

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

Kindly note that:

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

DEPARTMENTAL DETAILS

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

Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch Ground floor, Umnotho House, 56 Eloff Street, Johannesburg Email Address: bongani.shabangu@gauteng.gov.za

Administrative Unit telephone number: (011) 240 3377/3051 Department central telephone number: (011) 240 2500

BASIC ASSESSMENT REPORT FOR THE PROPOSED BRYANSTON EXTENSION 3 PROJECT A HOUSING DEVELOPMENT GAUT 002/21-22/E0020



	(For official use	only)						
NEAS Reference Number:								
File Reference Number:								
Application Number:								
Date Received:		•	•	l.		.		
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If this BAR has not been subm permission was not requested time frame.								
Not applicable								
Is a closure plan applicable for	this application a	and has it be	en include	ed in thi	s report?		ı	No
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Has a draft report for this applic administering a law relating to a						tate Departm	ents [Yes
Is a list of the State Department contact person?	s referred to abo	ove attached	I to this re	port inc	luding their	full contact	details	and
								No
If no, state reasons for not attac	ching the list.						L	
The register will be included in								
Have State Departments includ	ing the compete	nt authority	commente	ed?				No
If no, why?							!	
This Basic Assessment Re Departments and the Compe be included in the Basic As Comments and Response Re	tent Authority ar sessment Repo	e currently r	eviewing	the BAI	R. All comr	ments receive	ed will	
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SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Proposed Bryanston Extension 3 Project A Housing Development

Project Description:

PROJECT OVERVIEW

Project Background

Phumaf Holdings (Pty) Ltd was appointed by the Gauteng Department of Human Settlements to assist with all pre-planning, planning, design and construction management associated with some of the projects under the Gauteng Rapid Land Release Programme. Subsequently, K2M Environmental (Pty) Ltd was appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment and to manage the application for the Environmental Authorisation process for the proposed Housing Development located on erven 3948, 3949, 3950, 3951, 3952, 3953, 3954, 3955, 3956, 3957, 3958, 3959, 3960, 3905, 3906, 3907, 3908, 3909, 3910 and 3911 of the Bryanston Extension 3 Township. All the properties, except one, are owned by the Gauteng Provincial Government. Erf 3955 is owned by National Government. The above-mentioned properties make up the proposed project area of the Bryanston Extension 3 Project A Housing Development. It should be noted that there are three other residential developments (Bryanston 3B, 3C and 3D) within the area that are proposed by the Gauteng Department of Human Settlements that also form part of the Gauteng Rapid Land Release Programme. Furthermore, erven 3975, 3976, 3977 and 3978 in Bryanston Extension 3 form part of the proposed Housing Development in Bryanston Extension 3B which is also subject to a Basic Assessment Report which is being undertaken by GA Environment (Pty) Ltd.

The Gauteng Provincial Government has identified the need to provide suitable housing within its area of jurisdiction. This process was initiated as a means to address the Province's housing backlog due to the increase in population. In doing so, the Gauteng Provincial Government approved the Gauteng Rapid Land Release Programme which is aimed at fast tracking the provision of affordable residential units to qualifying beneficiaries within the Province. The Rapid Land Release Programme (RPRP) was launched in 2018 by the Premier of Gauteng Province, Mr David Makhura. The RLRP is a component of the broader land reform programme in the Province and the Republic of South Africa and is aimed at unlocking economic value through the release of properties to qualifying beneficiaries for various purposes which include housing as well as agricultural and commercials sites. The RLRP mainly aims to identify land parcels that are currently vacant, owned by either the National, Provincial or Local Government which can be allocated to qualifying beneficiaries.

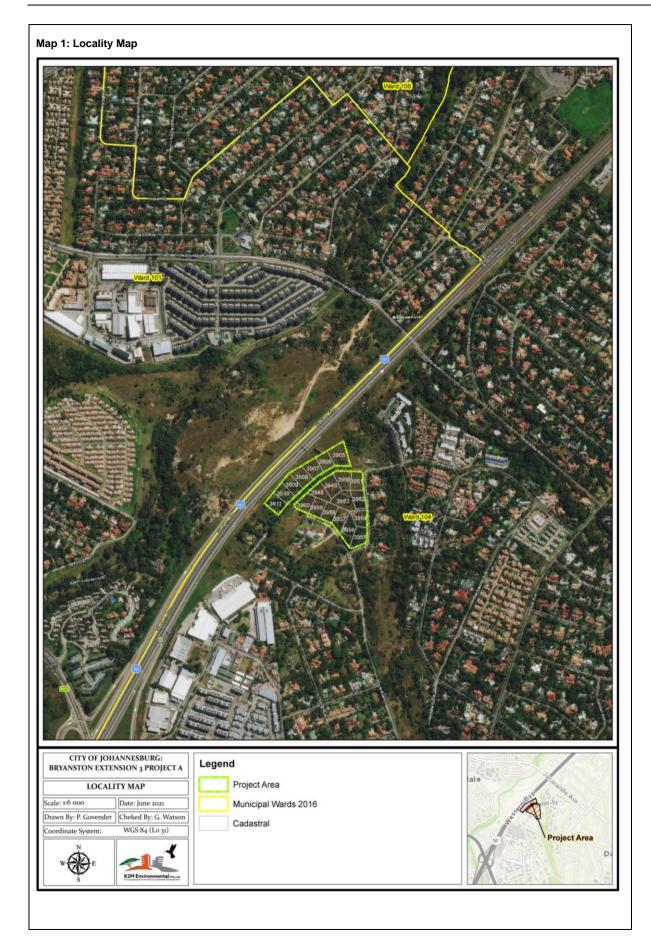
K2M Environmental lodged a NEMA Query with the Gauteng Department of Agriculture and Rural Development (GDARD) to establish if the proposed development requires Environmental Authorisation. In their response letter, (Appendix I), GDARD confirmed that the proposed development requires Environmental Authorisation subject to a Basic Assessment Process. Subsequently, K2M Environmental has submitted the completed Application Form for Environmental Authorisation to the Gauteng Department of Agriculture and Rural Development (GDARD) (see Appendix J for a copy of the Application Form). GDARD registered the project with Reference Number GAUT 002/21-22/E0020 in their letter dated the 22 June 2021. This reference number is to be quoted in all correspondence with GDARD for ease of reference.

Project Location & Description

Erven 3948, 3949, 3950,3951, 3952, 3953, 3954, 3955, 3956, 3957, 3958, 3959, 3960, 3905, 3906, 3907, 3908, 3909, 3910 and 3911 of the Bryanston Extension 3 Township make up the project area for the proposed Bryanston Extension 3 Project A Housing Development. The site is situated within Ward 104 of the City of Johannesburg Metropolitan Municipality (see Map 1 and **Appendix A1** for Locality Map) and has a total extent of approximately 4.55 ha. The project area consists of two blocks divided by a road known as Cedar Street. Only the southern portion which is 2.9ha in extent will be developed and the northern portion which is 1.6ha in extent will not be developed but will be used as part of a Biodiversity Offset Plan.

In terms of the City of Johannesburg Land Use Scheme, 2018, the current zoning for all subject properties and their surroundings are 'Residential 1'.







The proposed development layout and Urban Development Framework was prepared by Metroplan Town Planners and Urban Designers in April 2021 (see **Appendix A2** and **Appendix G1**, respectively). The proposed development entails the removal of vegetation for the following purpose:

- 3-4 storey residential buildings with approximately 80 units;
- 2-3 storey residential buildings with approximately 160 units;
- Approximately 20 single residential units;
- Internal water reticulation. The proposed internal water pipelines will have a minimum diameter of 110mm, mPVC, Class 16. The water mains will be installed 2m from the erf boundary forming a loop. Isolating valves will be placed at the reticulation nodes to provide effective isolation of loops. The proposed internal water reticulation will connect to the existing 100mm water AC located on Cedar St.
- Internal sewer reticulation. The proposed internal sewer pipelines will have a diameter of 160mm, uPVC (Heavy Duty), Class 16. The manholes will be 1 000mm to 1 500mm diameter precast rings with concrete covers. The proposed internal sewer reticulation will connect to the existing 160mm clay sewer pipeline located on Cedar St.
- Internal roads and stormwater infrastructure. Internal stormwater run-off will be collected using an underground
 pipe system and be conveyed into a proposed 450mm diameter stormwater pipe designed by GladAfrica
 Consulting Engineers (Pty) Ltd for the Bryanston Extension 3 Project D, since there are existing Stormwater pipes
 in the vicinity of the proposed site.
- An internal MV network to supply the proposed development with electricity.
- It should be noted that erven will be set aside for open space and conservation.

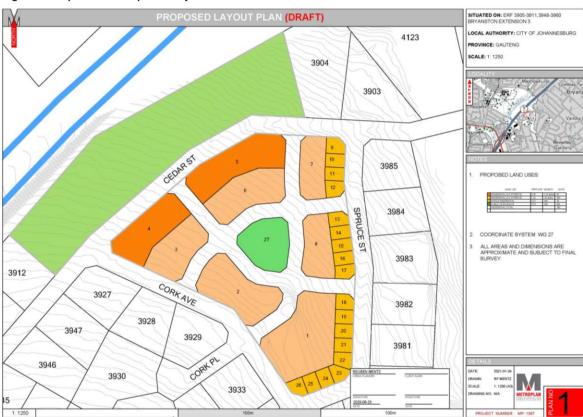


Figure 1: Proposed Development Layout

Environmental Impact Assessment Regulations

The Environmental Impact Assessment Regulations of 2014 (as amended) promulgated in terms of Section 24(5) of the National Environmental Management Act, (Act No. 107 of 1998) as amended, requires Environmental Authorisation from the competent authority (Gauteng Department of Agriculture and Rural Development) for activities listed in Government Notices R324, R325 and R327. Table 1 below identifies the activities that has been triggered for the proposed development.

Table 1: Triggered Activities

Activity No.	Description of Activity	Relevance to Project							
Activity 27 of	The clearance of an area of 1 hectare or more, but less	The proposed development will entail the							
GN.R. 327	than 20 hectares of indigenous vegetation except where such clearance of indigenous vegetation is required for – (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	removal of approximately 2.41 ha of indigenous vegetation.							



Activity 4 of GN.R. 324	The development of a road wider than 4 metres with a reserve less than 13,5 metres.	The proposed development may entail the construction of a road wider than 4m with a reserve less than 13.5m within an area
	c. Gauteng: iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; v. Within sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004); vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority.	classified as a: CBA and ESA; threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004); Sensitive areas identified in an environmental management framework
Activity 12 of GN.R. 324	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. c. Gauteng	The proposed development will entail the clearance of approximately 2.41 ha of indigenous vegetation within an area classified as: • Endangered vegetation • CBAs and ESAs
	i. Within any critically endangered or endangered ecosystem listed in terms of 52 of the NEMBA or prior to the publication of such list, within an area that has identified as critically endangered in the National Spatial Biodiversity Assessment, 2004; ii. Within any Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or in bioregional plans.	
Activity 14 of GN.R. 324	The development of- (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbors that will not increase the	The proposed development will entail development of infrastructure and structures with a physical footprint of 10 square metres within 32m of a watercourse on a site classified as: CBA and ESA Endangered vegetation
	development footprint of the port or harbor. c. Gauteng iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);	

Regulation 19 of the Environmental Impact Assessment Regulations of 2014 (as amended) determines that a Basic Assessment Procedure must be followed for all activities listed in Government Notice R327 and R324. K2M Environmental (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioner (EAP) by the applicant (Gauteng Department of Human Settlements) and will therefore be responsible for the Basic Assessment procedures concerned with the proposed development as specified in Sections 19 and 20 of Government Notice R326 promulgated in terms of Section 24(5) of the National Environmental Management Act, (Act No. 107 of 1998), as amended.

Select the appropriate box

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

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

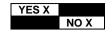


If yes, describe the legislation and the Competent Authority administering such legislation

Water Use Licence Application issued by the Department of Water and Sanitation will be required in terms of the National Water Act, 1998.



If yes, have you applied for the authorisation(s)?
If yes, have you received approval(s)? (attach in appropriate appendix)



2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:			
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	National & Provincial	27 November 1998			
Constitution of the Republic of South Africa (Act 106 of 1998)	National & Provincial	18 December 1996			
National Water Act 36 of 1998	National & Provincial	26 August 1998			
National Heritage Resources Act 25 of 1999	National & Provincial	28 April 1999			
National Environmental Management: Biodiversity Act 10 of 2004	National & Provincial	07 June2004			
Occupational Health and Safety Act 85 of 1993	National & Provincial	23 June 1993			
Polluters Pay Principal					
2014 EIA Regulations (as amended)	National & Provincial				
Protection of Personal Information Act, 2013 (POPI Act)	National	26 November 2013			
Gauteng Conservation-Plan Version 3.3	Provincial	October 2011			
Gauteng Environmental Management Framework	Provincial	November 2014			
City of Johannesburg IDP 2020/21 Review	Local	2020/21			
City of Johannesburg Metropolitan Municipality Spatial Development Framework 2040	Local	2016			
City of Johannesburg Metropolitan Municipality: Water Services By- laws	Local				
City of Johannesburg Metropolitan Municipality: Waste Management By-laws	Local	30 July 2013			
City of Johannesburg Metropolitan Municipality: Municipal Planning By-laws	Local	2016			
City of Johannesburg Inclusionary Housing Policy	Local	2019			

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

Legislation, policy of guideline	Description of compliance							
National Environmental Management Act (No. 107 of 1998)	NEMA is the overarching framework for Environmental Legislation in South Africa. This development requires Environmental Authorisation subject to a Basic Assessment to be conducted in terms of the 2014 EIA Regulations (as amended).							
Constitution of the Republic of South Africa (Act 106 of 1998)	All environmental aspects should be interpreted within the context of the Constitution. The Constitution has enhanced the status of the environment by virtue of the fact that environmental rights have been established in terms of Section 24.							
National Water Act 36 of 1998	The proposed development will entail development within 500m of wetlands. A pre-application meeting will be arranged with the Department of Water and Sanitation to discuss the way forward in terms of the Water Use License.							
National Heritage Resources Act 25 of 1999	This Act has been put into place to conserve, protect and conserve heritage resources. Documentation has been submitted to SAHRA for their comment. In their response, SAHRA indicated that they have no objection to the proposed Bryanston Extension 3 Project A Housing Development. See Appendix F1 for the final comment from SAHRA and Appendix G6 for the HIA Report.							
National Environmental Management: Biodiversity Act 10 of 2004	The Act provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA. Areas of high biodiversity need to be protected.							
Occupational Health and Safety Act 85 of 1993	The contractor needs to manage his staff and crew in strict accordance with the Occupational Health and Safety Act in order to prevent injuries to the staff.							
Polluters Pay Principal	The Polluters Pay Principal has been included into the preparation the EMPr.							
2014 EIA Regulations (as amended)	This development requires a Basic Assessment to be conducted in terms of the 2014 EIA Regulations (as amended). The purpose of the Basic Assessment is to ensure that the development does not impact on the natural environment.							
Protection of Personal Information Act, 2013 (POPI Act)	To comply with the requirements of POPI Act, all personal information provided by registered interested and affected parties (I&APs) will be							



	excluded from Public Participation section and will only be provided to GDARD who is the competent authority for this application and does not require consent to receive such information in the performance of their official duties.							
Gauteng Conservation-Plan Version 3.3	The Gauteng C-Plan classified areas within the province on the basis of its contribution to reach the conservation targets within the province. These areas are classified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) to ensure sustainability in the long term. According to C-Plan, the proposed site contains both CBAs and ESAs.							
Gauteng Environmental Management Framework	The Gauteng Provincial Environmental Management Framework has been used to assist in the determination of impacts and mitigation measures. According to the Gauteng EMF, majority of the site falls under Zone 1: Urban Development Zone and a small portion of the site in Zone 2: High Control Zone (inside Zone 1).							
City of Johannesburg IDP 2020/21 Review	The project area falls in Region B of the City of Johannesburg. As per the CoJ IDP, access to sustainable human settlements – housing, water and electricity, was identified as a priority issue in Region B.							
City of Johannesburg Spatial Development Framework 2040	The project area falls under the Consolidation Zone of the CoJ SDF. The policy intent in the Consolidation Zone would be to ensure existing and future development proposals are aligned with the broader intent of the SDF, specifically in terms of consolidating and diversifying development around existing activity nodes and public transport infrastructure. In this broad area, new development that does not require bulk infrastructure upgrades should be supported.							
City of Johannesburg Metropolitan Municipality: Water Services By-laws	The Water Services By-laws will be adhered to in terms of the engineering services that will be provided as part of the proposed development.							
City of Johannesburg Metropolitan Municipality: Waste Management By-laws	The proposed development will adhere to the waste management methods as stated in Chapter 3: Waste ministration and recycling of the By-laws and the beneficiaries of the residential units will be made aware of their obligation in terms of Chapter 4: Municipal Services, Part 2: Using Municipal Services of the City's By-laws.							
City of Johannesburg: Municipal Planning Draft By-laws	The Municipal Planning By-laws will be adhered to during the Town Planning Application of the proposed development.							
City of Johannesburg Inclusionary Housing Policy, 2019	Inclusionary housing is mandatory for any development within the jurisdiction of COJ, which proposed development includes 20 dwelling units or more. There are four different options for the implementation of inclusionary housing, however, in each option, a minimum of 30% of the total units in the development must be set aside for inclusionary housing. The proposed development is aligned with this policy as inclusionary housing is a part of the development.							

3. ALTERNATIVES

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

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

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

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

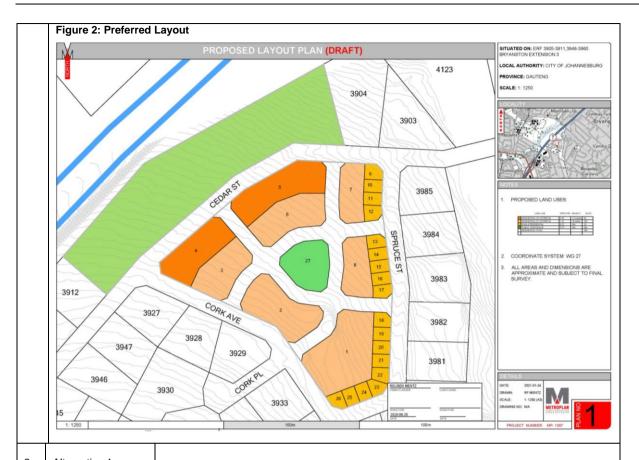
No site and activity alternatives were considered in the EIA Process. The site was selected by the Applicant for the purpose of constructing affordable high density residential blocks (preferred activity), prior to the commencement with the EIA Process. A Layout alternative, referred to as Alternative Layout 1 herein, was considered and is described below.

Provide a description of the alternatives considered.



	Alternative type,										
	either alternative:										
	site on property,										
	properties,										
No.	activity, design, technology,		Descr	iption							
	energy,										
	operational or other (provide										
	details of "other")										
1	Proposal: Preferred Site, Activity and Layout	Preferred Site: Erven 3948, 3949, 3950,3951, 3952, 3953, 3954, 3955, 3956, 3957, 3958, 3959, 3960, 3905, 3906, 3907, 3908, 3909, 3910 and 3911 of the Bryanston Extension 3 Township make up the project area for the proposed Bryanston Extension 3 Project A Housing Development. The project area is situated within Ward 104 of the City of Johannesburg Metropolitan Municipality and has a total extent of approximately 4.55 ha with a development footprint of approximately 2.79 ha. Preferred Activity:									
		The proposed development entails 3-4 storey residential buildin 2-3 storey residential buildin	gs with approx	kimately 80 un	its;	ving purpose:					
		Approximately 20 single resi		,	,						
		 Approximately 20 single resilinternal water reticulation. diameter of 110mm, mPVC, boundary forming a loop. Iso effective isolation of loops. existing 100mm water AC lool. Internal sewer reticulation. 160mm, uPVC (Heavy Duttediameter precast rings with connect to the existing 160m. Internal roads and stormwa using an underground pipe stormwater pipe designed be Extension 3 Project D, since proposed site. An internal MV network to sult should be noted that erven Preferred Layout: The proposed development layout Appendix A2. Table 1 and Figure land uses for the development. As indicated in Table 1 below, apapproximately 1.23 ha for Residen and 0.16 ha for Public Open Space 	The proposed, Class 16. The proposed The proposed Cated on Cedific Proposed (Proposed Proposed Propose	ne water main: will be placed; d internal water St. internal sewer The manhole ers. The propo pipeline locate ure. Internal se be conveyed Consulting Eng existing Storm osed developm ide for open sp d by Metroplar des a breakdo 0.45ha is set a by), approxima	s will be in at the reticular reficular reficu	estalled 2m from the erulation nodes to provide tion will connect to the will have a diameter of 1 000mm to 1 500mm to 1 500mm al sewer reticulation with r St. run-off will be collected to seed 450mm diameter by Ltd for the Bryanstor es in the vicinity of the electricity. Conservation.					
		aside for conservation. The remain				. ,					
		Table 1: Preferred Land Uses				-					
		Land Use	Area (HA)	Density	Units						
		Residential (3-4 Storeys)	0.45	132du/ha	80	_					
		Residential (2-3 Storeys)	1.23	35 du/ha	160	_					
		Single Residential	0.37	N/A	20						
		Public Open Space Conservation	0.16	N/A	N/A	_					
		Residential Total	1.6	N/A	N/A 260	+					
		Figure 2 below provides an illustrat	ion of the pref	erred layout.	200	_					





2 Alternative 1: Alternative Layout 1

Alternative Layout 1:

Alternative Layout 1 was prepared by Metroplan and is attached as **Appendix A3**. Table 2 and Figure 3 below provides a breakdown and illustration of the land uses for Alternative Layout 1.

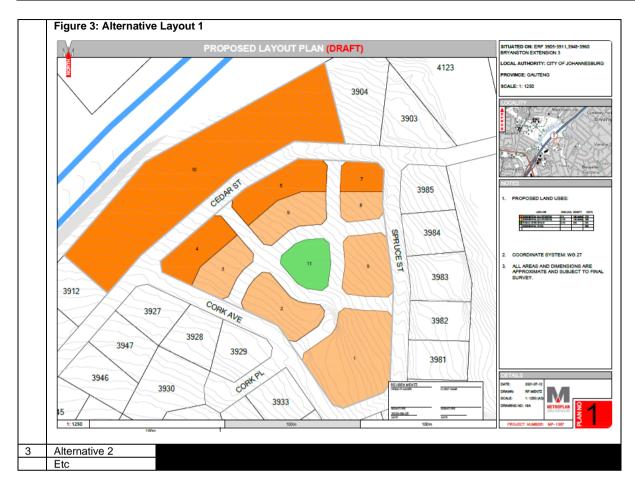
As indicated in Table 2 below, approximately 1.5ha is set aside for Residential (3-4 storey), approximately 2.15ha for Residential (2-3 storey) and 0.16 ha for Public Open Space.

