSA)

Accredited member of:
South African Soil Surveyors Organisation (SASSO)

Registered with:
The South African Council for Natural Scientific Professions
Registration number: 400106/08

Declaration

I, Johan Hilgard van der Waals, declare that:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing
 - any decision to be taken with respect to the application by the competent authority; and
 - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.



J.H. VAN DER WAALS
TERRA SOIL SCIENCE

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HYDROPEDOLOGY WETLAND IMPACT ASSESSMENT AND MANAGEMENT REPORT: RIVER WALK DEVELOPMENT, GAUTENG PROVINCE

1. INTRODUCTION

1.1 TERMS OF REFERENCE

Terra Soil Science was appointed by the **Bokamoso** to conduct a hydroponology based wetland delineation, status and functional assessment of the wetland/watercourse on the River Walk development site in the Gauteng Province. The focus of the investigation is to address aspects that include wetland distribution and functioning, landscape hydroponology and impacts of the urban and site development on the hydrological functioning of the wetland.

1.2 AIM OF THIS REPORT

The aim of this report is to provide a perspective on the distribution, status and functioning of the wetland/watercourse on the River Walk development site, provide a description and contextualisation of the hydroponology of the site, describe the historical impacts and to provide specific management recommendations regarding the hydrology of the wetland and site post development.

1.3 DISCLAIMER

This report was generated under the regulations of NEMA (National Environmental Management Act) that guides the appointment of specialists. The essence of the regulations are 1) independence, 2) specialisation and 3) duty to the regulator. The independent specialist has, in accordance with the regulations, a duty to the competent authority to disclose all matters related to the specific investigation should he be requested to do such (refer to declaration above).

It is accepted that this report can be submitted for peer review (as the regulations also allow for such). However, the intention of this report is not to function as one of several attempts by applicants or competent authorities to obtain favourable delineation outcomes. Rather, the report is aimed at addressing specific site conditions in the context of current legislation, guidelines and best practice with the ultimate aim of ensuring the conservation and adequate management of the water resource on the specific site.

Due to the specific legal liabilities wetland specialists face when conducting wetland delineations and assessments this author reserves the right to, in the event that this report becomes part of a delineation comparison exercise between specialists, submit the report to the competent authorities, without entering into protracted correspondence with the client, as an independent report.

1.4 METHODOLOGY

The report was generated through:

1. The collection and presentation of baseline land type and topographic data for the site;
2. The thorough consideration of the statutory context of wetlands assessment and the process of wetland delineation;
3. The identification of water related landscape parameters (conceptual and real) for the site;
4. Aerial photograph interpretation of the site;
5. Assessment of historical impacts and changes on the site through the accessing of various historical aerial photographs and topographic maps;
6. Focused soil and site survey in terms of soil properties as well as drainage feature properties;
7. Assessment of the functioning, status and hydrology of the wetlands on the site; and
8. Presentation of the findings of the various components of the investigation.

2. SITE LOCALITY AND DESCRIPTION

2.1 SURVEY AREA BOUNDARY

The site lies between 25° 45' 11" and 25° 45' 56" south and 28° 22' 25" and 28° 23' 15" east approximately 10 km east of Pretoria city centre in the Gauteng Province (**Figure 1**).

2.2 LAND TYPE DATA

Land type data for the site was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC). The land type data is presented at a scale of 1:250 000 and entails the division of land into land types, typical terrain cross sections for the land type and the presentation of dominant soil types for each of the identified terrain units (in the cross section). The soil data is classified according to the Binomial System (MacVicar et al., 1977). The soil data was interpreted and re-classified according to the Taxonomic System (Soil Classification Working Group, 1991).

The site falls into the **Ba9** land type (Land Type Survey Staff, 1972 - 2006). **Figure 1** also provides the land type distribution around the site. **Ba** land types denote areas with dominantly plinthic catena where red soils occur frequently. Following on the field survey it is evident that the broad land type data (**Ba9**) is not representative of the survey area and that the site consists predominantly of soil derived from shale and andesite (no plinthic character). A dedicated discussion of the specific site conditions will be provided later in the report.