Table 2: Land Uses for Alternative Layout 1

Land Use	Area (HA)	Density	Units
Residential (3-4 Storeys)	1.5	180 du/ha	270
Residential (2-3 Storeys)	2.15	130 du/ha	280
Public Open Space	0.16	N/A	N/A
Residential Total			550

Figure 3 below provides an illustration of the preferred layout.



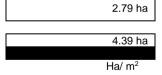


In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

PHYSICAL SIZE OF THE ACTIVITY

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

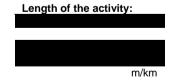
Proposed activity (Total environmental (landscaping, parking, etc.) and the building footprint) Alternatives: Alternative 1 (if any) Alternative 2 (if any)



Size of the activity:

or, for linear activities:

Proposed activity Alternatives: Alternative 1 (if any) Alternative 2 (if any)



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

Size of the site/servitude: Proposed activity 4.55 ha Alternatives: Alternative 1 (if any) 4.55 ha Alternative 2 (if any) Ha/m²



5. SITE ACCESS

Proposal

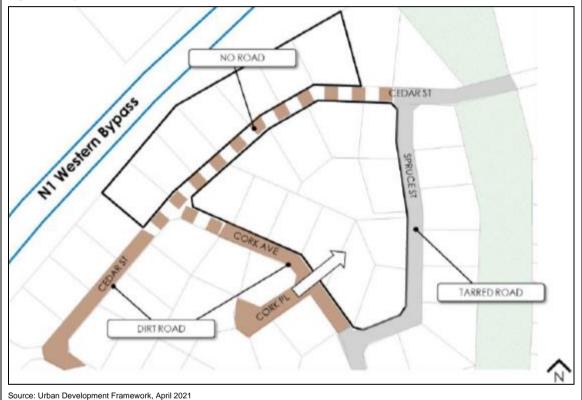
Does ready access to the site exist, or is access directly from an existing road? If NO, what is the distance over which a new access road will be built



Describe the type of access road planned:

The site is bounded by streets on all sides: Cork Avenue to the west, Spruce Street to the east and Cedar Street to the north. Spruce Street is a tarred road. Only a portion of Cork Avenue has been constructed and it is not tarred. Cedar Street has not been constructed in the area where is abuts the site. Cork Place ends in a T-junction from the south-west into Cork Avenue. This intersection should be used as a point of entry into the site to prevent an offset intersection. The proposed site access is illustrated in Figure 4 below.

Figure 4: Proposed site access



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

Alternative 1

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

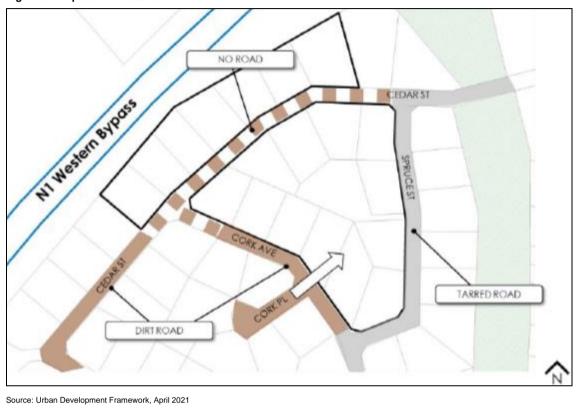


Describe the type of access road planned:



The site is bounded by streets on all sides: Cork Avenue to the west, Spruce Street to the east and Cedar Street to the north. Spruce Street is a tarred road. Only a portion of Cork Avenue has been constructed and it is not tarred. Cedar Street has not been constructed in the area where is abuts the site. Cork Place ends in a T-junction from the south-west into Cork Avenue. This intersection should be used as a point of entry into the site to prevent an offset intersection. The proposed site access is illustrated in Figure 5 below.

Figure 5: Proposed site access



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

Alternative 2

Does ready access to the site exist, or is access directly from an existing road? If NO, what is the distance over which a new access road will be built Describe the type of access road planned:



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

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

Section A 6-8 has been duplicated **Not Applicable** Number of times (only complete when applicable)

6. LAYOUT OR ROUTE PLAN

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

- > the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
 - A4 size for activities with development footprint of 10sqm to 5 hectares;
 - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
 - A2 size for activities with development footprint of >20 hectares to 50 hectares);
 - A1 size for activities with development footprint of >50 hectares);



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

Refer to **Appendix A2** and **A3** for the layout plans for the preferred layout and Alternative Layout 1, respectively. It should be noted that an environmentally sensitive map of the site and an environmentally sensitive map overlain with the proposed development layout is include in **Appendix A4** and **Appendix A5**, respectively.

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

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

Refer to Appendix A1 for Locality Map of the preferred site.

7. SITE PHOTOGRAPHS

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

Refer to **Appendix B** for Site Photos.

8. FACILITY ILLUSTRATION

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

Refer to Appendix C for the infrastructure layouts that is proposed for the development.



SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

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

Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route Not Applicable time

Instructions for completion of Section B for location/route alternatives

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

Section B has been duplicated for location/route alternatives

Not Applicable

times

(complete only when appropriate)

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

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

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

Section B - Section of Route

(complete only when appropriate for above)

Section B - Location/route Alternative No.

(complete only when appropriate for above)



1. PROPERTY DESCRIPTION

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

ERF NUMBER	TOWNSHIP
ERF 3948	Bryanston Extension 3
ERF 3949	Bryanston Extension 3
ERF 3950	Bryanston Extension 3
ERF 3951	Bryanston Extension 3
ERF 3952	Bryanston Extension 3
ERF 3953	Bryanston Extension 3
ERF 3954	Bryanston Extension 3
ERF 3955	Bryanston Extension 3
ERF 3956	Bryanston Extension 3
ERF 3957	Bryanston Extension 3
ERF 3958	Bryanston Extension 3
ERF 3959	Bryanston Extension 3
ERF 3960	Bryanston Extension 3
ERF 3905	Bryanston Extension 3
ERF 3906	Bryanston Extension 3
ERF 3907	Bryanston Extension 3
ERF 3908	Bryanston Extension 3
ERF 3909	Bryanston Extension 3
ERF 3910	Bryanston Extension 3
ERF 3911	Bryanston Extension 3

2. **ACTIVITY POSITION**

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

Alternative: Preferred Layout Longitude (E): Latitude (S): -26.065923

27.981250

In the case of linear activities: Alternative:

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



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

> Addendum of route alternatives attached 0

The 21 digit Surveyor General code of each cadastral land parcel

ш	ERF NUMBER	TOWNSHIP	21 DIGIT CODE																				
TERNATIVE	ERF 3948	Bryanston Extension 3	Т	0	ı	R	0	1	1	4	0	0	0	0	3	9	4	8	0	0	0	0	0
	ERF 3949	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	4	9	0	0	0	0	0
AND AL AYOUT	ERF 3950	Bryanston Extension 3	Т	0	ı	R	0	1	1	4	0	0	0	0	3	9	5	0	0	0	0	0	0
	ERF 3951	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	5	1	0	0	0	0	0
PROPOSAL L	ERF 3952	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	5	2	0	0	0	0	0
7	ERF 3953	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	5	3	0	0	0	0	0



	ERF 3954	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	5	4	0	0	0	0	0
	ERF 3955	Bryanston Extension 3	Т	0	ı	R	0	1	1	4	0	0	0	0	3	9	5	5	0	0	0	0	0
	ERF 3956	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	5	6	0	0	0	0	0
	ERF 3957	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	5	7	0	0	0	0	0
	ERF 3958	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	5	8	0	0	0	0	0
	ERF 3959	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	5	9	0	0	0	0	0
	ERF 3960	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	6	0	0	0	0	0	0
	ERF 3905	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	0	5	0	0	0	0	0
	ERF 3906	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	0	6	0	0	0	0	0
	ERF 3907	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	0	7	0	0	0	0	0
	ERF 3908	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	0	8	0	0	0	0	0
	ERF 3909	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	0	9	0	0	0	0	0
	ERF 3910	Bryanston Extension 3	Т	0	1	R	0	1	1	4	0	0	0	0	3	9	1	0	0	0	0	0	0
	ERF 3911	Bryanston Extension 3	Т	0	I	R	0	1	1	4	0	0	0	0	3	9	1	1	0	0	0	0	0
ALT. 2																							

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat X

4. LOCATION IN LANDSCAPE

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

Plain X

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

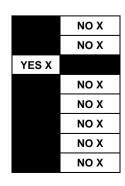
Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

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

Any other unstable soil or geological feature

An area sensitive to erosion



BASIC ASSESSMENT REPORT FOR THE PROPOSED BRYANSTON EXTENSION 3 PROJECT A HOUSING DEVELOPMENT GAUT 002/21-22/E0020



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

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

NO X

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

Latitude (S): Longitude (E):

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

NO X

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

Latitude (S): Longitude (E):

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

NO X

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

Latitude (S): Longitude (E):

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

GEOTECHNICAL ASSESSMENT

A Phase 1 Geotechnical Investigation was undertaken for the proposed development in November 2019 by GCS Geotechnical Engineering Consultants and is attached as **Appendix G2**. The findings from the investigation are summarised below.

Geology

Based on the 1:250 000 Geological Map titled "2628 East-Rand (1986)", the site can be seen to be underlain by granite of the Halfway House Granite Formation.

Further, more detailed mapping shows the granite belonging to the Bryanston Granodiorite (Anhaeusseur, 1973) and also possible shallow granite bedrock with perched water levels (McKnight, 1997).

Fieldwork

TLB-excavated test pits were conducted on site, in order to ascertain and better understand the general engineering properties and parameters of the subsurface materials. All existing rock exposures were identified on site.

The results of the test pits indicated refusal depths ranging between 1.4 m and 3.2 m below existing ground level, refusing at an average depth of 2.8 m. Typically the ground conditions comprised a thin veneer of colluvium, underlain by residual granite, which is underlain by weathered granite bedrock.

Groundwater

No groundwater seepage occurred on site in any of the test pits, although during summer months and during times of prolonged or heavy rainfall, it may be assumed that a perched groundwater table may be present at relatively shallow depths over the site.

Development Recommendations

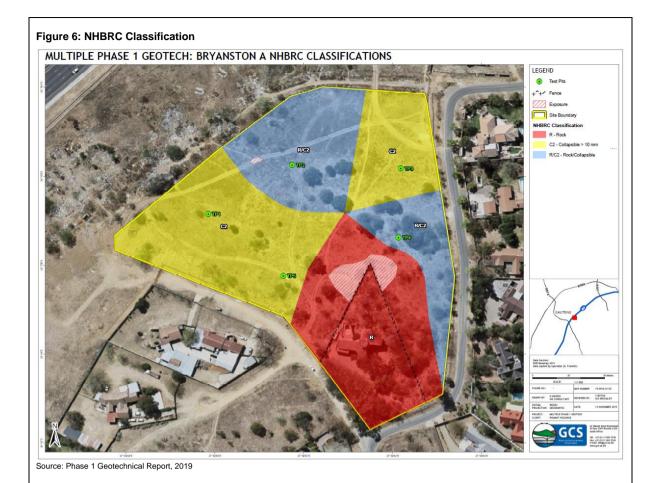
Material Usage

The soils include hillwash, pebble marker/talus and residuum. These layers are underlain by completely to highly weathered granite.

NHBRC Classification

The site is underlain by potentially collapsible colluvium (C), which is underlain by a potentially collapsible residual granite. These assumptions coupled with the layer thickness and existing rock outcrop have led to the suggestion that this site can be represented by NHBRC classification: C2/R. This signifies a cumulative potential collapse of >10 mm, and possible difficult excavation (R) to 1.5 m in the southern portion of site. Figure 6 below illustrates the NHBRC Classification for the proposed site.





Foundations

The NHBRC Site Classification based on test pit logs excavated over the site can be mitigated by the following foundation options:

- Stiffened strip footings or RC raft.
- Compaction of in situ soils below individual footings.
- Deep strip footings below potentially collapsible layer and fabric reinforcement in the floor slabs.
- Soil raft.
- Normal foundations (Site Class C and R only).

Excavatability and Earthworks

All materials on site classify as SOFT excavation (SABS 1200 D) to depths ranging between 1.4 m and 3.2 m with an average depth of around 2.8 m. Below this depth, INTERMEDIATE to HARD excavation is to be anticipated due to weathered granite bedrock which has been identified in the southern portion of site.

<u>Drainage</u>

For the promotion of a stable site, with no soil movement-related issues (settlement and/or heave), it is extremely important that adequate drainage, both surface and subsurface, be constructed so that no water ingress into the subsurface soils in and around foundation bases is possible. Drainage should be such that any rainfall is diverted to the nearest stormwater drainage system. Areas of potential pooling or damming of rainfall on site should be carefully designed and sloped so as the remove this water away from the foundations.

6. AGRICULTURE

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

YES X

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

The north western segment of the project area contains High Potential Agricultural Land, however it should be noted that no development is proposed to take place on this portion of the site as this portion will be earmarked as conservation as



indicated in the Preferred Development Layout (Appendix A2). Map 2 below illustrates the segment of the project area that contains High Potential Agricultural Land. Map 2: High Potential Agricultural Land CITY OF JOHANNESBURG: BRYANSTON EXTENSION 3 PROJECT A Legend Project Area HIGH POTENTIAL AGRICULTURAL LAND Date: June 2021 High Potential Agricultual Land Drawn By: P. Govender | Cheked By: G. Watson WGS 84 (Lo 31)

7. GROUNDCOVER

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

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

National right aread	Ninternal control control	Nietowel orelatorith	Vald daminatad bu	Landanand
Natural veld - good	Natural veld with	Natural veld with	Veld dominated by	Landscaped
condition	scattered aliens	heavy alien infestation	alien species	(vegetation)
% = 25%	% = 55%	% = 5%	% = 0	% = 0

BASIC ASSESSMENT REPORT FOR THE PROPOSED BRYANSTON EXTENSION 3 PROJECT A HOUSING DEVELOPMENT GAUT 002/21-22/E0020



Sport field % = 0	Cultivated land % = 0	Paved surface (hard landscaping) % = 0	Building or other structure % = 10%	Bare soil % = 5%
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Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

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

YES X

If YES, specify and explain:

VEGETATION ASSESSMENT

A Wetland and Vegetation Assessment Report was undertaken by the Biodiversity Company in August 2020 and is attached as **Appendix G3.** It should be noted that only the vegetation assessment is covered under this section of the BAR.

Vegetation Types

The project area is situated within the grassland biome. Grasslands are dominated by a single layer of grasses. The amount of cover depends on rainfall and the degree of grazing. The grassland biome experiences summer rainfall and dry winters with frost (and fire), which are unfavourable for tree growth. Thus, trees are typically absent, except in a few localized habitats. Geophytes (bulbs) are often abundant. Frosts, fire and grazing maintain the grass dominance and prevent the establishment of trees.

Egoli Granite Grassland

Egoli Granite Grassland (EGG) occurs only in the Gauteng province, and less than 32% of this vegetation type remains untransformed. The province has a target to conserve and protect 25% of the remaining vegetation type. Egoli Granite Grassland is characterised by a high species richness with a patchy dominance of various grass species, and a large variety of forbs (broad leafed herbaceous plant, other than grass), representing a climax or close to climax condition (Mucina & Rutherford, 2006).

The Gm 10 vegetation type is characterised by undulating planes and low hills covered in tall growing Hyparrhenia hirta. The rocky habitats in this vegetation type shows a diversity of woody species, including various shrub and tree species, (Mucina & Rutherford, 2006).

Conservation Status of the Vegetation Type

According to Mucina & Rutherford (2006), this vegetation type is classified as Endangered (EN). The national target for conservation protection for both these vegetation types is 24%, but only 3% is conserved in statutory reserves (Diepsloot and Melville Koppies Nature Reserves). More than two thirds of this vegetation unit have already undergone transformation mostly due to urbanisation, cultivation or building of roads.

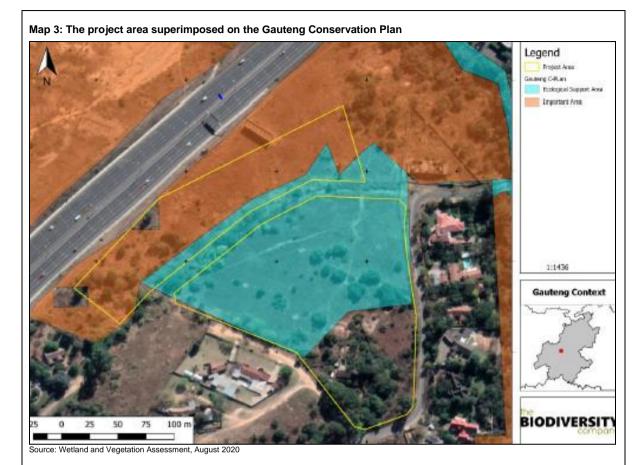
Gauteng Conservation Plan

The Gauteng Conservation Plan (Version 3.3) (GDARD, 2014b) classified areas within the province on the basis of its contribution to reach the conservation targets within the province. These areas are classified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) to ensure sustainability in the long term. The CBAs are classified as either 'Irreplaceable' (must be conserved), or 'Important'.

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then biodiversity targets cannot be met.

As shown in Map 3, the project area is situated across CBA: Important and an ESA classified areas.





Vegetation Assessment

The field survey for the project area flora was conducted from the 21st of August 2020. During the survey the floral communities in the project area was assessed. The area was ground-truthed on foot, which included spot checks and meanders in pre-selected areas to validate desktop data.

Due to the environmental conditions of the season, and the fact that area had been burnt, providing the list of plant species recorded to date will therefore by no means be comprehensive/sufficient, a survey during the correct phenological periods (wet season) not covered, may likely yield up to 40% additional flora species for the project area. Thus, only a preliminary habitat assessment and sensitivity is provided.

Protected Plan Species

One plant species (*Hypoxis hemerocallidea*) that is protected in Gauteng was recorded in the project area (Figure 7). According to the list of protected species no person may cut, disturb, damage or destroy or possess, collect, remove, transport, export, purchase, sell, donate, or in any other manner acquire or dispose of any protected plant unless he or she is the holder of a permit which authorises him or her to do so. Figure 7 presents the locations of the recorded species.



Figure 7: Hypoxis hemerocallidea observed within the project area



Source: Wetland and Vegetation Assessment, August 2020

Habitat Assessment

The main habitat types identified across the project area were initially identified largely based on aerial imagery. These main habitat types were refined based on the field coverage and data collected during the survey, the delineated habitats can be seen in Map 4. Photo 1 is an illustration of this habitat delineated for the project area. Emphasis was placed on limiting timed meander searches within the project area and natural habitats and therefore habitats with a higher potential of hosting SCC. The habitats identified, are preliminary delineations due to the timing of the survey, as well as the fact that the area had been burnt recently, however the grassland type and vegetation structures identified are discussed in the sub-sections below.

i. Intact Grassland

This Grassland habitat is regarded as semi-natural grassland, but slightly disturbed due to human infringement, due to the vacancy and accessibility of the land. The current ecological condition of this habitat in regard to the main driving forces seem to be intact. The habitat consists of grassland interspersed with termite mounds, as well as areas where sandstone bedrock protrude from the soil, thus different microhabitats that may present a high species diversity and composition.

This habitat unit can thus be regarded as important, not only within the within the local landscape, but also regionally. It serves as a buffer for the wetland habitats and is also the only remaining greenlands, used for foraging, and movement corridors for fauna within a landscape fragmented by urban development to more natural areas where they may reproduce and seek refuge. The preliminary habitat sensitivity of the intact Grassland is regarded as high, due to the role of this intact habitat to biodiversity within a very fragmented local landscape.

The spatial guidelines for land use for these grasslands that are relevant to this project area include (SANBI.2013):

- Avoid any further fragmentation of primary grassland;
- Maintain connectivity between natural areas across the landscape; and
- Establish and respect buffers around protected areas, wetlands and rivers.

ii. <u>Degraded Grassland</u>

This habitat is assigned to areas where the grassland has been altered due to historic and/or current human activity. The condition of these grassland's ranges from heavily disturbed (largely due to ongoing maintenance or shallow cultivation) to degraded grassland (due to historic infrastructure impacts, dumping and alien invasive plant species). The sensitivity of these areas is regarded as low-moderate due to the fact that these areas are connected to more sensitive habitats. These do serve as a buffer and also part of the movement corridor. This habitat also has a higher potential to returning to a more natural state if left undisturbed.

iii. <u>Transformed</u>

This habitat unit represents all areas of urban development. This habitat is regarded as transformed due to the nature of the modification of the area to such a point where it wouldn't be able to return to its previous state. Due to the transformed nature of this habitat, it is regarded as having a low concern sensitivity.



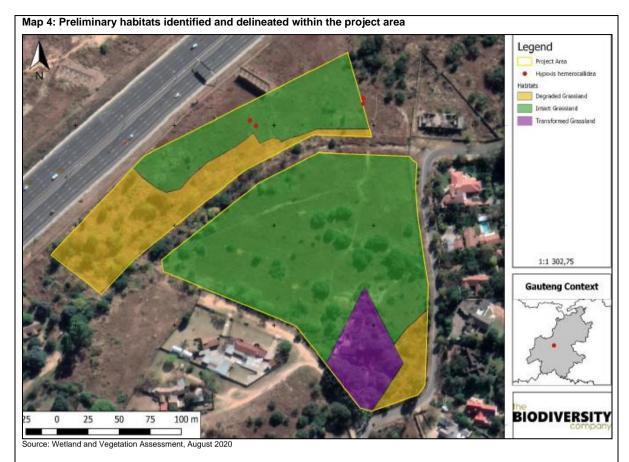


Photo 1: Preliminary habitats identified within the project area: A_ Degraded Grassland and B) Intact Grassland



Source: Wetland and Vegetation Assessment, August 2020

The plant species theme sensitivity as indicated in the screening report was derived to be medium.

As per the terms of reference for the project, GIS sensitivity maps are required in order to identify sensitive features in terms of the relevant specialist discipline/s within the study area. The sensitivity scores identified during the field survey for each terrestrial habitat are mapped in Map 5. These sensitivities are preliminary.



In terms of terrestrial habitats, areas that were classified as having a low and low-moderate sensitivity are those areas which were deemed by the specialists to have been impacted upon and/or were modified from their original condition due to activities such as clearing of vegetation and urban development and also aspects associated with an urban area such as littering, dumping and infringement.

The habitats rated as high are habitats that still;

- Serve as and represent CBA and ESA, as identified by the Gauteng Conservation Plan; and
- Support various faunal and floral species, as habitat and a movement corridor.

It is important to note that this map does not replace any local, provincial or government legislation relating to these areas or the land use capabilities or sensitivities of these environments but is done in relation to the legislation

Legend
Project Anno
Project Ann

Map5: Preliminary habitat sensitivity identified and delineated within the project area

Source: Wetland and Vegetation Assessment, August 2020

Specialist Conclusion

Three preliminary habitats were identified within the project area. The intact Grassland habitat is regarded as semi-natural grassland, but slightly disturbed due to human infringement, due to the vacancy and accessibility of the land. The current ecological condition of this habitat in regard to the main driving forces seem to be intact. This habitat unit can thus be regarded as important, not only within the within the local landscape, but also regionally. It acts as a buffer for the wetland habitats and the only remaining greenlands, used for foraging and is also used as a movement corridor for fauna within a fragmented landscape. The preliminary habitat sensitivity of the intact Grassland is regarded as high. A search and rescue plan must be implemented prior to construction (breaking ground) for the project area and should include the areas considered for the offset allocation.

BIODIVERSITY OFFSET

A Biodiversity Offset for the proposed development was undertaken by The Biodiversity Company in June 2021 and is attached as **Appendix G4**.

Mitigation Hierarchy

There will likely be a loss of sensitive areas with adjacent (or surrounding) areas also likely to be negatively impacted on due to the proposed development. The mitigation hierarchy in general consists of the following in order of which impacts should be mitigated:

- Avoid/prevent impact;
- Minimise impact;



- Rehabilitate impact; and
- Offset impact: refers to compensating for latent or unavoidable negative impacts on biodiversity. Offsetting should take place to address any impacts deemed to be unacceptable which cannot be mitigated through the other mechanisms in the mitigation hierarchy. The objective of offsets should be to ensure no net loss of biodiversity. Offsets can be considered to be a last resort to compensate for residual negative impacts on biodiversity.

The objective of biodiversity offsets is to ensure that residual impacts on biodiversity and ecosystem services of moderate to high significance (i.e. do not represent a 'fatal flaw' from a biodiversity perspective) are compensated for by developers in such a way that ecological integrity is maintained, and development is sustainable (DEA & DP, 2015). Where biodiversity offsets are appropriate, offsets can be comprised of single or composite areas to fully compensate for the biodiversity loss.

There are four main approaches for a biodiversity offset:

- 1. Re-creating or fully restoring lost habitat;
- 2. Improving the management of degraded areas e.g. fire management, alien vegetation removal, re-introducing native species:
- 3. Avoiding projected loss by securing areas for protection and effective management; and
- 4. Averting risk by reducing or removing the underlying cause of biodiversity loss in the area e.g. through working with the community to support sustainable living (BBOP, 2012; DEA & DP, 2015).

Desktop Spatial Review

The following features describes the general area and habitat, this assessment is based on spatial data that are provided by various sources such as the provincial environmental authority and SANBI. The desktop analysis and their relevance to this project are listed in Table 3.

Table 3: Desktop spatial features examined

Desktop Information Considered	Relevant/Not relevant		
Conservation Plan Terrestrial	Relevant: The project area is situated across Critical Biodiversity Areas (CBA) Important and Ecological Support Areas (ESA) classified areas.		
Ecosystem Threat Status	Relevant: The project area falls across a CR ecosystem		
Ecosystem Protection Level	Relevant: The terrestrial ecosystems associated with the project area is rated as poorly protected		
Protected Areas (SAPAD & SACAD)	Irrelevant: 10.5 km from the Fossil Hominid Site of South Africa. Its thus outside of the buffer zone of the SAPAD		
Important Bird and Biodiversity Areas	Irrelevant: 10.5 km from Magaliesberg IBA		
National Protected Areas Expansion Strategies (NPAES)	Irrelevant: Closest NPAES (Vaal grassland) is 18.3 km from the project area		
National Biodiversity Assessment (NBA) Wetlands	Relevant: The project area is 30.5 m from a Critically Endangered (CR) wetland		
Strategic Water Source Areas (SWSA)	156 km from the closest SWSA		
Gauteng Ridges	The project area is adjacent to a class 4 ridge		

Source: Biodiversity Offset Report, June 2021

Faunal Assessment

Avifauna

The fauna assessment were also conducted in June (2021). Looking at the desktop information based on the Southern African Bird Atlas Project 2 (pentads 2600_2800; 2600_2805) 331 species have been observed in the area, of these 16 species are species of conservation concern. During the field assessment no species of conservation concern were observed, however six of the SCCs expected still have a likelihood to occur in the area as a result of the river system that runs close to the project area. According to the Interested and Affected party (IAP) in the area 80 species have been recorded in the nearby area of the project area, unfortunately the list was not made available. It was mentioned however that African finfoot (*Podica senegalensis*) has been recorded just south of the project area along the river system.

Mammals

Based on the IUCN a total of 74 mammal species are expected in the area. Of these species 13 are species of conservation concern, 2 of them have a likelihood of occurrence in the project area. No SCCs were observed on site, during the assessment or through the deployment of camera traps. IAPs did however mention that Cape Clawless Otters (Aonyx capensis) have been recorded in the river system just south of the project area, unfortunately the photographic evidence were not made available. Species observed during the camera trap survey included, Water Mongoose (Atilax paludinosus) and Rusty Spotted Genet (Genetta maculata).

Reptiles

Based on IUCN and ADU (2021) data 76 reptile species are expected in the project area, of these species four are SCCs. None of these species are likely to occur in the project area. Twenty one amphibian species are expected in the project area, none are SCCs. During the field survey only one reptile species the Variable Skink (*Trachylepis varia*) were observed.



Biodiversity Offset

The current development layout makes up 4.55 Ha of the footprint, divided into 2 portions the upper small portion (1.61 Ha) and the bottom larger portion (2.94 Ha). It is proposed that the area between the N1 highway and Cedar Street be used as a green space. This portion can only be considered part of the offset should the area be left natural and some portions be extensively rehabilitated and re-vegetated with natural vegetation. Access to this area will also have to be restricted and cannot be utilised as a recreational space.

Biodiversity Offset Calculation

The national biodiversity offsets (2017) approach is an ecological equivalence or "like for like" approach. The site has been divided into sections showing the hectares of each environmental feature that will be lost (Map 6). The calculation shows the loss in both the upper and lower section, however the final offset calculation is based on just the portion that will be developed. It is assumed that the upper section will not be developed and will be used as part of the offset. The offset ratios used here is based on: National Biodiversity Offset Policy (2017), SANBI, 2014 and DEA & DP (2015). The areas that will need to be offset are the areas with a high sensitivity rating and is still intact Egoli Granite Grassland. Portions of this area is classed as ESA and others as CBA: optimal. With the whole project area being classed as a CR ecosystem and the vegetation classed as CR the ratio would be 30:1, this is decreased as portion of the area is classed as an ESA. Thus, taking the various classifications and habitat features into account, the recommended offset ration would be 20:1. This means that a total area of 2.24 Ha will be lost which means a total area of 44.8 Ha will need to be offset.

Legend

Branton E-2 Project. Area
Area

1:2035

Gauteny Province Context

BIODIVERSIT

Map 6: Portion that is still intact and needs to be offset

Source: Biodiversity Offset Report, June 2021

Option Sites

Option sites will be identified, initially it will be selected based on desktop analysis. Their suitability will be based on the Vegetation type, Threat status (NBA, 2018), and Conservation status (Gauteng C-Plan, 2014). Once the sites are selected, they will be surveyed to see if they still present the state they are classified as. An attempt will be made to choose sites that can join either protected areas or will form part of a greenbelt corridor and is not a standalone area.

During the field survey, species of conservation concern were identified where management are required. An attempt will be made to match the SCCs that were identified in the project area.

Best approach would be to identify a number of sites and that have been agreed to form part of offset and then conduct the biodiversity assessments.

One area that can be looked at is the Crocodile Nature Reserve in the Lanseria area, this reserve consists of patches of land where the owners have either signed a conservation or protected area agreement. The reserve is currently in the process of trying to expand and joining their various pieces. The vegetation type in large portions of this area is Egoli Granite Grassland, which makes this area highly suitable. The reserve is also in procession of management plans into which the



offset could possibly be incorporated, this would allow for the effective management of the offset.

Management Plan for Species within Offset

The management plan for the species within the offset area is dependent on the option selected as the species found on the various areas differed. The management of the species will be crucial as the success of the offset is highly dependent on the success of the species of conservation concern. The full management plan will be provided once the offset approach has been selected.

Offset Mitigations and Management Guidelines for Biodiversity

The mitigations will be dependent on the site/option selected and a full set of mitigations for the specific choice will be provided. A full list of required information and guidelines will be provided for successful offset once the appropriate approach has been chosen.

Financial implications of the alternative offset strategies

The price per hectare of vacant land is highly dependent on the area in which the offset will be done. The option specific cost estimate will be provided once the decision has been made of which approach will be followed.

Conclusion from Offset Report

The Bryanston project area is regarded as highly sensitive from a biodiversity perspective, it is a CR ecosystem, CR vegetation type and acts as a corridor to the nearby watercourse area. The current state of the habitat is degraded in portions, transformed in the sections around the existing house and intact (semi disturbed) grassland in other areas. The recommended biodiversity offset ratio for this particular habitat is 20:1. The intact area that will be altered is 2.24 Ha that translates to a total offset area of 44.8 Ha. It is recommended that the offset approach be a combined approach, with a portion in the proposed green area on site, a portion elsewhere (becoming an addition to a protected area) and a financial portion. Even though the portion of grassland in the project area is regarded as semi disturbed it does still provide habitat for a number of species that does occur in the habitat. One protected flora species were observed in the project area, this species can be relocated into the area that could be offset in the project area. The financial portion for the proposed approach will be for the management of the offset, as it can only be regarded as a successful offset if it is managed correctly and not just left as bare land. It should be noted that the top green space area is divided into intact grassland and degraded grassland, as such the whole area cannot be regarded as an offset, but for the intact portion to be seen as part of the offset, the degraded section will have to be rehabilitated to avoid the spread of alien invasive species into the surrounding habitat.

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

YES X

If YES, specify and explain:

The African Finfoot was identified at two locations along the river system at the Bryanston Extension 3B site. This species occurs widely in sub-Saharan Africa but populations are decreasing. In South Africa the population has decreased by 30% in the last ten years, largely due to habitat degradation - this rapid decrease has resulted in this species being listed as Vulnerable on the regional Red List.

The Bryanston River provides the necessary breeding, roosting and foraging resources to support a diversity and density of avifaunal species.

Are there any special or sensitive habitats or other natural features present on the site? If YES, specify and explain:

YES X

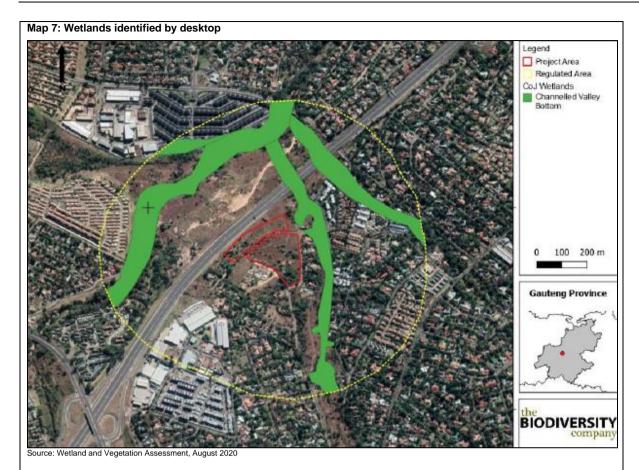
WETLAND ASSESSMENT

A Wetland and Vegetation Assessment Report was undertaken by the Biodiversity Company in August 2020 and is attached as **Appendix G3**. It should be noted that only the wetland assessment is only covered under this section of the BAR.

City of Johannesburg Wetlands

According to the CoJ wetland layer, one main channelled valley bottom wetland flows from south to north directly east of the proposed project area.





Wetland National Biodiversity Assessment

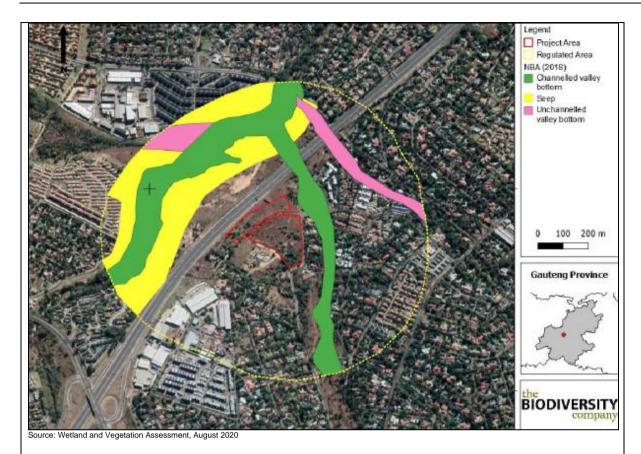
This spatial dataset is part of the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) which was released as part of the National Biodiversity Assessment (NBA) 2018. National Wetland Map 5 includes inland wetlands and estuaries, associated with river line data and many other data sets within the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) 2018.

Ecosystem threat status (ETS) of river ecosystem types is based on the extent to which each river ecosystem type had been altered from its natural condition. Ecosystem types are categorised as CR, EN, VU or LC, with CR, EN and VU ecosystem types collectively referred to as 'threatened' (Van Deventer et al., 2019; Skowno et al., 2019).

Map 8 shows that no NBA classified are located within the project area, but can be found within the 500 m regulated area surrounding the project area.

Map 8: Wetland areas demarcated by the National Biodiversity Assessment (NBA, 2018)





Wetland Assessment

Wetland Delineation and Description

The wetland areas were delineated in accordance with the DWAF (2005) guidelines (see Map 9). The valley bottom systems demarcated by the CoJ wetland layer and SAIIAE dataset are classified as riverine systems and have not been assessed further for this project (Figure 7-13). These systems have been demarcated for reporting purposes. One hillslope seep was identified within the proposed project area, namely HGM 1. A photograph of the identified seep is presented in Figure 8. This wetland system is the focus for the assessment. A river/riparian system is located immediately north-east of the project area.

The main features used in identifying the delineated area as a wetland includes soil form, supported by vegetation. A notable plant species recorded for the assessment was *Seriphium plumosum* (Stoebe) (Figure 9). According to Avenant (2015), *Seriphium plumosum* prefers growing in well-drained soils (much as in the case of the wetland's soils). Avenant (2015) further mentions however that this species is also known to cover wetland areas even though this is seldom the case.

A potential relic wetland (Figure 10) area was identified downslope of the delineated seep. In this area, very little if any natural vegetation remains while infilling and other soil disturbances have greatly altered the soil profile precluding its reliable identification as wetland. For the purposes of practicality, this area has been referred to as a relic wetland. According to Jobs (2009) relic wetlands are systems that display indicators of soil wetness, but these systems are no longer a functioning wetland (e.g. relic / historical wetland). In the instance of the potential relic wetland area, the soil morphology appears to be inconsistent with the landscape, vegetation, or observable hydrology (Jobs, 2009).



Figure 8: The identified hillslope seep



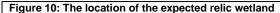
Source: Wetland and Vegetation Assessment, August 2020

Figure 9: Seriphium plumosum recorded in the project area



Source: Wetland and Vegetation Assessment, August 2020







Map 9: Delineation of wetlands withn the 500m regulated area



Source: Wetland and Vegetation Assessment, August 2020

General Functional Description of Wetlands Types

Hillslope seeps are well documented by (Kotze et al., 2009) to be associated with sub-surface ground water flows. These systems tend to contribute to flood attenuation given their diffuse nature. This attenuation only occurs while the soil within the wetland is not yet fully saturated. The accumulation of organic material and sediment contributes to prolonged levels of saturation due to this deposition slowing down the sub-surface movement of water. Water typically accumulates in the upper slope (above the seep). The accumulation of organic matter additionally is essential in the denitrification process involved



with nitrate assimilation. Seeps generally also improve the quality of water by removing excess nutrient and inorganic pollutants originating from agriculture, industrial or mine activities. The diffuse nature of flows ensures the assimilation of nitrates, toxicants and phosphates with erosion control being one of the Eco Services provided very little by the wetland given the nature of a typical seep's position on slopes.

It is however important to note that the descriptions of the above-mentioned functions are merely typical expectations. All wetland systems are unique and therefore, the ecosystem services rated high for these systems on site might differ slightly to those expectations.

Ecological Functional Assessment

The ecosystem services provided by the wetlands identified on site were assessed and rated using the WET-EcoServices method (Kotze *et al.* 2008). The summarised results for HGM 1 is shown in Table 4. The average ecosystem services score has been determined to be "Moderately Low" for HGM 1. No services were determined to provide any notable level of benefit.

Table 4: The ecosystem services being provided by the HGM unit

Wetland Unit			HGM 1		
	Siles	Flood attenuation		1.4	
		Regulating and supporting benefits	Streamflow regulation		1.4
	.sa			Sediment trapping	1.8
	Benefit			Phosphate assimilation	1.5
ands	ndirect Benefits	ns pue	Water Quality enhancement benefits	Nitrate assimilation	1.6
Ecosystem Services Supplied by Wetlands	ď	dating		Toxicant assimilation	1.6
piledb	(q pe jid	Regu		Erosion control	1.8
dng sa			Carbon storage		1.1
Servio			Biodiversity main enance		1.8
ystem		nefits	Provisioning of water for human use		0.0
Ecos	ect Benefi Provisio	sion be	Provisioning of harvestable resources		0.0
		Provis	Provisioning of cultivated foods		0.0
		effts	Cultural heritage		0.0
		Dir Cultural benefits	Tourism and recreation		0.0
		B Education and research		0.6	
	Average Eco Services Score			1.0	

Source: Wetland and Vegetation Assessment, August 2020

The Ecological Health Assessment

The general features of the identified wetland units within the project area were assessed in terms of impacts on the integrity of these systems using the WET-Health methodology. The PES for the assessed HGM units is presented in Table 5. The hydrology, geomorphology and overall PES of this wetland has been determined to be "Moderately Modified (C)" with the vegetation component being scored "Largely Modified (D)".



Table 5: Summary of the scores for the HGM 1 PES

Component	PES Rating	Description		
Hydrology	B/C	Moderately Modified: Aspects which have altered the hydrology predominantly include i) dumping in the area, ii) excavations iii) development in the area and surrounds, iv) increased human activity in the area, resulting in access routes and hardened surface areas.		
Geomorphology	В	Largely Natural: Aside from the modified state of the catchment, the geomorphology of this system is stable, with limited signs of disturbances to the system. The system is representative of an isolated seepage area. It is possible that land use changes have resulted in the receding of the system, and also the isolation of the system from the downslope (relic) areas.		
Negotation human activities. There has also been development within the larger area. The		Moderately Modified: The general area has been disturbed due to dumping, excavations and human activities. There has also been development within the larger area. These have resulted in vegetation being cleared, but more notable is the infestation and establishment of alien vegetation in the area.		
Overall	С	A moderate change in ecosystem processes and loss of natural habitat and biota has occurred, but the natural habitat remains largely intact.		

Source: Wetland and Vegetation Assessment, August 2020

The Ecological Importance and Sensitivity

The wetland EIS assessment was applied to the HGM units described in the previous section in order to assess the levels of sensitivity and ecological importance of the wetland. The results of the assessment are shown in Table 6. The following was considered for the EIS description:

- The Egoli Granite Grassland vegetation type is endangered; and
- According to the SAIIAE (NBA, 2018) dataset, seepage wetlands in the Mesic Highveld Grassland bioregion are classified as Critically Endangered (CR) and poorly protected.

A "High" EIS score has been determined for HGM 1. The Hydrological/Functional Importance and the Direct Human Benefits of HGM 1 has been scored "Moderate" and "Low" respectively due to the level of indirect and direct benefits

Table 6: The EIS results for the delineated HGM unit

Wetland Importance & Sensitivity	HGM 1
Ecological importance and sensitivity	2.1
Hydrological/functional importance	1.6
Direct human benefits	0.1

Source: Wetland and Vegetation Assessment, August 2020

Buffer Zones

The wetland buffer zone tool was used to calculate the appropriate buffer required for the project. The model shows that during the construction phase, only one threat is expected to pose a significance rating higher than "Low", namely that of "Increase in sediment inputs & turbidity". This threat already has been decreased from "Very High" to high by means of relevant mitigation measures.

As for the operational phase, four threats have been determined to have "Moderate" significance ratings, all pertaining to the contamination of watercourses by means of nutrient inputs and the regulation of floods. These significance ratings have been decreased from "High" to "Moderate" given the implementation of an attenuation pond which includes bioretention properties.

A pre-mitigation buffer zone of 50 m has been calculated, with the post-mitigation buffer zone calculated at 30 m. The Gauteng Department of Agriculture and Rural Development (GDARD) also recommends a buffer with of 30 m for wetlands in an urban area. It is the specialist's opinion that all recommendations and mitigation measures must be incorporated to ensure the conservation of watercourses.

Specialist Conclusion

A single dry season survey was conducted for the proposed Bryanston Housing Development on the 21st August 2020. One hillslope seep was identified within the proposed project area. A river/riparian system is located immediately north-east of the project area. A potential relic wetland area was identified downslope of the delineated seep.

The integrity of the seepage system was determined to be moderately modified, with the ecological importance and sensitivity of the system determined to be high. The average ecosystem services score was determined to be moderately low. A 30 m buffer has been calculated by means of the department of water and sanitation buffer tool.

In accordance with the General Authorisation (GA) requirements in terms of section 39 of the NWA, for water uses as defined in section 21 (c) or section 21 (i) a GA does not apply "to any water use in terms of section 21 (c) or (i) of the Act associated with the construction, installation or maintenance of any sewer pipelines, pipelines carrying hazardous materials and to raw water and waste water treatment works". Owing to the fact that this project will include the installation of sewerage services to accommodate the proposed development, a water use license will be required. Implementation of a stormwater management plan must be a requirement of the license.