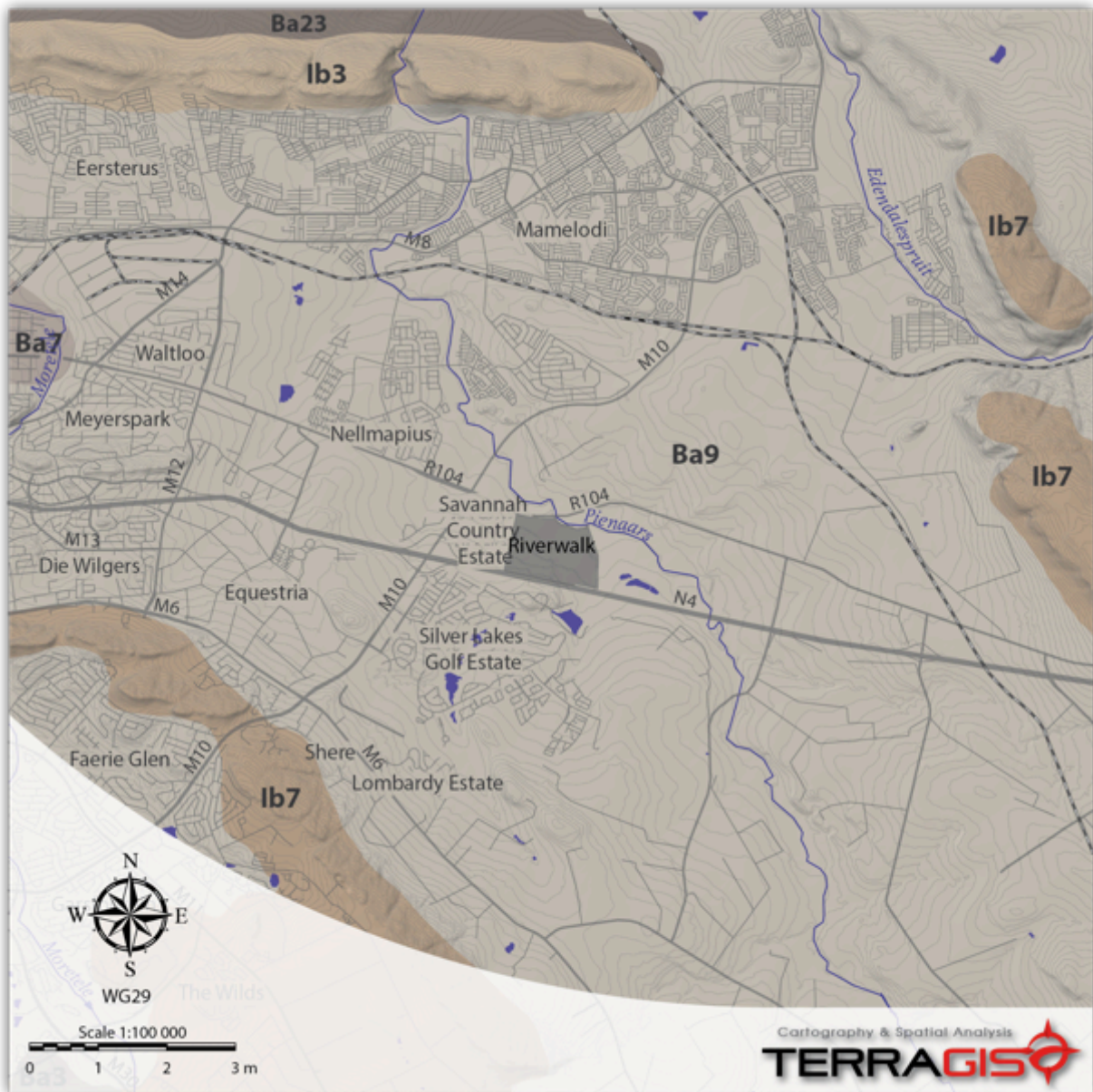


Figure 1 Locality of the survey site with the land types indicated in colour shaded areas

2.3 TOPOGRAPHY

The topography of the site is generally flat with a distinct small rocky hill in the south. The contour map for the site is provided in **Figure 2**. From the contour data a digital elevation model (DEM) was generated (**Figure 3**). The topographic data was further interpreted and the approaches and results are discussed later in the report.