Was a specialist consulted to assist	t with completing this section		YES X	
If yes complete specialist details				
Name of the specialist:	Andrew Husted			
Qualification(s) of the specialist:	` ,	nesburg) – Aquatic Health		
	`	aans University) – Aquatic	Health	
	BSc Natural Science			
	 Pr Sci Nat (400213/11) 			
	 Certificate of Competence 	e: Mondi Wetland Assessr	nents	
	 Certificate of Competence 	e: Wetland WET-Managem	ient	
	 SASS 5 Accredited – Deliver in the second control of the second control of	epartment of Water Affair	rs and Forestry for the River	ſ
	Health Programme		·	
	 EcoStatus application for 	rivers and streams		
Postal address:				
Postal code:				
Telephone:		Cell: 08	1 319 1225	_
	thebiodiversitycompany.com	Fax:		ı
Are any further specialist studies re			NO X	_
If YES,	commended by the openianet.		HO X	Œ
specify:				
If YES, is such a report(s) attached	2		NO X	-
If YES list the specialist reports atta			NO X	_
II 120 list the specialist reports atta	ici ica below			
	the state of the s			
Signature of specialist:		Date: June 2021		_
olgitature of specialist.		Date. Julie 2021		

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	River, stream, wetland	Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	Low density residential	Medium to high density residential	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial ^{AN}	rial ^{AN} 17. Hospitality 18. Church		19. Education facilities	20. Sport facilities
21. Golf course/polo fields 22. Airport ^N		23. Train station or shunting yard ^N	24. Railway line ^N	25. Major road (4 lanes or more) ^N
26. Sewage treatment plant ^A	waste treatment		29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33.Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):	35. Mixed use			

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



	NORTH				
	4	12	8	8	8
	9	4	1	8	8
WEST	9	4		8	8
	8	12	8	8	8
	25	8	4	8	8

SOUTH

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

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

Have specialist reports been attached

YES X

FAST

If yes indicate the type of reports below

The following Specialist Studies have been undertaken for the proposed Bryanston Extension 3 Project A Housing Development and are attached to the BAR:

- Appendix G1: Urban Development Framework
- Appendix G2: Phase 1 Geotechnical Investigation
- Appendix G3: Wetland and Vegetation Assessment
- Appendix G4: Biodiversity Offset Plan
- Appendix G5: Market Research and Socio-Economic Study
- Appendix G6: Phase 1 Heritage Impact Assessment
- Appendix G7: Bulk Services Availability Report
- Appendix G8:Civil Engineering Services Preliminary Design Report
- Appendix G9:Bulk Electrical Services Report
- Appendix G10:Electrical Engineering Outline Scheme Report
- Appendix G11: Traffic Impact Assessment Report

9. SOCIO-ECONOMIC CONTEXT

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

MARKET RESEARCH AND SOCIO-ECONOMIC STUDY

A Market Research and Socio-Economic Study was undertaken in February 2021 for the proposed development by Urban Econ Development Economist and the report is attached as **Appendix G5**. It should be noted that the key findings focusing on the socio-economic characteristics of the project area are briefly discussed below.

Two market areas were delineated for the proposed residential development, the primary market area and the secondary market area. The primary market area includes areas such as Bryanston and Randburg whereas the secondary market area includes areas such a Rosebank, some areas of Sandton, Honeydew and Fourways. The major transportation road facilitating traffic through both the primary and the secondary market area is the N1 western bypass.

Socio-Economic Profile

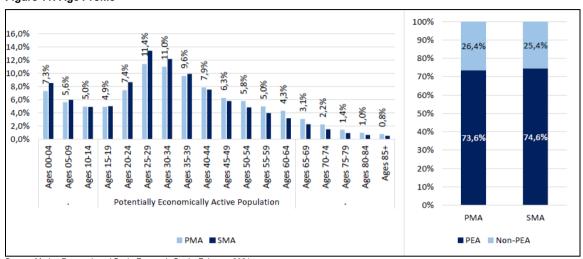
Age Profile

An age group classification was conducted to determine the percentage of the potentially economically active (PEA) population in relation to the not economically active (youth and retired) population. This will illustrate the percentage of the population that will constitute most of the potential target market. The age distribution of both the Primary Market Area (PMA)



and the Secondary Market Area (SMA) are indicated in Figure 11 below, along with the percentage of potentially economically active (PEA) population for both market areas.

Figure 11: Age Profile



Source: Market Research and Socio-Economic Study, February 2021

The data presented in the figure above shows that 73.6% of the total population in the primary market area falls within the potentially economically active population whereas 74.6% of the total population in the secondary market area are potentially economically active population.

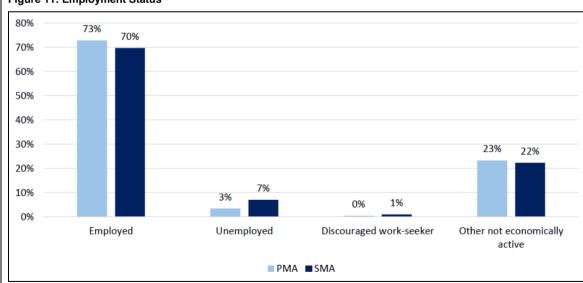
Labour Force and Employment Structure

Employment refers to individuals who are of working age who may potentially earn an income that will enable them to provide for their basic needs and improve their standard of living. As such, employment, and unemployment rates, as well as the level of skills, are important indicators of socio-economic well-being.

Employment Status and Level of Skills

The employment structure of the study area also includes an analysis of the formally employed labour in the study area. Figure 11 below illustrates the employment status of the PMA and SMA.

Figure 11: Employment Status



Source: Market Research and Socio-Economic Study, February 2021

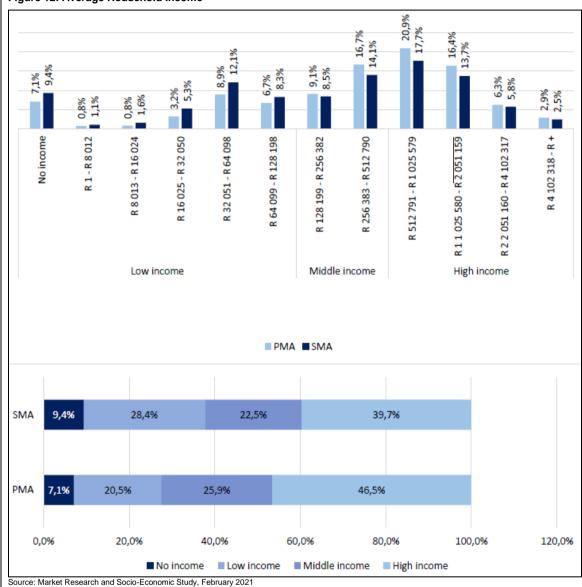
The figure above shows that the majority of the working-age population in both the primary market area (73%) and the secondary market area (70%) are employed.



Household Income

Household income can be used as an important factor in assessing and determining the affordability and the ability of households to access social housing services. The following figure indicates that the average household income for both the primary and the secondary market areas.

Figure 12: Average Household Income



Access to basic services is part of the constitutional mandate for the government to ensure that citizens have access to basic services such as water, sanitation, and electricity. Access to services also indicates the level of development and the standard of living of the people in the study area.

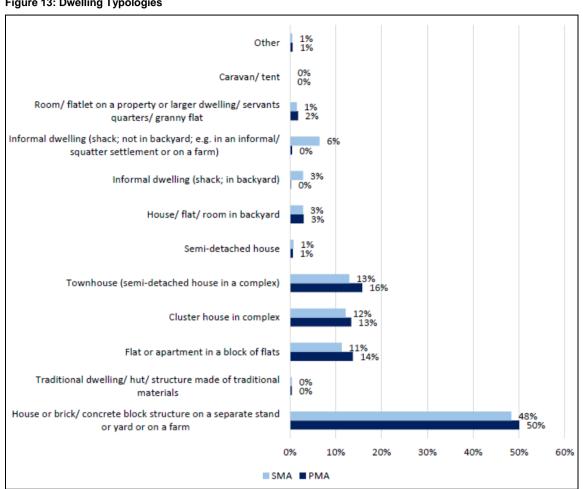
Dwelling Types in the Study Area

Access to Basic Services

This subsection aims to provide an overview of the various dwelling typologies within the study area and their prominence within the market. The following figure represents the dwelling typology within the delineated market area.





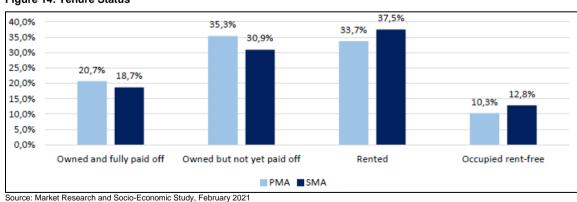


Source: Market Research and Socio-Economic Study, February 2021

Tenure Status

Tenure status refers to homeownership within the study area. The tenure profile aims to present the distribution of tenure within the direct market area. The following figure illustrates the tenure profile and status of the primary and secondary market area.

Figure 14: Tenure Status



The figure above shows that the largest portion of the primary market area's homes can be classified as rental units. Approximately 35.3% of all home occupants in the primary market area own homes but are not yet fully paid off whereas 33.7% of occupants live in rental units.

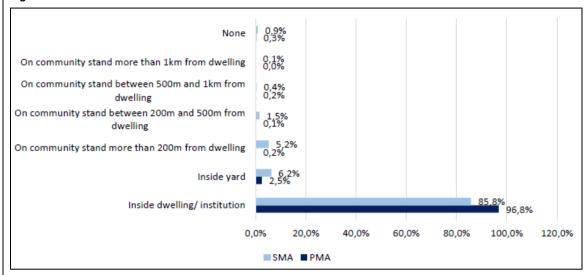
Most households in the secondary market area rent their homes (37.5%), followed closely by homes that are owned but not yet fully paid off (30.9%).



Access to Water

The following figure indicates the access to water of households in the demarcated market areas.

Figure 15: Access to Water



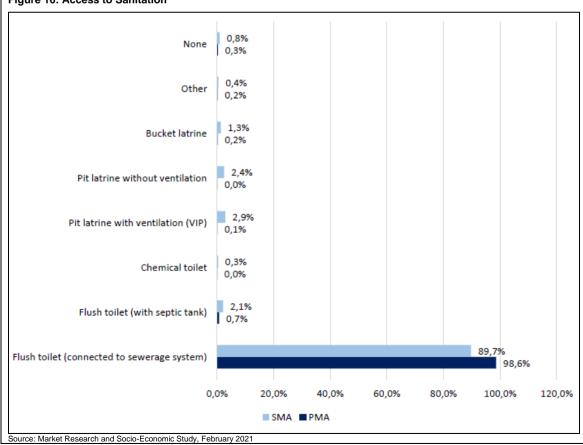
Source: Market Research and Socio-Economic Study, February 2021

Figure 15 above indicates that most households in both the primary (96.8%) and the secondary (85.8%) market areas have access to water inside their dwelling or institution. Other households' access to water from inside their yard, or a certain distance from their dwelling on a community stand.

Access to Sanitation

The following figure indicates the access to sanitation of households within the demarcated market areas.

Figure 16: Access to Sanitation





Based on the data presented in the figure above, most of the households in both the primary (98.6%) and the secondary (89.7%) market areas have access to flush toilets, connected to a sewerage system.

Residential Demand

Net Effective Demand

The (NED) presents the development potential (market gap) for social housing located in Bryanston. The NED also considers both the supply and demand of the market to calculate a realistic condition for the demand for housing in the market area. The future supply identified in the primary market area was accounted for in the model. Table 7 below illustrates the NED for Bonded Housing.

Table 7: Net Effective Demand for Bonded Housing

VEAD		BONDED						
YEAR	Subsidised	FLISP	Affordable Housing	Middle Income	High Income	Total		
2021	557	428	202	555	1 205	2 948		
2022	1 132	870	411	924	2 433	5 770		
2023	1 725	1 326	626	1 515	3 715	8 907		
2024	2 337	1 796	848	2 125	5 038	12 144		
2025	2 968	2 281	1 077	2 754	6 402	15 483		
2030	6 437	4 947	2 334	6 211	13 900	33 829		
2035	10 489	8 061	3 804	10 249	22 661	55 264		

Source: Market Research and Socio-Economic Study, February 2021

After subtracting the competitive future supply from the effective demand, the demand for housing in the market area is estimated to exist from 2021. There is a large demand for all housing types, the largest demand for high, middle-income housing as well as subsidised housing. Should the current market condition continue, enough demand will exist in the market area for new residential development. Table 8 presents the net effective demand for rental housing in the market area.

Table 8: Net Effective Demand for Rental Housing

			REN [*]	TAL			
YEAR	CRU	Social Housing Primary Market	Social Housing Secondary Market	Affordable Housing	Middle Income	High Income	Total
2021	69	163	160	129	354	768	1 643
2022	140	230	280	262	689	1 545	3 146
2023	213	403	450	399	1 056	2 362	4 884
2024	289	583	625	540	1 440	3 205	6 682
2025	367	768	806	686	1 840	4 075	8 542
2030	796	1 784	1 799	1 488	4 043	8 854	18 764
2035	1 298	2 971	2 959	2 425	6 617	14 438	30 707

Source: Market Research and Socio-Economic Study, February 2021

As indicated in Table 8, there is substantial demand for rental housing in the market area. Since the demand is focused on social housing, the focus here is on this specific housing category. There is a demand for 163 primary market social housing units and 160 Secondary market social housing in 2021. This is expected to grow to a total of 853 social housing units in 2023 and over 1 574 units by 2025. Should the current market condition continue, enough demand will exist in the market area for new residential development of social housing.

10. CULTURAL/HISTORICAL FEATURES

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

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

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



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

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



If YES, explain:

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

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

PHASE 1 HERITAGE IMPACT ASSESSMENT

A Phase 1 Heritage Impact Assessment was undertaken in November 2020 by Vhufa Hashu Heritage Consultancy and is attached as **Appendix G6**.

The findings from the Phase 1 HIA Report are summarised below:

- <u>Palaeontology</u>: The area falls in the grey colour code on the Palaeo-Sensitivity map. No palaeontological study is required.
- Stone Age remains: No Stone Age material was observed in the project area.
- Iron Age: No Iron Age cultural remains were observed in the project area.
- Graves and burials: No graves or burial sites were observed on the terrain.
- The built environment: Although Bryanston has buildings 60 years and older, none occur within the project area. An interesting stone walled fence of a tennis court was noted adjacent to the project area which probably dates from the 1960"s. The development will not impact on this structure. In addition, the published Johannesburg Heritage List of June 2019 lists no building in Bryanston with cultural significance.
- <u>Evaluation and statement of significance</u>: The Proposed Establishment of the Bryanston Extension 3 Project A
 Township Project does not impact on any heritage resources.
- Recommendations: No specific mitigation measures are recommended other that should any heritage remains be discovered by chance, then the heritage authority and the archaeologist must be informed and work ceased at that place.
- <u>Conclusion</u>: No heritage resources were recorded on the terrain. The Proposed Establishment of the Bryanston Extension 3 Project A Township Project poses no threat to known heritage resources and there will be no foreseen cumulative impacts relating to the project. From a heritage management perspective, there is no reason why the proposed development may not continue.

COMMENT FROM THE SOUTH AFRICAN HERITAGE RESOURCE AGENCY (SAHRA)

The South African Heritage Resource Agency (SAHRA) was notified about the Bryanston Extension 3 Project A Housing Development and documentation pertaining to the development was submitted to SAHRA for comment. In their final comment, (**Appendix F1**), SAHRA indicated that they have no objections to this proposed development, provided that the recommendations in the specialist reports and this comment are adhered to, and in addition, on the following conditions:

- If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments and charcoal/ash concentrations) or palaeontological remains are found during the proposed activities, SAHRA must be alerted immediately, and a professional archaeologist or palaeontologist, based on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of significance a Phase 2 rescue operation might be necessary.
- If any unmarked human burials are uncovered and the archaeologist called in to inspect the finds and/or the police find them to be heritage graves, mitigation may be necessary and the SAHRA Burial Grounds and Graves (BGG) Unit must be contacted for processes to follow.

Will any building or structure older than 60 years be affected in any way? Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

NO X

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



Refer to Appendix F1 for SAHRA's final comment for the proposed Housing Development located in Extension 3 of Bryanston.



SECTION C: PUBLIC PARTICIPATION (SECTION 41)

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

REQUIREMENTS OF THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS OF 2014 (AS AMENDED)

Table 6 below outlines the requirements for the public participation process set out in Section 41 of the Environmental Impact Assessment Regulations as well as the actions that will be taken by the Environmental Assessment Practitioners (EAP).

Table 6: Public Participation Process

2014 EIA Requirements (as amended)	Action taken by EAP
a. Fixing a notice board at a place conspicuous to the public at the boundary or on the fence or along the corridor of- i. the site where the activity to which the application relates is or is to be undertaken; and ii. any alternative site;	Notice boards in English will be placed along the site boundary and in areas in close proximity to the site to notify the surrounding community of the proposed development (See Appendix E1 for site notice boards)
 b. Giving written notice, in any of the manners provided for in Section 47D of the Act, to — i. the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken; ii. owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken; iii. the municipal councilor of the ward in which the site or alternative site is situated and any organization of ratepayers that represents the community in the area; iv. the municipality which has jurisdiction in the area; v. any organ of state having jurisdiction in respect of any aspect of the activity; and vi. any other party as required by the competent authority. 	Written notification of the proposed development, which included a Background Information Document, will be distributed to the people living adjacent to the site. A copy of the BID is included in Appendix E2. The BID included some project background details of the Independent Environmental Assessment Practitioner as well as the process to be followed during the EIA. An invitation to become involved in the project and to register as an interested and affected party was also included in the Background Information Document. A copy of the BAR will be submitted to the following: Gauteng Department of Agriculture and Rural Development Gauteng Department of Health Gauteng Department of Roads and Transport Gauteng Department of Education Department of Water and Sanitation City of Johannesburg Metropolitan Municipality Ward Councilor 104 South African Heritage Resource Agency (SAHRA) Registered and interested and affected parties upon request.
c. Placing an advertisement in – i. one local newspaper; or ii. any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	A newspaper advert will be published in the Sandton Chronicle on the 21 st of July 2021 (See Appendix E3 for a copy of the Advert).

REGISTER OF INTERESTED AND AFFECTED PARTIES

According to the Environmental Impact Assessment Regulations of 2014 (as amended), a register of interested and affected parties must be kept during the EIA process. A register of interested and affected parties will be included in the Final Basic Assessment Report.



2. LOCAL AUTHORITY PARTICIPATION

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

Was the draft report submitted to the local authority for comment? If yes, has any comments been received from the local authority?

NO X

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

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

This Basic Assessment Report will be submitted to the City of Johannesburg Metropolitan Municipality for comment. Comments received from the City will be included in the Final BAR.

3. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?

NO X

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

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

This Basic Assessment Report will be submitted to various stakeholders and organs of state for comment. Comments received in response to the Basic Assessment Report will be included in the Final BAR in the form of a Comments and Response Report.

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

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

Comments received in response to the Basic Assessment Report for the proposed development will be included in the Basic Assessment Report to be submitted to the Department in the form of a Comments and Response Report.

All personal information will be excluded from Public Participation section and will only be provided to GDARD who is the competent authority for this application who do not require consent to receive such information in the performance of their official duties. For all other Interested and affected parties, personal information for material reasons will only be provided upon receipt of written consent from the affected party. These measures have been put in place to protect the personal information of all parties and safeguard their interests in terms of the POPI Act.



5. APPENDICES FOR PUBLIC PARTICIPATION

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

- Appendix 1 Proof of site notice
- Appendix 2 Written notices issued as required in terms of the regulations
- Appendix 3 Proof of newspaper advertisements
- Appendix 4 Communications to and from interested and affected parties
- Appendix 5 Minutes of any public and/or stakeholder meetings
- Appendix 6 Comments and Responses Report
- Appendix 7 Comments from I&APs on Basic Assessment (BA) Report
- Appendix 8 Comments from I&APs on amendments to the BA Report
- Appendix 9 Copy of the register of I&APs



SECTION D: RESOURCE USE AND PROCESS DETAILS

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

Instructions for completion of Section D for alternatives

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

Section D has been duplicated	for alternatives	Not Applicable	times	(complete only when appropriate)	
Section D Alternative No.	Not Applica	ble (complete only wh	nen appropriate fo	or above)	

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? If yes, what estimated quantity will be produced per month? How will the construction solid waste be disposed of (describe)?

YES X
Approximately 20m³

As part of the construction contract, the contractor will be required to ensure safe disposal of all construction waste. The contractor will make provision of waste bins and a central temporary storage area for waste materials. The contractor will also be liable for safe disposal at a licensed waste disposal site.

It should be noted that the appointed ECO will also be required to ensure that all construction waste is correctly disposed of and the Environmental Management Plan (EMPr) is effectively implemented in terms of the waste handling and disposal measures.

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

The contractor will collect construction waste from the development site and dispose of it at a licensed waste disposal site. The contractor will be required to provide proof of safe disposal to a licensed waste disposal site.

Will the activity produce solid waste during its operational phase? If yes, what estimated quantity will be produced per month?

YES X
Approximately 38m³

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

A Bulk Services Availability Report for the proposed Bryanston Extension 3 Project A Housing Development was prepared by Phumaf in September 2019 and is attached as **Appendix G7**.

According to the Bulk Services Availability Report, the domestic waste that will be generated as a result of the proposed development will be collected by the Municipality which will be established as part of this project. It is further envisaged that this will be an on-street collection system operating once a week using a Municipal Waste collection truck.

Disposal of collected waste will be via City of Johannesburg Municipal Waste Disposal who collect generated waste at pre-determined locations on the site and disposes it at their Landfill / Waste Disposal facility on a weekly basis.

Waste reduction through recycling at source will be encouraged to reduce the waste pile (e.g. bottles, tins and paper and cardboard).

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

YES X

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

All waste will feed into the City of Johannesburg Metropolitan Municipality's municipal waste stream.



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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? If yes, inform the competent authority and request a change to an application for scoping and EIA.

NO X

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

NO X

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

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

- Sorting of waste and the concept of recycling and reusable refuse will be encouraged. Recyclable materials can be collected by a small business enterprise and assist in ensuring sustainability within the community.
- Composting systems such as vermiculture, will be encouraged during the operational phase in order to convert
 organic waste into fertilizer.

Liquid effluent (other than domestic sewage)

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

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

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



Will the activity produce any effluent that will be treated and/or disposed of on site? If yes, what estimated quantity will be produced per month?



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

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

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

NO X

If yes, provide the particulars of the facility: Facility name:
Contact person:

Postal address: Postal code: Telephone: E-mail:

Cell: Fax:

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

Not applicable as no other liquid effluent (other than domestic sewage) will be be produced as a result of the proposed Housing Development.

Liquid effluent (domestic sewage)

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

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

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

The total sanitation demand calculated for the proposed development is approximately 5.57 l/s. NO X

Existing and Proposed Sewer Infrastructure

BULK SEWER SYSTEM AND RETICULATION

The Bulk Services Availability Report was prepared in September 2019 and the Civil Engineering Services Preliminary Design Report was prepared in April 2021 by Phumaf and is attached as **Appendix G7** and **Appendix G8**, respectively.

Authority and Provider Agreements

The proposed development area falls within the Joburg Water jurisdiction and the Municipality serves as both the Sanitation



Service Authority as well as the Sanitation Service Provider.

The content of this section is based on information obtained from a GLS Sewer Master Plan, titled "Network Analysis: Western Klein Jukskei Basin", dated October 2014.

Bulk Sewer System

The proposed development falls under the Western Klein Jukskei Basin (WKJ), Roodepoort / Randburg sub-basin which drains to the WKJ outfall and the Northern wastewater treatment works (WWTW) via the Diepsloot Tunnel. According to JW personnel, the Northern WWTW has a design capacity of $435M\ell/d$, and also according to the JW records the PDDWF discharging to the Northern WWTW was 412 $M\ell/d$ (2013). Therefore, the current spare capacity is estimated to be only 23 $M\ell/d$.

It is estimated that the ultimate flow contribution from the basins draining to the Northern WWTW will be 610 Mt/d. This exceeds the existing design capacity by 175 Mt/d.

However, a new WWTW situated near the Lanseria airport is considered to serve these new areas as well as the existing WKJ and Diepsloot pumped basins. This will result in sewage that is currently being pumped to the Northern WWTW catchment being diverted to the proposed Lanseria WWTW.

When the proposed Lanseria WWTW and required outfalls are implemented, it will result in the ultimate scenario flow to the Northern WWTW decreasing to approximately 495 Mt/d, thus still exceeding its existing capacity by 60 Mt/d. Upgrading of the Northern WWTW would therefore still be required to meet the ultimate scenario irrespective of whether the proposed Lanseria WWTW is constructed.

Design Norms and Standards

Table 9: Design standards and design parameters for sewerage reticulation design

	DESIGN FLOW CRITERIA		
	Residential I: >500 m² -1750 m²	700 - 1350 l/d/unit	
	Residential II & III erven	700 - 2300 l/d/unit	
Average sewer Discharge	Residential IV erven per 500m² floor area	2550 l/d	
	Business and commercial per 500m ² floor area	1200 l/d	
	PEAK FACTOR		
	Other Residential	2.3	
	Low-income areas	2.5	
Peak Factors	Business	1.3	
	Commercial	1.5	
Sewer infiltration	Commercial	15% of the design flow	
	FLOW VELOCITIES		
Velocities (Gravity)	Minimum Velocity	0.7m/s	
	Maximum Velocity	3m/s	
	MAXIMUM DEPTH OF FLOW		
Pipe capacity	Flow level in the pipe as the percentage of diameter	67% Full at Peak Discharge (PDWWF)	
	SEWER GRADIENTS		
Minimum Gradients for Pipes	150mm Ø	1:80 steeper gradient closer to the upper e	
	160mm Ø	1:140	
Acceptable Minimum grades	200mm Ø	1:200	
	≥300mm Ø	1:350	
	MANNING COEFFICIENT		
Hydraulic Calculations	Manning Equation	n=0.013	
	PIPE MATERIALS		
Pipe Materials	All pipes	PVC-U Heavy-Duty Class 34 To SANS 791 or Solid (Sandwiched) Walle uPVC Class 400 to SANS 1601	
	PIPE LOCATION		
Locations of Sewers	In all road reserves	1.5m from the Erf boundary	
Connections	Per Erf	110mm Ø PVC-U Class 34	
	MINIMUM COVER OVER PIPES		
Minimum Onum augus air	In road reserves	1,4m	
Minimum Cover over pipes	Other Areas	1,0m	
	MANHOLES		
Manholes	Spacing	80m Maximum	

Source: Civil Engineering Services Preliminary Design Report, April 2021



It must be noted that these standards have been utilised to obtain an indication of the size of the services only and they must, therefore, be confirmed through a preliminary and final design process.

Sewage Flows

The following are assumed:

- Demand rates are according to the Guidelines for Human Settlement.
- Johannesburg Water Guidelines and Standards for the Design and Maintenance of Water and Sanitation Services

Table 9: Sewer Flow (Annual Average Daily Flow)

Zoning	No of Stands	No of Dwellings	Area (ha)	ADWF per Unit (I/day)	Unit	Average Sewage Outflow (I/day)	Average Sewage Outflow (ADWF)(I/s)	Peak Factor	PWWF (l/s)
Residential									
Zone 1 (Single					Res				
Residential)	18	20	0.37	700	Dwelling	14000	0.1620	2.3	0.373
Residential									
Zone 2-3					Res				
(Storeys)	6	160	1.23	700	Dwelling	112000	1.2963	2.3	2.981
Residential Zone 4 (Storeys)	2	80	0.45	700	Res Dwelling	56000	0.6481	2.3	1.491
Public Open Space									
TOTAL	18		0.37			182000	2.106		4.845
						Total incl.15% Ext	raneous flow		5.572

Source: Civil Engineering Services Preliminary Design Report, April 2021

Sewer design flow is estimated at approximately 80% of the water consumption plus 15% Stormwater infiltration.

The total sanitation demand calculated for the proposed development is approximately 5.57 l/s.

The chosen design standards used for the calculations above are:

Peak Flow Rate = Average Daily Flow Rate X Peak Factor

Peak Factor = 2.3 (Reference 1& 2)

Existing Sewer Pipe Networks

Information received from the IMQS Map Viewer Johannesburg Water (JW) Sewer Network Analysis Image and GLS/JW Consulting Sewer Master Plan Layout in **Annexure G of the Civil Engineering Services Preliminary Design Report, April 2021** and the topographical survey indicates that there are existing sewer services in the area and within the proposed site, however, the existing sewer pipes within this development does not align with the latest proposed Bryanston Extension 3 layout plan and therefore a new sewer reticulation design within the proposed development will be required.

The existing sewer pipes are shown in **Annexure G of the Civil Engineering Services Preliminary Design Report, April 2021**, IMQS Map Viewer Johannesburg Water (JW) Sewer Network Analysis Image and GLS/JW Consulting Sewer Master Plan Layout, there are existing 160 mm diameter Clay sewer pipes within the proposed site, however, they are not laid according to the proposed layout plan. The existing internal reticulation pipes will be exhumed and re-laid according to the proposed sewer reticulation design. There is more existing 160mm diameter Clay sewer pipes located to the North on Cedar St, to the West on Cork Ave, and to the East on Spruce St.

Phumaf Holdings (Pty) Ltd has since requested Johannesburg Water to determine the capacity analysis and the effect the proposed development will impose on the existing network pipes and determine if there will be upgrades required on the current system based on the Draft Layout Plan that has been completed and approved.

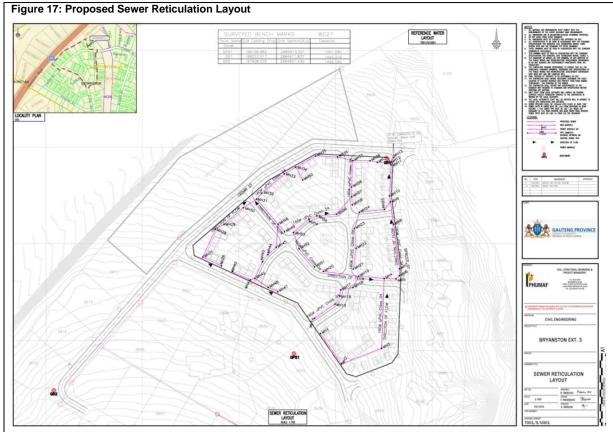
Proposed Sewer Network

The proposed internal sewer reticulation layout for Bryanston Extension 3, Drawing No. 7001/S/U001 is shown in **Appendix C1** and is illustrated in Figure 17.

The total length of the proposed sewer reticulation pipes of the proposed Bryanston Extension 3 is approximately 1.124km. It must be noted that the final pipe length and the correct pipe sizes of the water services will, therefore, be confirmed through a preliminary and final design process when the proposed draft layout is completed and approved.

The pipes will be 160 mm diameter uPVC (Heavy Duty) Class 34 and the manholes will be 1 000mm to 1500mm diameter precast rings with concrete covers.





Source: Civil Engineering Services Preliminary Design Report, April 2021

Proposed Upgrades

The proposed development lies within a serviced area with the existing sewer network consisting of pipes 160mm diameter. Most of the pipes in the network have sufficient capacity to accommodate the current sewer discharge. An upgrade to the existing sewer network will, therefore, be necessary to accommodate the Bryanston Extension 3 proposed development. The extent of such an upgrade will be determined during the design stages of the project.

A new internal sewer reticulation network for the proposed development will be designed in line with the approved site development plan. This will connect to the existing sewer network in line with Johannesburg Water (JW) water and sanitation guidelines.

Will the activity produce any effluent that will be treated and/or disposed of on site? If yes describe how it will be treated and disposed off.

NO X

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

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

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

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



Not applicable as no gaseous emissions other than dust during construction phase are expected. It should be noted that dust mitigation and management measures are included in the Environmental Management Programme EMPr (Appendix H).

2. WATER USE

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

Municipal



Х

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

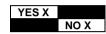
If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix.

Does the activity require a water use permit from the Department of Water Affairs? If yes, list the permits required

YES X

The proposed Housing Development located in Extension 3 of Bryanston is located within 500m of wetlands, as such a Water Use License Authorisation (WULA) will be required for the proposed development. It should be noted that the WULA for the proposed development is in the process of being undertaken.

If yes, have you applied for the water use permit(s)?
If yes, have you received approval(s)? (attached in appropriate appendix)



Existing and Proposed Water Infrastructure

BULK WATER SUPPLY AND RETICULATION

The Bulk Services Availability Report was prepared in September 2019 and the Civil Engineering Services Preliminary Design Report was prepared in April 2021 by Phumaf and is attached as **Appendix G7** and **Appendix G8**, respectively.

Authority and Provider Arrangements

The proposed development area falls within the Joburg Water jurisdiction and the Municipality serves as both the Water Service Authority as well as the Water Service Provider.

The content of this section is based on information obtained from a GLS Water Master Plan, titled "Network Analysis: Linden, Blairgowrie & Kensington B Reservoir Sub-Districts", dated October 2014.

Bulk Services and Bulk Supply Services

The proposed Bryanston development falls under Linden, Blairgowrie, and Kensington B (LBK) water subdistricts and is supplied by the Rand Water (RW) connection, RW connection 1007. There are four reservoirs and two towers in the LBK system. The reservoirs consist of the 21 200 kl Linden 1 reservoir, the 25 500 kl Linden 2 reservoir, the 9 500 kl Kensington B reservoir, and the 6800 kl Blairgowrie reservoir.

The two towers comprise the 500 $k\ell$ Kensington B water tower and the 450 $k\ell$ Linden water tower. The existing Kensington B water Tower and reservoir are not capable of providing the required minimum pressure in the water sub-district during peak demand.

The existing GLS Water Master Plan, titled "Johannesburg Water Network Analysis Power Park Reservoir District" dated August 2009 is based on the previous Land Use Scheme. It predicted that an additional future development of 40 units per hectare will be sufficiently accommodated in their current system.

Phumaf Holdings (Pty) Ltd has since requested Johannesburg Water to determine the capacity analysis and the effect the proposed development will impose on the existing network pipes and determine if there will be upgrades required on the current system based on the Draft Layout Plan that has been completed and approved.

Design Norms and Standards

The design parameters utilised to calculate the demand and requirements for civil services for this report are in accordance with the Guidelines for Human Settlement Planning and Design compiled by the Department of Housing and Construction Technology (2000) and other approved design specifications.



Table 10: Design Parameters and design standards for water supply				
	DESIGN CONSUMPTION / DEMAND CRITERIA			
	Residential I: >500m2 - 1750m2	800l/unit /d - 2600/unit/d		
	Residential II & III (Per 500m² of gross floor area)	800I/unit /d - 2700/unit/d		
Average Water Demand	(Per 500m² of gross floor area)			
	Business and commercial per 500m² floor area	1650/unit/d		
	PEAK FACTORS AND PEAK FLOW VELOCITY			
Instantaneous Peak Factors	Residential	4		
	Preferred Velocity Diameter ≤160mm	0.7m/s		
	Preferred Velocity Diameter ≥200mm	1.0m/s		
Peak Flow Velocity	Maximum Velocity Diameter ≤180mm	1.0m/s - 3.5m/s		
	Maximum Velocity Diameter ≥200mm	1.0m/s - 2.5m/s		
	WATER PRESSURE AND MINIMUM HEAD			
Water Pressure	Design Water Pressure	Between 2.5 bar to 9.0 bar		
Static Pressure	Minimum Static Pressure	2.0 ber		
Residual Head	Minimum residual Head	1.5 bar at any connection		
	FIRE FLOW CRITERIA			
	Total Fire Flow	High-100 l/s, Moderate 1 & 2 50 l and 25l/s and Low 15l/s		
High Risk, Moderate and Low-Risk category /Area	Hydrant Spacing	180m max for High and Moderati Risk and 240m Max. on mains fo Low Risk		
	Min. flow for each Hydrant	High:25 I/s, Moderate :25I/s and L 15I/s		
	Minimum Residual Pressure at Fire node	High:20m, Moderate:15m, and Lo 15m		
	House Connections	HDPE Class 16		
	PIPE DIAMETERS			
Minimum nine diameters	Residential with Fire Hydrant	110mm Ø		
Minimum pipe diameters	Single House Connection	25mm Ø		
Valves	All areas	Not more than 600m apart		
	PIPE LOCATION AND COVER			
		2m from erf boundary in the roa		
Pipe Locations	All road reserves	reserve		
		All on the high side of roadways		
Cover to pipes	On sidewalks & Across Street	Minimum 0.8m and maximum 1.5		

Source: Civil Engineering Services Preliminary Design Report, April 2021

It must be noted that these standards have been utilised to obtain an indication of the size of the services only and they must therefore, be confirmed through a preliminary and final design process.

Water Demands

The peak water demand (excluding fire flow) is calculated during the preliminary designs. The summarised AADD and peak flows calculated during the preliminary designs are summarised in Table 10 below.



Table 11: Water Demand (Annual Average Daily Demand)

Zoning	No of Stands	No of Dwellings	Area (ha)	AADD per Unit (I/day)	Unit	Average Water Demand (I/day)	Average Water Demand (I/s)	Peak Factor	Peak Demand (I/s)
Residential									
Zone 1 (Single					Res				
Residential)	18	20	0.37	800	Dwelling	16000	0.19	4	0.741
Residential									
Zone 2-3					Res				
(Storeys)	6	160	1.23	800	Dwelling	128000	1.48	4	5.926
Residential									
Zone 4					Res				
(Storeys)	2	80	0.45	800	Dwelling	64000	0.74	4	2.963
Public Open									
Space									
TOTAL		260	0.37			208000	2.41		9.630
	SUB-TOTAL						6929.6	30 kl/day	
PLUS UAW (20% OF TOTAL AADD)						2407.407 kl/day			
	TOTAL AVERAGE DEMAND (AADD)						12037.0	37 kl/day	
		PEAK DE	MAND (ex	cc. Fire flow) F	PF = 4			139.318 l/s	
		FIRE FLOW PE	R HYDRA	NT (X4) - Mod	lerate Risk			15	i l/s

Source: Civil Engineering Services Preliminary Design Report, April 2021

- Total Instantaneous Peak Demand = Average Daily Demand X Instantaneous Peak = 9.63 l/s
- Instantaneous Peak Factor = 4 for Residential 1, 2, 3 and for commercial Reference 1 & 2

Existing Water Pipe Network

Information received from the IMQS Map Viewer Johannesburg Water (JW) Water Network Analysis Image and GLS/JW Consulting Water Master Plan Layout and the topographical survey indicates that there are existing water services in the area as attached (Drawing No. LBK 6.4 A) in **Annexure D of the Civil Engineering Services Preliminary Design Report**, April 2021. There are no existing water pipes within the proposed site and a new water reticulation design will be required to accommodate the new proposed Bryanston Extension 3. There is however an existing 100mm diameter AC water pipe located to the North on Cedar St, to the West on Cork Ave and 75mm diameter AC to the east on Spruce St. The proposed internal water reticulation will connect to the existing 100mm water AC located on Cedar St.

Phumaf Holdings (Pty) Ltd has since requested Johannesburg Water to determine the capacity analysis and the effect the proposed development will impose on the existing network pipes and determine if there will be upgrades required on the current system based on the Draft Layout Plan that has been completed and approved.

Capacity analysis of the network pipes

The topographical survey done for the site confirms that there is existing water infrastructure in the vicinity of the site and no signs of other existing water pipes within the proposed site. IMQS Map Viewer Johannesburg Water (JW) Water Network Analysis Image and GLS/JW Consulting Water Master Plan Layout has records of the existing water network in the Bryanston Ext 3 area as attached (Drawing No. LBK 6.4 A) in **Annexure D of the Civil Engineering Services Preliminary Design Report**, April 2021.

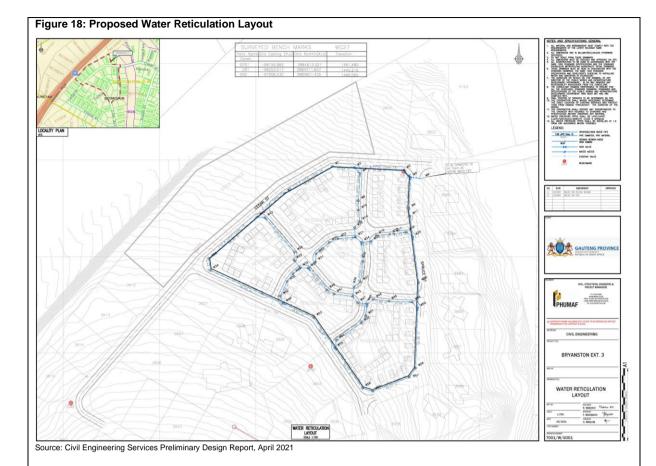
Proposed Water Network

The proposed internal water reticulation layout for Bryanston Extension 3, Drawing No. 7001/W/U001 is shown on **Appendix C2** and Figure 18. The total length of the proposed water reticulation pipes of the proposed Bryanston Extension 3 is approximately 1.322km. It must be noted that the final pipe length and the correct pipe sizes of the water services will, therefore, be confirmed through a preliminary and final design process when the proposed draft layout is completed and approved.

The pipe sizes, material, and class will be a minimum of 110mm mPVC Class 16. The water mains will be installed 2m from the erf boundary forming a loop. Isolating valves will be placed at the reticulation nodes to provide effective isolation of loops.

The designs will be based on the Johannesburg Water (JW), Guidelines, and standards for the Design and Maintenance of Water and Sanitation Services – Revised June 2017 together with the Red Book.





Proposed link upgrade

The proposed development lies within a serviced area with the existing sewer network consisting of pipes 100mm diameter. Most of the pipes in the network have sufficient capacity. An upgrade to the existing water network will, therefore, be necessary to accommodate the Bryanston Extension 3 proposed development. The extent of such an upgrade will be determined during the design stages of the project.

A new internal water reticulation network for the Bryanston Extension 3 proposed development will be designed in line with the approved site development plan. This will connect to the existing water network in line with Johannesburg Water (JW) water and sanitation guidelines.

3. POWER SUPPLY

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

The source of power supply for the proposed development will be from the City of Johannesburg Metropolitan Municipality.

Existing and Proposed Power Supply Infrastructure

ELECTRICAL SERVICES

The Bulk Electrical Services Report was prepared in September 2019 and the Electrical Engineering Outline Scheme Report was prepared in July 2021 by Phumaf is attached as **Appendix G9** and **Appendix G10**, respectively.

Existing Infrastructure

The project site is part of an existing township which falls under the jurisdiction of City Power. The Bryanston area generally has adequate electricity supply from the City Power network. There is adequate MV (11 kV) distribution adjacent and around the land parcels under consideration. Internal MV and LV reticulation will therefore be required in line with the approved Spatial Development Plan.



Electricity Bulk Supply Determination

Demand Calculations

The land use budget for the Project is primarily residential and is as indicated below. The electrical demand was estimated as per SANS 204: 2011 – Energy Efficiency in Buildings and the National Rationalized Specifications (NRS) 034-1:2007 Table 2 (Refer to Annexure A of the Electrical Engineering Outline Scheme Report).

Individual dwelling units have been allocated an average load based on Urban Residential II Consumer Class (LSM 7 and 8), with a load of 3.54kVA ADMD. Because this is a City Power area of supply the relevant tariff will be the Homelight 80, with a provision of an 80A supply circuit breaker for each dwelling unit. In order to estimate the total load requirements for other consumers which are not housing unit stands, the following kVA/m² figures were adapted based on load densities in voltampere per meter square as stipulated by the NRS 069:2004 guidelines with specific reference to Annex B subsection B2 (refer to Annexure B of the Electrical Engineering Outline Scheme Report):

- Business or office equivalent 0.08kVA/m²
- Light industrial or equivalent 0.04kVA/m²
- Industrial or equivalent 0.10kVA/m²

The estimated total electricity supply bulk requirement is given below:

ltem	Description	Quantity / Area	Total Load (KVA)
1	Dwelling Units (@ 3.54kVA ADMD)	20	70.8
2	Dwelling Units (@ 2.5kVA ADMD)	240	600
3	Streetlighting (LED High Masts @5kVA)	2	10
	TOTAL	-	680,8

Source: Electrical Engineering Outline Scheme Report, July 2021

The total bulk electricity requirements for the project is 680.8 kVA. The required bulk capacity is currently available in the City Power network for the development. A single 800kVA minisubstation will provide adequate electrical power for the proposed development, taking into account limited future expansion.

Energy Efficiency

The design of all electrical services will be premised on the need to minimize the total electrical demand of the development. Energy saving measures (electrical and non-electrical) will be recommended for the development. Active and passive measures will include:

- Use of solar heating and lighting wherever possible
- Energy efficient lighting e.g. LED lamps
- Proper thermal insulation as required
- Optimal alignment of building structures.

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

4. ENERGY EFFICIENCY

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

The design of all electrical services will be premised on the need to minimise the total electrical demand of the development. Energy saving measures (electrical and non-electrical) will be recommend for the development. Active and passive measure will be considered:

- Use of solar heating and lighting wherever possible
- Energy efficient lighting e.g., LED Lamps
- Proper thermal insulation as required
- Optimal alignment of building structures

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

As stated above, energy saving measures will be encouraged for the development. The use of energy sources such as solar and gas will be encouraged where possible. Sustainable design principles to be implemented will also contribute to reducing energy demand.



ALTERNATIVE ENERGY SOURCES

Various types of materials can potentially be utilized during the construction phase of the project for both infrastructure and top structure purposes. This may include different material types (e.g. brick types, roof types and furnishings as well as green building designs. Green Building Guidelines have been recommended in this report to encourage sustainable development. It should be noted that the sections below have been adopted from the *Green Building Guideline: Medium Density Affordable Housing and the Msunduzi Green Building Guidelines.*

Hot Water Systems

SANS 10400-XA refers to SANS 10252: At least half of the annual average hot water heating requirements shall be provided by means other than electrical resistance heating. The alternative means could be via but not limited to heat pumps, solar water heating, heat recovery from other processes or heating via gas. Hot water installations need to comply with further SANS requirements as provided in section 4.1 of SANS 10400-XA:

- All hot water pipes must be clad with insulation
- Solar hot water systems must comply with the following standards which govern the quality and functioning of these systems: SANS 1307, SANS 10106, SANS 10254 and SANS 10252-1.

Insulation for Roof and External Walls

The installation of insulation lowers the thermal conductivity of a building element. Once the thermal conductivity of the building element decreases its insulating properties increase. The thermal conductivity of the building is defined to be the quantity of heat that flows through a unit area in a unit of time, per unit difference in temperature. It is expressed in Watts per square meter Kelvin (W/m²K). It provides an indication of how much heat is transmitted through a material, but also includes losses due to convection and radiation. Insulation reduces the heat gained during warm summer months and reduces the heat lost during cold winter months.

High Efficiency Geyser for Hot Water

This initiative investigates the different energy sources that can be used to deliver hot water to a development. For this purpose, three fuels or sources of energy were investigated these include: electrical resistance, Liquid Petroleum Gas (LPG) and Natural Gas. The water heater selected must have a high efficiency. The different sources of energy are discussed further below:

- Electrical Resistance: This is a standard storage tank style water heater that suffers inefficiencies or losses in energy due to standby loss. As the hot water sits in the tank, heat may escape through the walls of the tank. Therefore, when considering increasing geyser efficiencies, a geyser blanket would be a good addition
- LPG and Natural Gas: Water heaters that utilise gas can operate within both a conventional storage tank and tank less
 application. In the case of storage tanks, they may suffer the same heat losses as experienced with a conventional
 electric option unless a sealed combustion vent is included.

The purpose of having a high efficiency geyser specified is to reduce the demand for electricity that would otherwise, be required.

Solar Photovoltaics: Renewable Energy Generation

Photovoltaics (PV) utilises solar radiation to produced electrical energy. The outputted Direct Current (DC) voltage requires a solar panel array provision of 10m2 for 1kWp/day (required for 25% of project annual consumption). The DC can be converted to standard mains Alternating Current (AC) via an invertor for residential consumption. PV has a reduction in cost per kWh a proportion of the difference can be utilised to finance the uplift via alternative financing. It will also reduce the CAPEX associated with upfront electrical connection charges and provide a resilience buffer to power shortages.

Internal Lighting - Energy Savings Bulbs

Energy efficient lighting is commonly available in South Africa in the form of Compact Fluorescent Lamps (CFLs) and these have largely replaced traditional incandescent lighting as the preferred lighting choice due to reduced energy consumption and heat generation and longer life spans. While 75W incandescent bulbs require electrical resistance to heat a metallic element 'white hot', a 13W CFL bulb contains a gas mixture of argon and mercury which is excited by a small electric current. In 4W Light Emitting Diodes (LEDs) electrons are encouraged to 'jump' between energy levels releasing photons.

Low Flow Fixtures and Fittings

In order to reduce the water demand per unit, it is recommended that low flow water fixtures and fittings be utilised. This includes low flow showerheads, hand basin taps, water closets and kitchen taps. The difference between these fixtures and normal fixtures would be the application of a flow restrictor that determines the flow rate of the fixture or fitting.



5. TRAFFIC ASSESSMENT

A Traffic Impact Assessment was undertaken by Glad Africa Consulting Engineers in March 2020 and is attached as **Appendix G11**. It should be noted that the Traffic Impact Assessment was undertaken for all of the proposed project sites located within Bryanston Extension 3.

Study Objectives

The study area is restricted to a number of intersections around the proposed development for which the traffic and pedestrians' impacts would be significant. The study objectives are to quantify and qualify the traffic impact of the proposed Bryanston Extension 3, Projects sites.

Future Gauteng Road Planning

PWV3 Road Planning

The proposed alignment of the PWV3 freeway is shown in Figure 19 below. It should be noted that the proposed Bryanston Extension 3 project sites are directly in the path of the starting section of the PWV3 freeway, which starts at Rocky Street and proceeds northwards via the Arboretum River valley to the N1 with a proposed N1/PWV3 systems interchange and extends north-westward to Zandspruit. This freeway reserve has not been de-proclaimed as yet. It should be noted that a Section 7 Application for a change in land use with this Department in terms of the Gauteng Transport Infrastructure Act (Act 8 of 2001).

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Figure 19: Extract from 2010 Gauteng Provincial Road Planning

Source: Traffic Impact Assessment, March 2020

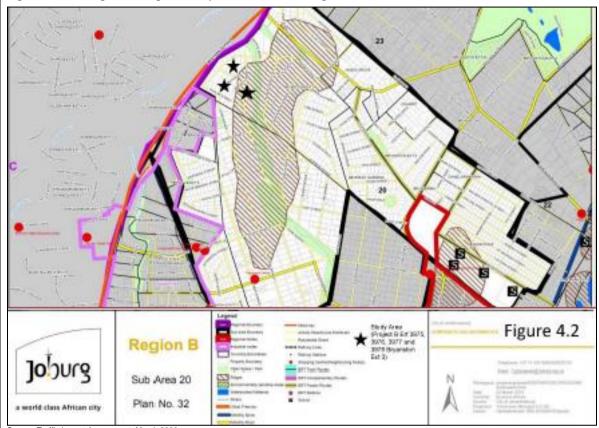
City of Johannesburg RSDF Planning

The City of Johannesburg latest Regional Spatial Development Framework (RSDF) for Region B, Sub-area 20, which covers most of Bryanston Extension 3, does not show the PWV3 alignment included. The Sub-area 20 plan is shown in Figure 20 below. It passes through an identified Ridge classification area and along the open space river valley. The sub-area boundary encompasses an infill residential area. This is currently characterised and dominated by Residential (Res) 1 land-



use.

Figure 20: COJ Region Strategic Development Framework- Region B, Sub-area 20



Source: Traffic Impact Assessment, March 2020

The estimated proposed PWV3 road reserve is detailed in Figure 21. The very fact that Gauteng is proposing the development of human settlement, implies indirectly that it has earmarked part of their PWV3 road reserve land and therefore the section of PWV3 inside the N1/N3/N12 ring road is unlikely to ever be constructed and has been used as motivation for the Section 7 de-proclamation application.

Figure 21: Estimated PWV3 road reserve showing all proposed GDHS Bryanston Project sites: A, B, C, D





Source: Traffic Impact Assessment, March 2020

Existing Road Network

Bryanston Extension 3 Project sites, are located in a residential area and therefore the surrounding road network is predominantly Class 5 roads. The site is bound by Cork Ave and Spruce St which both function as Class 5 – residential local streets (Reference is made to TRH 26 for the road classification).

Figure 22: Road classification



Source: Traffic Impact Assessment, March 2020

Public Transport and Non-motorised Transport

The Bryanston Extension 3 development lies to the west of Malibongwe Dr and north of Rocky St. There is an existing bus/taxi route along these two streets. A small number of taxis was also observed along North St. However, these streets are at a distance from the access of the development. Therefore, a new public transport route is proposed to better serve the proposed development. The proposed public transport route and the laybys are shown in Figure 24.

Non-motorised Transport (NMT) plays an important role in the first and last mile (kilometre) of travel, especially for public transport users. The implementation of NMT involves the application of universal access design; - a principle that enables all citizens to reach their destination without a hindrance in their physical environment.

With regards to the residents of this new Bryanston housing development, travel by means of cycling, walking, including travel by persons living with any visual or physical disability, should be accommodated. This has the beneficial effect of promoting transportation equity, maximising independence and improving community liveability. There are currently no NMT facilities in the Bryanston Extension 3 area where the housing development will be located.

Recommendations for Public Transport, NMT and Traffic Calming

The recommendations for public transport and NMT are made in consideration of the other developments proposed in the area. These developments include Bryanston Extension 3, Projects B, C and D.

The following recommendations should be provided from an NMT and public transport perspective:

- The public transport (minibus-taxi) route to go from North St, going along Long St and Poplar St; and then to North St via Cork Ave. A secondary route will extend via Cork Ave, Spruce St, Cedar Ave towards Jacaranda and Cumberland Ave which must serve the scholars.
- A layby is to be provided on the northern side of Poplar St, 20 m before it intersects with Cork Ave. A minibus-taxi stop
 should be provided on the western side of Cork Ave some 20 m south of Spruce St. Since the traffic flow is 2 vehicles
 per minute, it is proposed that the minibus-taxi stop in the roadway of Cork Ave to load/ offload passengers on the
 paved sidewalk.
- Provision of a paved 1,8 m wide paved sidewalk on one side of Cork Ave and Poplar St due to the usage of public transport. The sidewalk leads to laybys on Poplar St. A sidewalk should also be provided along the eastern side of Cork Ave from the pedestrian access of Bryanston Project B to the midblock yield controlled pedestrian crossing.
- Provision of a raised pedestrian crossing for pedestrians crossing Cork Ave from Bryanston Project B. to where the lavbys are located.
- It is recommended that lighting along Cork Ave and Poplar St be provided to ensure that safety and security is



enhanced for all NMT users of the new housing development.

• Traffic calming measures (speed humps, road signs, speed restriction) to be implemented for the safety of NMT users on Cork Ave and Poplar St. This should all be done according to Johannesburg Road Agency (JRA)'s standards.

The extension (tarring) of Cork Ave from Spruce St to the entrance of Bryanston Project D (erf 3927) with the cul-de-sac being a hammer head to JRA specifications, is also required to access Bryanston Project B and will be required for Bryanston Project A.

The recommendations for public transport (PT) routing will mainly be minibus-taxis since the geometry of the Class 5 roads in the area is not suitable for buses. The PT routes and NMT recommendations made for Bryanston 3 Project sites are shown in Figure 24.

Legend

Sidewalk
Public Transport Route
Extension of Cork Ave
Hammer Head
Raised Pedestrian Crossing
Taxi layby
Speed Hump
Access

Figure 24: Public Transport and NMT requirements for all proposed Bryanston Extension 3 Project sites

6. ROADS AND STORMWATER MANAGEMENT

ROADS

The Bulk Services Availability Report was prepared in September 2019 and the Civil Engineering Services Preliminary Design Report was prepared in April 2021 by Phumaf and is attached as **Appendix G7** and **Appendix G8**, respectively.

Authority and Provider Arrangements

Source: Traffic Impact Assessment, March 2020

The Johannesburg Roads Agency is responsible for the provision and maintenance of roads and stormwater infrastructure in its area of jurisdiction.

Design Standards

The design parameters that will be utilized for road geometric design and pavement structures as well as the requirements for civil services for this report are in accordance with the Guidelines for Human Settlement Planning and Design compiled by the Department of Housing and Construction Technology (2000) and other approved design specifications.

It must be noted that these standards have been utilised to obtain an indication of the size of the services only and they must, therefore, be confirmed through a preliminary and final design process.



Table 12: Design Parameters and Design Standards for Roads

Class	4a, 4b, 5a, 5b and 5c		
Road Width	7.5m, 7m, 6m, 5.5m, and 5m		
Road Reserve	22m, 20m,16m,13m, and 12m		
Pavement Layers	No layer within the pavement structure shall be less than 125mm		
Cross fall/Camber	Single cross fall (3%)		
Longitudinal Slope	Minimum:0.5%		
Kerbing	Fig 3 barrier or type Fig 8b Mountable		
Pedestrian Walkways	No pedestrian walkway shall be less than 1.2m when paved		
Verges	The minimum verge width shall be 2.7m		
Access to Erven	ccess to Erven Minimum stacking distance at entrances is to be between 4.5m edge of road and gate		

Source: Civil Engineering Services Preliminary Design Report, April 2021

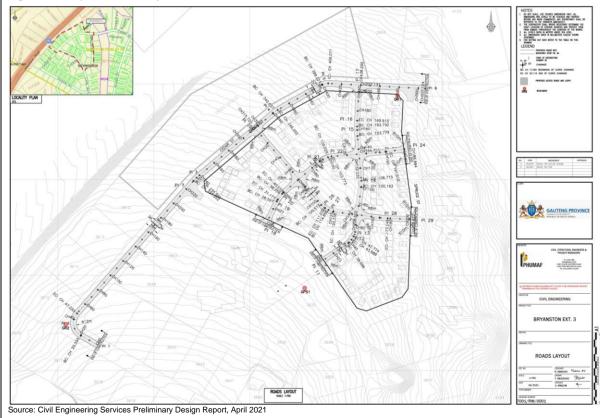
Internal Roads

The internal road network is in fairly good condition and consists of surfaced roads, being Class 4 and Class 5 roads with a road reserve ranging between 10 meters and 30 meters in width.

The total length of the proposed Bryanston Extension 3 road networks is approximately 1.110km. New internal roads for the proposed development will be designed in line with an approved spatial development plan, traffic impact assessments, and Johannesburg Roads Agency (JRA) guidelines.

The site is bounded by streets on all sides: Cork Avenue to the west, Spruce Street to the east, and Cedar Street to the north. Spruce Street is a tarred road. Only a portion of Cork Avenue has been constructed and it is not tarred. Cedar Street has not been constructed in the area where it abuts the site. Cork Place ends in a T-junction from the southwest into Cork Avenue. This intersection should be used as a point of entry into the site to prevent an offset intersection. See attached Proposed Roads layout for Bryanston Extension 3, Drawing No. 7001/RW/U001 in **Appendix C3** and Figure 25.

Figure 25: Proposed Road Layout





STORMWATER MANAGEMENT

Authority and Provider Arrangements

The Johannesburg Roads Agency (JRA) and Stormwater Division is responsible for the provision and maintenance of roads and stormwater infrastructure in its area of jurisdiction.

Design Norms and Standards

The Rational Method will be used to calculate the stormwater runoff for this site. The stormwater will be drained along the road reserve, mainly in open, unlined V-drain channels, with underground / piped systems only where surface drainage is not possible or deemed to be impractical.

Designs will be such that the canals can accommodate the 1:5-year minor storm and the 1:25 year major storm is accommodated in the road structure without overtopping.

Table 13: Design Parameters and Standards for Stormwater

Major system design frequency	25 year
Minor system design frequency	5 year
Minimum Pipe size within road reserves	450mm diameter
Maximum manhole spacing	100m
Minimum pipe class for 450mm and 525mm diameter	100D
All other classes to be designed	
Maximum velocity to be not more than	5m/s in pipes
	3m/s in road
Slope to be not less than	1% in order to self-clean
No hidden junction box will be allowed	
Pipe Material	Concrete interlocking

Source: Civil Engineering Services Preliminary Design Report, April 2021

Existing Stormwater Systems

Information from JRA Road Asset Management Systems and topographical survey show that their existing stormwater infrastructure on existing areas adjacent to the planned development, there is an existing 450mm diameter located to the Northwest direction of the proposed site on Cedar St and another existing 450mm diameter pipe located to the north eastern direction also on Cedar Street which the Stormwater runoff from the proposed Bryanston Extension 3 will discharge into. To tie into these existing systems, the positions, levels of these existing systems will be confirmed by the survey information available in order to confirm functional designs. See **Annexure K of the Civil Engineering Services Preliminary Design Report**, April 2021. (JRA Stormwater Reticulation) for JRA Existing Stormwater reticulation Layout.

Proposed Internal Stormwater

No existing stormwater exists within the proposed development area.

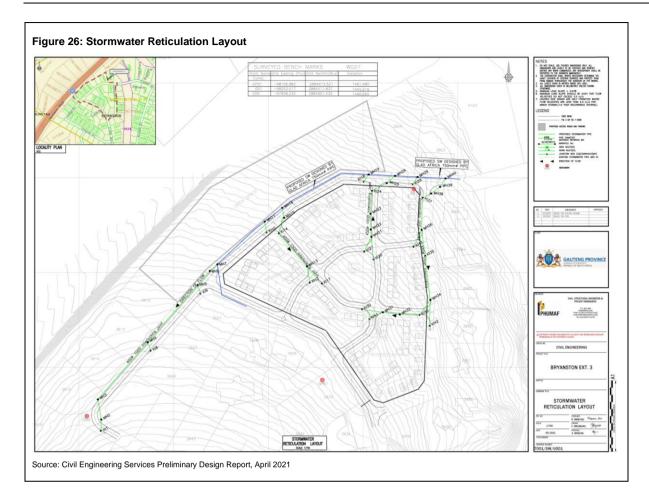
A conceptual stormwater management plan for the development will be required. Stormwater will be managed on the proposed site and outlet onto the roads. Even though the JRA policy states that all new developments on land exceeding 8 500m² are subject to stormwater attenuation on-site, for the proposed Bryanston Extension 3 internal stormwater run-off will be collected using an underground pipe system and be conveyed into a proposed 450mm diameter stormwater pipe designed by GladAfrica Consulting Engineers (Pty) Ltd for the Bryanston Extension 3 Project D, since there are existing Stormwater pipes in the vicinity of the proposed site.

The stormwater runoff will be collected from the low points of Cork Avenue and discharge into a reticulation of stormwater pipes.

Stormwater pipe capacities will be designed to be able to cater to minor storms of 1 in 5 year whilst both roads and stormwater pipes should cater to major storms 1 in 25 year. The stormwater master plan must provide for a level of attenuation and pollution control should stormwater outlet to the natural watercourse.

See Appendix C4 and Figure 26 for the proposed Stormwater Reticulation Layout for Bryanston Extension 3, Drawing No. 7001/SW/U001.







SECTION E: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

Comments and responses that will be received in response to the Basic Assessment Report will be included into the Basic Assessment Report to be submitted to the Department in the form of a Comments and Response Report.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)

(A full response must be provided in the Comments and Response Report that must be attached to this report):

Comments and responses that will be received in response to the Basic Assessment Report will be included into the BAR to be submitted to the Department on the conclusion of the public participation period in the form of a Comments and Response Report.

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

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

The assessment of the potential impacts of the envisaged development is undertaken in accordance with the broad criteria required by the integrated environmental management procedure and includes the following:

Nature of impact

A brief description of the type of impact the proposed development will have on the affected environment.

Extent/Scale

The physical extent of the impact.

1. Footprint

The impacted area extends only as far as the actual footprint of the activity.

2. Site

The impact will affect the entire or substantial portion of the site/property.

Local

The impact could affect the area including neighbouring properties and transport routes.

Regional

Impact could be widespread with regional implication.

National

Impact could have a widespread national level implication.

Duration

The duration of the impact.

1. Short term

The impact is quickly reversible within a period of one year, or limited to the construction phase.

Medium term

The impact will have a medium term lifespan (project lifespan 1 – 10 years).

Long term

The impact will have a long term lifespan (project lifespan > 10 years).



4. Permanent

The impact will be permanent beyond the lifespan of the development.

Intensity

These criteria evaluate intensity of the impact and are rated as follows:

1. Minor

The activity will only have a minor impact on the affected environment in such a way that the natural processes or functions are not affected.

Low

The activity will have a low impact on the affected environment

3. Medium

The activity will have a medium impact on the affected environment, but function and process continue, albeit in a modified way.

4. High

The activity will have a high impact on the affected environment which may be disturbed to the extent where it temporarily or permanently ceases.

5. Very high

The activity will have a very high impact on the affected environment which may be disturbed to the extent where it temporarily or permanently ceases.

Probability

This describes the likelihood of the impacts actually occurring.

1. Improbable

The possibility of the impact occurring is highly improbable (less than 5% of impact occurring).

2. Low

The possibility of the impact occurring is very low, due either to the circumstances, design or experience (between 5% to 20% of impact occurring).

Medium

There is a possibility that the impact will occur to the extent that provision must be made therefore (between 20% to 80% of impact occurring).

4. High

There is a high possibility that the impact will occur to the extent that provision must be made therefore (between 80% to 95% of impact occurring).

Definite

The impact will definitely take place regardless of any prevention plans, and there can only be relied on migratory actions or contingency plans to contain the effect (between 95% to 100% of impact occurring).

Determination of significance

Significance is determined through a synthesis of the various impact characteristics and represents the combined effect of the extent, duration, intensity and probability of the impacts.

1. No significance

The impact is not substantial and does not require any mitigatory action.

2. <u>Low</u>

The impact is of little importance but may require limited mitigation.

Medium

The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.

4. High



The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation and management is essential.

The following assessment scale is used to determine the significance of the identified potential impacts on the environment.

Significance = (probability + duration + scale) x intensity

Probability: 1 – 5
Extent: 1 – 5
Duration: 1 – 4
Intensity: 1 – 10

Significance rating criteria

>75	High environmental significance
50 – 75	Medium environmental significance
<50	Low environmental significance

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

THE IMPACT ASSESSMENT OF THE PROPOSAL IS INIDICATED IN THE TABLE BELOW.



Nature	Extent	Duration	Intensity	Probability	Significance rating of impacts (positive or negative)	Mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented	
				CONSTRUCT	ION PHASE – DIRECT IM	PACTS			
	Physical and Landscape Characteristics								
Impact of development on natural drainage patterns, caused by surface clearance and associated decrease of vegetation cover, leading to increased surface runoff and erosion.	Local	Short	Low	Low	Low (Negative)	Construction activities must be restricted to the construction site to minimize the impacts of the construction phase on the wetland area.	Low	Low	
Destruction of, and fragmentation of, portions of the vegetation community.	Local	Permanent	Medium	High	High (Negative)	 No development or construction activity should take place within the northern portion of the site as this portion is earmarked for conservation. A search and rescue plan must be implemented prior to construction (breaking ground) for the project area, and should include the areas considered for the offset allocation. Vehicles must be restricted to existing roads and new pathways must be restricted. Areas to be developed be specifically demarcated prior to construction. All laydown, storage areas etc should be restricted to low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the site once the construction/closure phase has been concluded. During construction activities, all rubble generated must be 	Medium	Low	



3.	Loss of floral species of conservation concern, Hypoxis hemerocallidea.	Site	Short	Medium	Medium	Medium (Negative)	1. 2. 3.	removed from the site. Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. During the planning and surveying phase, the floral SCC (Hypoxis hemerocallidea) that may be affected by the proposed development, must be marked and where possible, relocated to suitable and similar habitat in the surrounding area. Relevant permits must be applied for from local authorities. No collection of floral SCC or medicinal floral species may be allowed by construction workers or future residential occupants.	Low	
					Ecol	ogical Characteristics	1	A qualified environmental control		
1.	Displacement of faunal community due to habitat loss, disturbance (noise, dust and vibration) and/or direct mortalities.	Local	Medium	Medium	Medium	Medium (Negative)	2.	A qualified environmental control officer must be on site when construction begins to identify species that will be directly disturbed and to relocate fauna that is found during construction. Staff should be educated about the sensitivity of faunal species and measures should be put in place to deal with any species that are encountered during the construction process. No trapping, killing or poisoning of any wildlife is to be allowed on site, including snakes, birds, lizards, frogs, insects or mammals.	Low	Low



2.	Introduction and encroachment by alien invasive species	Local	Medium	Medium	Medium	Medium (Negative)	Areas that are denuded during construction need to be revegetated with indigenous vegetation to prevent erosion during flood events. Promptly remove all alien and invasive plant species that may emerge during construction (i.e. weedy annuals and other alien forbs). Limit soil disturbance Minimize unnecessary clearing of vegetation beyond the infrastructure footprints		
4.	Impact on surrounding vegetation during construction (e.g. collection of firewood, veld fires, etc.)	Local	Short	Medium	Low	Medium (Negative)	No harvesting of firewood from the site or from the areas adjacent to it. Under no circumstances are the staff allowed to start a fire.		
	Soil Characteristics and Geology								
1.	Increased bare surfaces, floodpeaks and potential for erosion	Local	Long	Medium	Moderately High	Medium (Negative)	 All bare areas must be revegetated with indigenous vegetation to decrease the possibility of erosion. Keep scraping / excavation in the footprint area to a minimum and keep soil heaps neat and tidy. Attempt to complete the bulk of earthmoving activities during winter when flow volumes are lowest. Ensure soil stockpiles and concrete / building sand are sufficiently safeguarded against rain wash. Scrape the area where mixing and storage of sand and concrete occurred to clean and re-grass once finished. Do not situate any of the construction material laydown areas within any wetland. 		
2.	Soil pollution (cement	Site	Short	Medium	Medium	Medium (Negative)	Mixing of concrete should not take place within the identified Low Low		



	powder, diesel, oil etc.) during construction							wetlands.		
3.	Dust pollution due to exposure to loose soils.	Site	Short	Low	Medium	Medium (Negative)	1. 2.	Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil. Dust reducing mitigation measures must be put in place and must be strictly adhered to; this will be very important during the construction phase.	Low	Low
4.	Soil stockpiles that are left unattended during construction.	Site	Short	Medium	Medium	Medium (Negative)	1.	All removed soil and material must not be stockpiled within the identified wetland and buffer. Stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds.	Low	Low
5.	Surface and Subsurface Drainage	Site	Medium	Medium	Medium	Medium (Negative)	1. 2. 3.	Surface and subsurface must be constructed so that no water ingress into the subsurface soils in and around foundation bases is possible. Drainage should be such that any rainfall is diverted to the nearest stormwater drainage system. Areas of potential pooling or damming of rainfall on site should be carefully designed and sloped so as the remove this water away from the foundations.	Low	Low
Ground and Surface Water										
1.	Water quality impacts (sedimentation and turbidity) on wetland system	Local	Long	Medium	High	High (Negative)	 2. 3. 4. 	Ensure soil stockpiles and concrete / building sand are sufficiently safeguarded against rain wash. Scrape the area where mixing and storage of sand and concrete occurred to clean and re-grass once finished. Re-instate topsoil and lightly till disturbance footprint, re-grass and irrigate. Wetland and buffer areas to be	Medium	Low



2. Contamination of wetlands due to leaks and spillage from construction machinery, equipment and vehicles. 2.2 Contamination and eutrophication of wetland systems with human sewerage and litter. Medium (Negation of Wetland Systems with human sewerage and litter).	construction and service them regularly. 7. The contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected must be disposed of at a licensed disposal facility. 8. The contractor must be in possession of an emergency spill kit that must be complete and available at all times on site. 9. Any possible contamination of topsoil by hydrocarbons must be avoided. Any contaminated soil must be treated in-situ or be placed in containers and removed from the site for disposal in a licensed facility.					
Archaeological, Historical and Cultural Significance						



1.	Impact on sites with valuable archaeological, history and cultural significance	Site	Short	Minor	Low	Low (Negative)	1. If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments and charcoal/ash concentrations) or palaeontological remains are found during the proposed activities, SAHRA must be alerted immediately, and a professional archaeologist or palaeontologist, based on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of significance a Phase 2 rescue operation might be necessary. 2. If any unmarked human burials are uncovered and the archaeologist called in to inspect the finds and/or the police find them to be heritage graves, mitigation may be necessary and the SAHRA Burial Grounds and Graves (BGG) Unit must be contacted for processes to follow.
					Soc	cio-Economic Impacts	
1.	Construction activities on the proposed development may pose various risks to workers safety.	Local	Short	Medium	Medium	Medium (Negative)	The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No.85 of 1993) and the National Building Regulations. Low Low Low Regulations.
2.	Sense of place	Regional	Short	Medium	High	Medium (Negative)	Create strict controls on the roads leading to the development and prevent people from parking on the side of the roads, driveways, and other public areas that may inconvenience other road users. Vehicles should be towed away if parked in non-designated areas and such practices should be made abundantly clear among the construction workers and



				Ī			construction managers to avoid		
							unnecessary conflicts.		
3.	Influx of migrant workers during the construction phase of the development.	Regional	Medium	Medium	High	Medium (Negative)	Prioritise local people for work opportunities Ensure the transfer of skills – highly skilled construction workers must work together with low to medium skilled workers to facilitate the skills sharing and transfer process. Establish skills desks at Bryanston to identify the labour force with the correct skills that could be employed immediately or could be trained for specific positions during construction.	Low	Low
4.	Impact on crime /community safety	Local	Short	Very High	High	Medium (Negative)	Construction workers should always be supervised. Construction activities should be kept to normal working hours e.g. from 7 am until 5 pm during weekdays. Property owners surrounding the construction areas should be informed of the construction schedules and activities. Workers conduct should be guided by a code of conduct to be developed by the contractors. The construction areas should be fenced to avoid unauthorised entry by animals or children.	Low	Low
5.	Impact on the local and regional economy through contracting and sub-contracting	Regional	Medium	Medium	High	Medium (Positive)	Make use of domestically produced building material and equipment. Prioritise the procurement of goods and services from the local SMMEs and particularly SMMEs located in the study area	High (Positive)	Low
6.	Direct employment opportunities are anticipated to occur through the employment of construction workers	Regional	Medium	Medium	Medium	Medium (Positive)	No mitigation required.	Medium (Positive)	Low
7.	Additional demand for	Regional	Medium	High	High	Medium (Negative)	Provide public transportation service for workers in order to	Low	Low



	basic services and social services.						reduce congestion on roads.
					E	ngineering Services	
1.	Capacity of road network to handle traffic due to construction activity/vehicles.	Local	Short	Medium	Medium	Low (Negative)	It must be ensured that a backlog of traffic does not develop at access points during peak hours, through the implementation of an efficient and effective access control system. Construction vehicles must adhere to speed limits.
2.	Possibility of increased number of road accidents due to increased traffic volumes. Accident risk may be highest at the point where the site is accessed from.	Local	Long	Medium	Medium	Low (Negative)	Employ people to help alert oncoming traffic and regulate the traffic during construction hours so that residents and visitors know about the construction taking place. Low Low Low Low Low Low Low Lo
3.	Increased soil erosion due to increased quantity and flood peak intensity of stormwater flow, most significantly at stormwater outlets.	Site	Long	Medium	Medium	Medium (Negative)	A Stormwater Management Plan will be prepared. Refer to the Civil Engineering Design Report (Appendix G8) wherein stormwater management is discussed. Low Low
					Potentia	al Environmental Impact	ets
1.1	Increase in air pollution (dust) during construction (e.g. construction vehicles, excavation, earthworks, burning of waste products etc.). Some phases of construction may cause odours that are detective over some distance (e.g. burning of plastic containers and bags).	Local	Short	Medium	High	Medium (Negative)	Dust reducing mitigation measures must be put in place and must be strictly adhered to. Air filters on all mechanized equipment must be properly designed and maintained. Onsite burning of waste is not permitted. A dust suppression programme should be implemented by means of periodic water sprinkling. All industrial activities are subject to operating within the conditions of national legislation, including



1.3 Impact on the ambient air quality due to vehicle tailpipe emissions from increased traffic volumes.						the National Environmental Management: Air Quality Act No. 39 of 2004.		
Increase in ambient noise level affecting surrounding properties during construction.	Local	Short	Low	High	Medium (Negative)	 Silencers on diesel-powered equipment must be properly designed and maintained. Construction activities should be limited to normal office hours. Adjacent landowners should be notified of extremely noisy activities at least 24 hours prior to such activities commencing. Construction should take place between 07:00- 17:00. Mondays to Fridays. 	Low	Low
Visual impact of development on landscape.	Local	Long	Medium	High	Medium (Negative)	 Ensure that the Architectural design is sympathetic to the surrounding areas. All construction material must be stored in one place out of the direct eyesight of pedestrians. The Architectural code must be adhered to during construction. 	Low	Low
4. Impact of lighting on surrounding properties, including light trespass and over-illumination. Apart from being a visual impact, over-illumination is also a waste of energy	Local	Long	Medium	High	Medium (Negative)	 Avoid shiny metals in structures. If possible, shiny metal structures should be darkened or screened to prevent glare. Night-time light sources must be directed away from residential areas. Incorporate measures for visual screening (e.g. using shade cloth) in the EMPr. Avoid construction activities outside of normal working hours. 	Low	Low
				CONSTRUCTIO	ON PHASE – INDIRECT I	MPACTS		
				Soc	cio-Economic Impacts			
Indirect job creation (e.g. building suppliers) and induced job creation (broader local economy).	Local	Short	Minor	High	Medium (Positive)	No mitigation required	Medium	Low



	OPERATIONAL PHASE – DIRECT IMPACTS								
					Ecol	logical Characteristics			
1.	Introduction of pest species (e.g. rats and flies) due to the new habitats that's created in the waste containers.	Local	Long	Medium	Medium	Medium (Negative)	Food waste should not be left exposed. Disposal of collected waste will be via City of Johannesburg Municipal Waste Disposal who collect generated waste at predetermined locations on the site and disposes it at their Landfill / Waste Disposal facility on a weekly basis. Waste reduction through recycling at source should be encouraged to reduce the waste pile (e.g. bottles, tins and paper and cardboard).		
2.	Loss of vegetation and floral species of conservation concern (Hypoxis hemerocallidea)	Site	Short	Medium	Medium	Medium (Negative)	1. The biodiversity offset plan (Appendix G4) must be implemented to accommodate for the loss of the biodiversity as a result of the proposed development. 2. No collection of floral SCC may be allowed by occupants of residential units. 3. The northern portion of the site should be demarcated as a no-go area.		
					Surf	ace and Ground Water			
1.	Potential leaks from sewage leaking into the surrounding environment.	Local	Long	Medium	Low	Medium (Negative)	Ensure that all blockages in drains are promptly fixed. Leaks and pipe bursts relevant to sewerage systems are unlikely, but possible. An action plan must be implemented to react on burst pipes and potential sewerage leaks.		
2.	Increase in inputs (sediment, turbidity, nutrient, toxic organic contaminants, heavy metal contaminants)	Local	Long	Medium	Medium	Medium (Negative)	A proper stormwater management plan must be incorporated, which includes attenuation ponds that not only diffusely releases flows into the river system, but also assimilates toxicants by means of Low Low Low		



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							bioretention. 2. Strict rules must be incorporated to residents regarding the disposal of refuse, dirty water and washing cars within the property.
					Soil Ch	aracteristics and Geolog	
1.	Soil erosion due to stormwater runoff caused by paved areas.	Local	Long	Medium	High	Medium (Negative)	Re-instate topsoil and lightly till disturbance footprint, re-grass and irrigate. Low Low Low
2.	Surface and Subsurface Drainage	Site	Medium	Medium	Medium	Medium (Negative)	 4. surface and subsurface must be constructed so that no water ingress into the subsurface soils in and around foundation bases is possible. 5. Drainage should be such that any rainfall is diverted to the nearest stormwater drainage system. 6. Areas of potential pooling or damming of rainfall on site should be carefully designed and sloped so as the remove this water away from the foundations.
					E	ngineering Services	
1.	Traffic	Regional	Long	Medium	Medium	Medium (Negative)	Mitigation measures started in the Traffic Impact Assessment Report (Appendix G11) should be implemented. Low Low
2.	Increase in demand of services delivery (water, sanitation, waste disposal).	Regional	Long	Medium	Medium	Medium (Negative)	Consultation with the CoJ regarding infrastructure capacity and upgrades to accommodate the proposed development was undertaken (Refer to Appendix 8 for the Civil Engineering Design Report). Low Low
					Soc	cio-Economic Impacts	
1.	Sense of place	Local	Permanent	Medium	High	Medium (Negative)	Develop secure parking for residents in the facility. Develop visitors parking bays in the facility. Low Low Low



2.	Influx of migrant workers may remain during the operational phase.	Regional	Long	Medium	High	Medium (Negative)	Prioritise local people for work opportunities	Low	Low
3.	Impact on crime.	Local	Long	Very High	High	Medium (Negative)	 Enclose the development with a high electric fence. Acquire the services of a security company. Install security cameras. Monitor and restrict access. Lighting as security measure at night should be implemented as part of the development. 	Low	Low
4.	Impact on the local and regional economy through contracting and subcontracting.	Local	Long	Minor	Medium	Low (Positive)	Make use of domestically produced building material and equipment. Prioritise the procurement of goods and services from the local SMMEs and particularly SMMEs located in the study area.	High (Positive)	Low
5.	During the operational phase, direct employment creation is anticipated through the following activities: (i) cleaning and maintenance of the building, (ii) safety and security and (iii) building management.	Local	Long	Medium	High	Medium (Positive)	No mitigation required	Medium	Low
6.	Impact on basic services, social facilities, and economic infrastructure.	Local	Long	Medium	Medium	Medium (Negative)	Consultation with the CoJ regarding capacity of infrastructure has been undertaken (Refer to the Civil Engineering Report – Appendix G8).	Low	Low
					OPERATIONA	L PHASE – INDIRECT IM	PACTS		
					Er	ngineering Services			
1.	Capacity of power grid to supply electricity to the proposed development.	Regional	Long	Medium	Medium	Low (Negative)	There is adequate capacity in the Johannesburg network to supply the proposed development.	Low	Low
2.	Indirect employment creation	Local	Long	Medium	High	Medium (Positive)	No mitigation required.	Medium	Low

BASIC ASSESSMENT REPORT FOR THE PROPOSED BRYANSTON EXTENSION 3 PROJECT A HOUSING DEVELOPMENT GAUT 002/21-22/E0020



			En	vironmental Impacts				
Fluctuation in property value in surrounding areas.	Long	Medium	Low	Medium (Negative)	1. 2.	Design the development in such a way as to blend in with the local environment. The Body corporate should ensure the maintenance and operation of the complex, with the assistance of the Department of Human Settlement and Municipality.	Medium	Low

BASIC ASSESSMENT REPORT FOR THE PROPOSED BRYANSTON EXTENSION 3 PROJECT A HOUSING DEVELOPMENT GAUT 002/21-22/E0020



Alternative 1: Alternative Layout 1

It should be noted that the impacts associated with Alternative Layout 1 was collectively assessed with that of the Preferred Layout as both layouts are proposed on the same site under the same environmental conditions. The Preferred layout and Alternative Layout 1 differ in the number of residential units and housing typologies. Alternative Layout 1 also proposes to construct 3-4 storey residential units on the northern portion of the site whereas as the Preferred Layout has earmarked this portion of the site as conservation. The preferred layout also considers the surrounding land uses by stepping up the density instead of just maximising the number of units.

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
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NO GO ALTERNATIVE

	Nature	Significance rating of impacts (positive or negative)	Mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
1.	The proposed will retain its current status and no construction activities will be undertaken.	Positive	No mitigation will be required.	Not applicable	Not applicable
2.	The need to provide people with housing will not be met. The principle of building sustainable human settlements will not be supported.	Negative	No mitigation will be required.	Not applicable	Not applicable
3.	There will be no opportunity for any economic activities, the development will not provide opportunity for job creation within the local community.	Negative	No mitigation will be required.		Not applicable
4.	There will be no visual impact to affected areas.	Positive	No mitigation will be required.	Not applicable	Not applicable
5.	No displacement of faunal community due to habitat loss, disturbance (noise, dust and vibration) and/or direct mortalities.	Negative	No mitigation will be required.	Not applicable	Not applicable
6.	No destruction of, and fragmentation of, portions of the vegetation community and loss of SCC.	Negative	No mitigation will be required.		Not applicable
7.	No negative environmental impacts such as dust, noise, vegetation clearance.	Positive	No mitigation will be required	Not applicable	Not applicable
8.	The site will be left vulnerable to land invasion.	Negative	No mitigation will be required.	Not applicable	Not applicable



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

Refer to the following attached specialist studies that were that were used to inform the tables above:

- Appendix G1: Urban Development Framework
- Appendix G2: Phase 1 Geotechnical Report
- Appendix G3: Wetland and Vegetation Assessment
- Appendix G4: Biodiversity Offset Plan
- Appendix G5: Market Research and Socio-Economic Study
- Appendix G6: Phase 1 Heritage Impact Assessment
- Appendix G7: Bulk Services Availability Report
- Appendix G8: Civil Engineering Services Preliminary Design Report
- Appendix G9: Bulk Electrical Services Report
- Appendix G10: Electrical Engineering Outline Scheme Report
- Appendix G11: Traffic Impact Assessment Report

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

The following assumptions and limitations apply to the EIA:

- The environmental authorization application has been initiated during the conceptual design and planning stages of the development.
- It is assumed that the information provided by the various specialists and project engineers are accurate.
- The EIA project team is of the view that an adequate level of information is provided in order to facilitate the required assessment of potential impacts of the proposed project alternatives and decision-making in this regard.
- The study involves the assessment of impacts on the current conservation value of affected land and not on either the historic or potential future conservation value.
- The mitigation measures provided in the EMPr will be implemented and it assumed that the measures are adequate and will successfully enhance positive impacts while limit the negative impacts.

3. IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING AND CLOSURE PHASE

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

The proposed development is for housing as such, the decommissioning and closure phases are not applicable.

Proposal				
Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented

Alternative 1

negative): Integration: being implemented	Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
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Alternative 2

Potential impacts:	Significance rating of impacts (positive or	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being
	negative):		minganon.	implemented



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

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

4. CUMULATIVE IMPACTS

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

- Additional population will put pressure on existing services such as roads, water, sewerage and waste disposal. It should be noted that the services will be upgraded to accommodate the proposed development.
- · Potential for illegal dumping within the open space system and conservation area do exist.
- Collectively, the proposed housing developments in Bryanston Extension 3 Township could cumulatively lead to the loss of migratory connectivity and support habitats for CBA areas, as well as further degradation of natural and near-natural remnant Egoli Granite Grassland that may occur in the area. This will in turn affect the floral species diversity in the region.
- Alien invasive species will out-compete indigenous flora and fauna and reduce overall indigenous biodiversity in the area if not properly managed.

5. ENVIRONMENTAL IMPACT STATEMENT

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

Proposal

The project area falls within the Egoli Granite Grassland. This vegetation type has a conservation status of Critically Endangered (CR). According to the specialist study, the site is classified as having a high sensitivity as it represents CBA and ESA, as identified by the Gauteng Conservation Plan; and it also support various faunal and floral species, as a habitat and a movement corridor. In addition to this, the project area also contains a floral species of conservation concern (SCC), known as *Hypoxis hemerocallidea*, is protected in Gauteng as an Orange listed Species. This means that no person may cut, disturb, damage or destroy or possess, collect, remove, transport, export, purchase, sell, donate, or in any other manner acquire or dispose of any protected plant unless he or she is the holder of a permit which authorises him or her to do so.

Based on the above, the clearance of vegetation of the site to accommodate the proposed development is deemed to have a high significant impact that is likely to be permanent prior to the implementation of mitigation. In order to accommodate for the loss of biodiversity within the project area, a Biodiversity Offset is being proposed on the northern portion of the site (which is earmarked as conservation in the Preferred Development Layout Plan (Appendix A2)). The offset ratios used here is based on: National Biodiversity Offset Policy (2017), SANBI, 2014 and DEA & DP (2015). The areas that will need to be offset are the areas with a high sensitivity rating and is still intact Egoli Granite Grassland. Portions of this area is classed as ESA and others as CBA: optimal. With the whole project area being classed as a CR ecosystem and the vegetation classed as CR the ratio would be 30:1, this is decreased as portion of the area is classed as an ESA. Thus, taking the various classifications and habitat features into account, the recommended offset ration would be 20:1. This means that a total area of 2.24 Ha will be lost which means a total area of 44.8 Ha will need to be offset.

In terms of the impacts associated with the identified wetland (seep - HGM 1), the recommended post-mitigation buffer zone calculated at 30 m must be adhered to and should be demarcated as a no-go area during the construction phase of the proposed development. It is also noteworthy that the identified wetland (seep - HGM 1) is located with the northern portion of the site which is earmarked as conservation in the Preferred Development Layout Plan.

It is of the utmost importance that the mitigation measures as proposed in the BAR, Wetland and Biodiversity Report, Biodiversity Offset Report and EMPr are effectively implemented as potential impacts associated with the development can be reduced to an acceptable levels.

The proposed development will also have a positive impact in terms of its socio-economic benefits as it will provide employment opportunities during the construction phase and will also add to the local and regional economy; provision of residential units to qualifying beneficiaries which in turns assists in reducing the housing backlog within the province.

Table 14 considers both the advantages and disadvantages of the proposed development.



Table 14: Advantages and	Disadvantages of the	proposed development

Advantages	Disadvantages
The proposed housing development will assist in	Property value of surrounding home/landowners may
reducing the housing backlog of the City of	decrease.
Johannesburg Metropolitan Municipality.	
The proposed development will assist in reducing the establishment of informal settlements within the City through the provision of affordable housing opportunities.	The clearance of 2.41 ha of environmental sensitive area.
Basic services such as water and sanitation will be provided.	
Employment opportunities during the construction phase.	
Optimal development on the site will reduce security risks and prevent illegal dumping.	
The rehabilitation of 1.6ha of the project area as well as the rezoning of this rehabilitated area from residential to conservation. The offset plan also include the financial provision for the maintenance of the rehabilitated area.	

Alternative 1: Alternative Layout 1

It should be noted that the impacts associated with Alternative Layout 1 was collectively assessed with that of the Preferred Layout as both layouts are proposed on the same site under the same environmental conditions. The Preferred layout and Alternative Layout 1 differ in the number of residential units and housing typologies. Alternative Layout 1 also proposes to construct 3-4 storey residential units on the northern portion of the site whereas as the Preferred Layout has earmarked this portion of the site as conservation.

Alternative 2

No-go (compulsory)

The no-go option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the Competent Authority decline the application, the 'No-Go' option will be followed, and the status quo of the site will remain.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

Impact	Significance rating of impacts before mitigation (positive or negative)	Significance rating of impacts after mitigation	
CONSTRUCTION PHASE - DIRECT IMPACTS			
Impact of development on natural drainage patterns, caused by surface clearance and associated decrease of vegetation cover, leading to increased surface runoff and erosion.	Low (Negative)	Low	
Destruction of, and fragmentation of, portions of the vegetation community.	High (Negative)	Medium	
Loss of floral species of conservation concern, <i>Hypoxis hemerocallidea</i>	Medium (Negative)	Low	
Displacement of faunal community due to habitat loss, disturbance (noise, dust and vibration) and/or direct mortalities.	Medium (Negative)	Low	
Introduction and encroachment by alien invasive species.	Medium (Negative)	Low	
Impact on surrounding vegetation	Medium	Low	



during another to a collection of	(NI	
during construction (e.g. collection of firewood, veld fires, etc.)	(Negative)	
Increased bare surfaces, floodpeaks and potential for erosion.	Medium (Negative)	Low
Soil pollution (cement powder, diesel,	Medium	Low
oil etc.) during construction Dust pollution due to exposure to	(Negative) Medium	
loose soils. Soil stockpiles that are left unattended	(Negative) Medium	Low
during construction.	(Negative)	Low
Surface and Subsurface Drainage.	Medium (Negative)	Low
Water quality impacts (sedimentation and turbidity) on wetland system	High	Medium
Contamination of wetlands due to leaks and spillage from construction machinery, equipment and vehicles. Contamination and eutrophication of	(Negative) Medium (Negative)	Low
wetland systems with human sewerage and litter. Impact on sites with valuable	Low	
archaeological, history and cultural significance	(Negative)	Low
Construction activities on the proposed development may pose various risks to workers safety.	Medium (Negative)	Low
Sense of place	Medium (Negative)	Low
Influx of migrant workers during the construction phase of the development.	Medium (Negative)	Low
Impact on crime /community safety	Medium (Negative)	Low
Impact on the local and regional economy through contracting and sub-contracting	Medium (Positive)	High (Positive)
Direct employment opportunities are anticipated to occur through the employment of construction workers	Medium (Positive)	Medium (Positive)
Additional demand for basic services and social services.	Medium (Negative)	Low
Capacity of road network to handle traffic due to construction activity/vehicles.	Low (Negative)	Low
Possibility of increased number of road accidents due to increased traffic volumes. Accident risk may be highest at the point where the site is accessed from.	Low (Negative)	Low
Increased soil erosion due to increased quantity and flood peak intensity of stormwater flow, most significantly at stormwater outlets.	Medium (Negative)	Low
Increase in air pollution (dust) during construction (e.g. construction vehicles, excavation, earthworks, burning of waste products etc.).		
Some phases of construction may cause odours that are detective over some distance (e.g. burning of plastic containers and bags).	Medium (Negative)	Low
Impact on the ambient air quality due to vehicle tailpipe emissions from increased traffic volumes.		
Increase in ambient noise level affecting surrounding properties during construction.	Medium (Negative)	Low
Visual impact of development on landscape.	Medium (Negative)	Low
Impact of lighting on surrounding	Medium	Low



properties, including light trespass and over-illumination. Apart from	(Negative)	
being a visual impact, over-		
illumination is also a waste of energy		
	JCTION PHASE - INDIRECT IMPA	стѕ
Indirect job creation (e.g. building	Medium	Medium
suppliers) and induced job creation	(Positive)	(Positive)
(broader local economy).	(i ositive)	(i ositive)
OPERA	TIONAL PHASE – DIRECT IMPACT	TS
Introduction of pest species (e.g. rats	Medium	
and flies) due to the new habitats	(Negative)	Low
that's created in the waste containers.	, ,	
Loss of vegetation and floral species of conservation concern (<i>Hypoxis</i>	Medium	Low
hemerocallidea)	(Negative)	LOW
Potential leaks from sewage leaking	Medium	
into the surrounding environment.	(Negative)	Low
Increase in inputs (sediment, turbidity,	, v	
nutrient, toxic organic contaminants,	Medium	Low
heavy metal contaminants)	(Negative)	
Soil erosion due to stormwater runoff	Medium	Low
caused by paved areas.	(Negative)	LOW
Surface and Subsurface Drainage	Medium	Low
Ourrace and Oubsurface Drainage	(Negative)	Low
Traffic	Medium	Low
	(Negative)	
Increase in demand of services	Medium	1
delivery (water, sanitation, waste	(Negative)	Low
disposal).	Medium	
Sense of place	(Negative)	Low
Influx of migrant workers may remain	Medium	
during the operational phase.	(Negative)	Low
	Medium	Lem
Impact on crime.	(Negative)	Low
Impact on the local and regional	Low	High
economy through contracting and	(Positive)	(Positive)
sub-contracting. During the operational phase, direct		
employment creation is anticipated		
through the following activities: (i)	Medium	
cleaning and maintenance of the	(Positive)	Medium
building, (ii) safety and security and		
(iii) building management.		
Impact on basic services, social	Medium	Low
facilities, and economic infrastructure.	(Negative)	LOW
OPERAT	IONAL PHASE – INDIRECT IMPAC	CTS
Capacity of power grid to supply	Low	Law
electricity to the proposed	Low (Negative)	Low
development.	· · · · · · · · · · · · · · · · · · ·	
Indirect employment creation	Medium	Medium
' '	(Positive)	
Fluctuation in property value in	Medium	Medium
surrounding areas.	(Negative)	

For alternative: Alternative Layout 1

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

The preferred activity is the construction of residential units together internal services and open space land uses. As indicated in the above impact assessment tables, the preferred layout has predominantly low significant impacts with the implementation of the prescribed mitigation measures.



7. SPATIAL DEVELOPMENT TOOLS

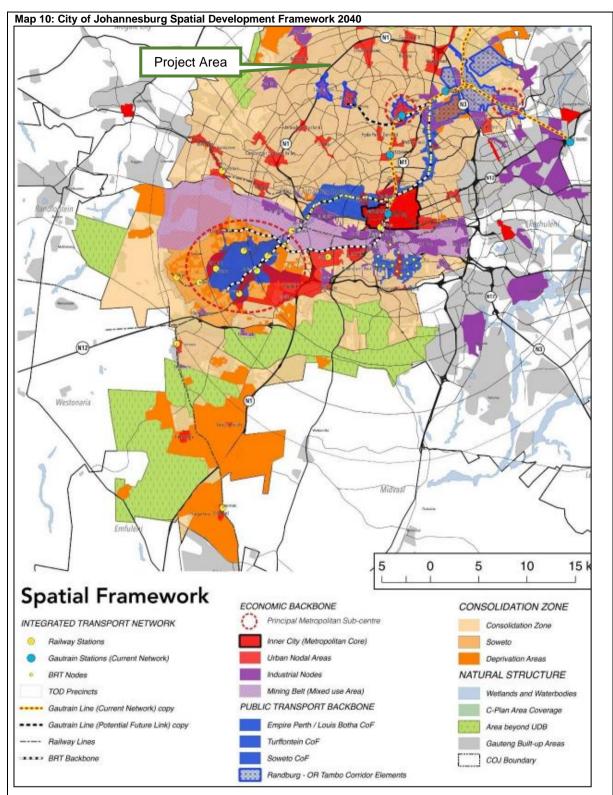
Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

City of Johannesburg Spatial Development Framework 2040, 2016/2017

According to the CoJ SDF 2040, the project area falls within a "Consolidation Zone" as indicated in Map 10 below. A Consolidation Zone is defined as follows: 'This area (neither within the Transformation Zone, nor outside the urban development boundary) is viewed as a focus of urban consolidation, infrastructure maintenance, controlled growth, urban management, addressing backlogs (in social and hard infrastructure) and structural positioning for medium to longer term growth. The policy intent in these areas would be to ensure existing and future development proposals are aligned as far as possible with the broader intent of the SDF, specifically in terms of consolidating and diversifying development around existing activity nodes and public transport infrastructure. In this broad area, new development that does not require bulk infrastructure upgrades should be supported, however underserviced parts of the city (informal settlements and marginalised areas) should receive investment.'

It can be seen as an established suburban built-up area within the Consolidation Zone. In these areas, the focus is to 'create liveable lower to medium density suburban areas that are well-connected to areas of higher intensity through transit infrastructure, without the need for additional investment in service infrastructure. Large vacant or under-developed land portions within these areas will only be released for development subject to stringent conditions related to sound growth management principles.'





Source: CoJ SDF 2040, 2016

Gauteng Conservation Plan (Version 3.3)

The Gauteng Conservation Plan (Version 3.3) classified areas within the province on the basis of its contribution to reach the conservation targets within the province. These areas are classified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) to ensure sustainability in the long term. The CBAs are classified as either 'Irreplaceable' (must be conserved), or 'Important'.

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



ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then biodiversity targets cannot be met

Map 11 below depicts that the proposed site contains both Critical Biodiversity Areas (CBAs) as well as Ecological Support Areas (ESAs) in terms of the Gauteng C-Plan Version 3.3. It should be noted that as indicated preferred development layout (**Appendix A2**), the segment of the site that contains CBAs will be earmarked for conservation.

Map 11: Gauteng Conservation Plan 3.3

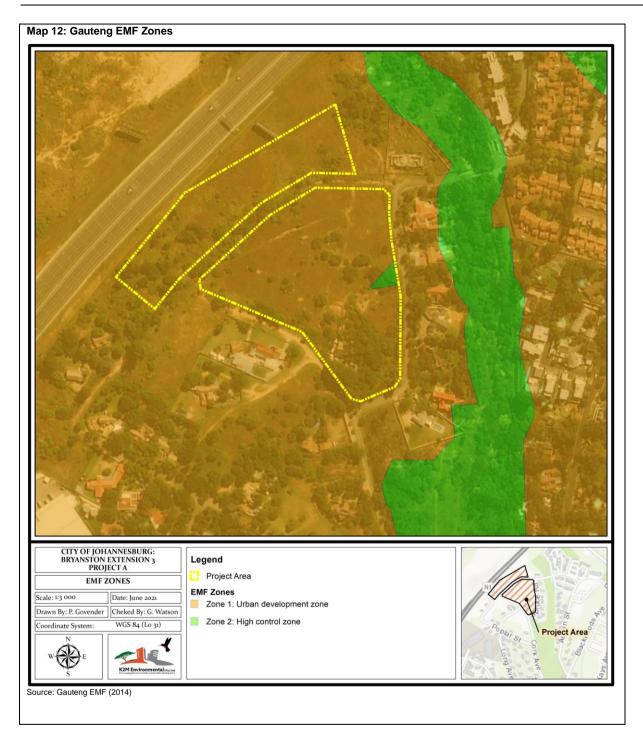


Source: SANBI BGIS

Gauteng EMF

Map 12 below clearly depicts the Gauteng EMF Zones that are located within the proposed site. Majority of the site falls within Zone 1: Urban Development Zone and a small eastern portion of the site falls within Zone 2: High Control Zone of the Gauteng Environmental Management Framework.





8. RECOMMENDATION OF THE PRACTITIONER

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



If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

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



The following pertinent conditions for inclusion in the Environmental Authorisation are recommended:

- Appointment of an ECO to monitor compliance with the Environmental Authorisation and the approved EMPr
- All mitigation measures provided in Appendix G1 G11 of the BAR are to be adhered to.
- The Traffic Impact Assessment for the proposed development must be approved by the JRA.
- Some of the specialist mitigation measures and recommendations are listed below:

Wetland and Vegetation Recommendations and Mitigation Measures:

- · Wetland and buffer areas to be avoided.
- Sediment traps must be installed together with erosion monitoring in and around the project area.
- Implementation of soft or green stormwater management measures.
- Off-site equipment vehicle fuelling and maintenance, storage in bunded area, no on-site fabrication, oil spill kits, equipment & vehicle inspections.
- A proper stormwater management plan must be incorporated, which includes attenuation ponds that not only
 diffusely releases flows into the river system, but also assimilates toxicants by means of bioretention.
- Strict rules must be incorporated to residents regarding the disposal of refuse, dirty water and washing cars within the property.
- · Leaks and pipe bursts relevant to sewerage systems are unlikely, but possible.
- An action plan must be implemented to react on burst pipes and potential sewerage leaks.
- It is preferred that the wetland and buffer areas be avoided. In the event the system is not avoided, the level of significance for residual impacts must be determined in order to establish the need for compensation.
- Terrestrial biodiversity for the project area is rated as "very high sensitivity" according to the Environmental Screening Tool (https://screening.environment.gov.za/screeningtool/#/pages/welcome). Findings from the biodiversity offset report (June 2021) must be considered for the authorisation process to provide for compensation.
- The proposed development will not directly impact the identified wetland system. It is recommended that the stormwater management plan ensure that all dirty water within the development area is contained and not discharged, unless treated. Further to this, no hydrological alterations to the wetland system are permitted.
- Despite any level of risk, owing to the fact that this project will include the installation and operation of sewerage pipelines to accommodate the proposed development, a water use license will be required.

Geotechnical Recommendations and Mitigation Measures:

Material Usage

The soils include hillwash, pebble marker/talus and residuum. These layers are underlain by completely to highly weathered granite.

NHBRC Classification

The site is underlain by potentially collapsible colluvium (C), which is underlain by a potentially collapsible residual granite. These assumptions coupled with the layer thickness and existing rock outcrop have led to the suggestion that this site can be represented by NHBRC classification: C2/R. This signifies a cumulative potential collapse of >10 mm, and possible difficult excavation (R) to 1.5 m in the southern portion of site.

Foundations

The NHBRC Site Classification based on test pit logs excavated over the site can be mitigated by the following foundation options:

- Stiffened strip footings or RC raft.
- Compaction of in situ soils below individual footings.
- Deep strip footings below potentially collapsible layer and fabric reinforcement in the floor slabs.
- Soil raft.
- Normal foundations (Site Class C and R only).

Excavatability and Earthworks

All materials on site classify as SOFT excavation (SABS 1200 D) to depths ranging between 1.4 m and 3.2 m with an average depth of around 2.8 m. Below this depth, INTERMEDIATE to HARD excavation is to be anticipated due to weathered granite bedrock which has been identified in the southern portion of site.

Drainage

For the promotion of a stable site, with no soil movement-related issues (settlement and/or heave), it is extremely important that adequate drainage, both surface and subsurface, be constructed so that no water ingress into the subsurface soils in and around foundation bases is possible. Drainage should be such that any rainfall is diverted to the nearest stormwater drainage system. Areas of potential pooling or damming of rainfall on site should be carefully designed and sloped so as the remove this water away from the foundations.

SAHRA Recommendations and Mitigation Measures:

• If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics,



bones, stone artefacts, ostrich eggshell fragments and charcoal/ash concentrations) or palaeontological remains are found during the proposed activities, SAHRA must be alerted immediately, and a professional archaeologist or palaeontologist, based on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of significance a Phase 2 rescue operation might be necessary.

 If any unmarked human burials are uncovered and the archaeologist called in to inspect the finds and/or the police find them to be heritage graves, mitigation may be necessary and the SAHRA Burial Grounds and Graves (BGG) Unit must be contacted for processes to follow.

<u>Traffic Impact Assessment Recommendations and Mitigation Measures for Public Transport, NMT and Traffic Calming:</u>

- The recommendations for public transport and NMT are made in consideration of the other developments proposed in the area. These developments include Bryanston Extension 3, Projects B, C and D. The following recommendations should be provided from an NMT and public transport perspective:
 - The public transport (minibus-taxi) route to go from North St, going along Long St and Poplar St; and then to North St via Cork Ave. A secondary route will extend via Cork Ave, Spruce St, Cedar Ave towards Jacaranda and Cumberland Ave which must serve the scholars.
 - A layby is to be provided on the northern side of Poplar St, 20 m before it intersects with Cork Ave. A minibus-taxi
 stop should be provided on the western side of Cork Ave some 20 m south of Spruce St. Since the traffic flow is
 2 vehicles per minute, it is proposed that the minibus-taxi stop in the roadway of Cork Ave to load/ offload
 passengers on the paved sidewalk.
 - Provision of a paved 1,8 m wide paved sidewalk on one side of Cork Ave and Poplar St due to the usage of public transport. The sidewalk leads to laybys on Poplar St. A sidewalk should also be provided along the eastern side of Cork Ave from the pedestrian access of Bryanston Project B to the midblock yield controlled pedestrian crossing.
 - Provision of a raised pedestrian crossing for pedestrians crossing Cork Ave from Bryanston Project B. to where the laybys are located.
 - It is recommended that lighting along Cork Ave and Poplar St be provided to ensure that safety and security is enhanced for all NMT users of the new housing development.
 - Traffic calming measures (speed humps, road signs, speed restriction) to be implemented for the safety of NMT
 users on Cork Ave and Poplar St. This should all be done according to Johannesburg Road Agency (JRA)'s
 standards.
- The extension (tarring) of Cork Ave from Spruce St to the entrance of Bryanston Project D (erf 3927) with the cul-desac being a hammer head to JRA specifications, is also required to access Bryanston Project B and will be required for Bryanston Project A.
- The recommendations for public transport (PT) routing will mainly be minibus-taxis since the geometry of the Class 5 roads in the area is not suitable for buses.

9. THE NEEDS AND DESIREBILITY OF THE PROPOSED DEVELOPMENT (AS PER NOTICE 792 OF 2012, OR THE UPDATED VERSION OF THIS GUIDELINE)

Needs and Desirability

The implementation of the housing development will reduce the housing backlog within the Gauteng Province as the proposed land for development can include approximately 260 residential units. Due to the variety of economic opportunities and the rapid urbanisation that takes place within Gauteng, there is often high numbers of migrants that enter into the province in search of employment opportunities and improved standards of living. This in turn leads to an increase in the demand for suitable housing as well as the provision of basic services such as water supply and sanitation.

In addition to the above, the proposed development will assist in combating issues such as illegal land invasion, service delivery protests, overcrowding in townships, outbreak of diseases and the construction of informal dwellings within environmentally sensitive areas. Furthermore, the construction phase of the proposed development will provide an opportunity for employment to the surrounding community and will in turn contribute to the local economy and improved standards of living.

It should further be noted that a Market Research and Socio-Economic Study (**Appendix G5**) was undertaken for the proposed development which found that there is a demand for a social housing residential development in the market area. The demand for primary market social housing units is 163 units in 2021 and is expected to grow to 768 units by 2025. The demand for secondary market social housing units is 160 units in 2021 and is expected to grow to 806 units in 2025. High-density typology is encouraged for all the recommended social housing categories, with some medium density for affordable housing to provide as many units as possible on the site.

1. Is the activity permitted in terms of the property's existing land use rights?

NO

The property will be rezoned from Residential 1 to accommodate the high-density housing development.



2. Will the activity be in line with the following?	
(a) Provincial Spatial Development Framework (PSDF)	YES
The proposed development addresses two spatial principles, namely the Principal of Sustainable Communities of Spatial Concentration. The proposed development will provide subsidised housing units which will include n such as water and sanitation.	
(b) Urban edge / Edge of Built environment for the area	YES
The project area is currently zoned as "Residential 1" as per the City of Johannesburg Land Use Scheme, 2018.	
	1
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES
According to the CoJ SDF 2040, the project area falls within a "Consolidation Zone." A Consolidation Zone is d 'This area (neither within the Transformation Zone, nor outside the urban development boundary) is viewed as consolidation, infrastructure maintenance, controlled growth, urban management, addressing backlogs (in infrastructure) and structural positioning for medium to longer term growth. The policy intent in these areas we existing and future development proposals are aligned as far as possible with the broader intent of the SDF, sp of consolidating and diversifying development around existing activity nodes and public transport infrastructure.'	a focus of urban social and hard ould be to ensure
(d) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	NO
The Gauteng Provincial Environmental Management Framework has been used to assist in the determination mitigation measures. According to the Gauteng EMF, majority of the site falls under Zone 1: Urban Development Portion of the site in Zone 2: High Control Zone (inside Zone 1).	
(e) Any other Plans (e.g. Guide Plan)	YES
Please refer to the specialist studies undertaken for the proposed development.	
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES
Please see above (2c).	
	1
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)?	YES
The implementation of the housing development will assist in reducing the establishment of informal settlement housing backlog within the City of Johannesburg. The proposed development will also include the construction and proper sanitation infrastructure.	is and reduce the of water networks
F. As the constant of the demands are site as well-black to the time of any limited and	
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?	YES
There are existing municipal pipelines surrounding the project area, however internal infrastructure within the si constructed/ installed to accommodate the proposed development.	ite will need to be
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?	YES
The Gauteng Department of Human Settlements will be responsible for the construction of the proposed residen	tial units.



Is this project part of a national programme to address an issue of national concern or YES Throughout the country, there are many people without proper housing structures and access to basic services. The aim of this development is therefore to reduce the establishments of informal settlements and construct affordable housing units and associated infrastructure. Do location factors favour this land use (associated with the activity applied for) at this place? YES (This relates to the contextualisation of the proposed land use on this site within its broader The proposed site is currently vacant. All environmentally sensitive areas will be demarcated and included into the development layout. The loss of biodiversity as a result of the proposed development will be compensated for by undertaking a Biodiversity Offset (see Appendix G4 for the Biodiversity Offset Report) Furthermore, the proposed development will be adjacent to existing residential land uses. Will the benefits of the proposed land use/development outweigh the negative impacts of it? YES The purpose of this development is to address the City's housing backlog and need for more houses due to the expanding population and urbanisation. 10. Will the proposed land use/development set a precedent for similar activities in the area (local YES municipality)? There are many other proposed housing developments in the City of Johannesburg currently. 11. Will any person's rights be negatively affected by the proposed activity/ies? NO This development will not infringe on any person's rights, as the proposed development will entail the construction of housing which can meet of suitable beneficiaries. 12. What will the benefits be to society in general and to the local communities? Provision of housing opportunities Access to municipal services such as water and sanitation. Job creation during the construction phase Prevent illegal occupation of the land which will affect the surrounding communities Prevention of illegal dumping

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

Approximately 10 years from the date of issue of the Record of Decision.

Prevention of informal settlements

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) (MUST INCLUDE POST CONSTRUCTION MONITORING REQUIREMENTS AND WHEN THESE WILL BE CONCLUDED.)

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

EMPr attached YES – Refer to **Appendix H**



SECTION F: APPENDIXES

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

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

- Appendix A: Site plan(s) (must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)
- Appendix B: Photographs
- Appendix C: Facility illustration(s)
- Appendix D: Route position information
- Appendix E: Public participation information
- Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information
- · Appendix G: Specialist reports
- Appendix H: EMPr
- Appendix I: Other information

CHECKLIST

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

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