



Eco Route

ENVIRONMENTAL CONSULTANCY
REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

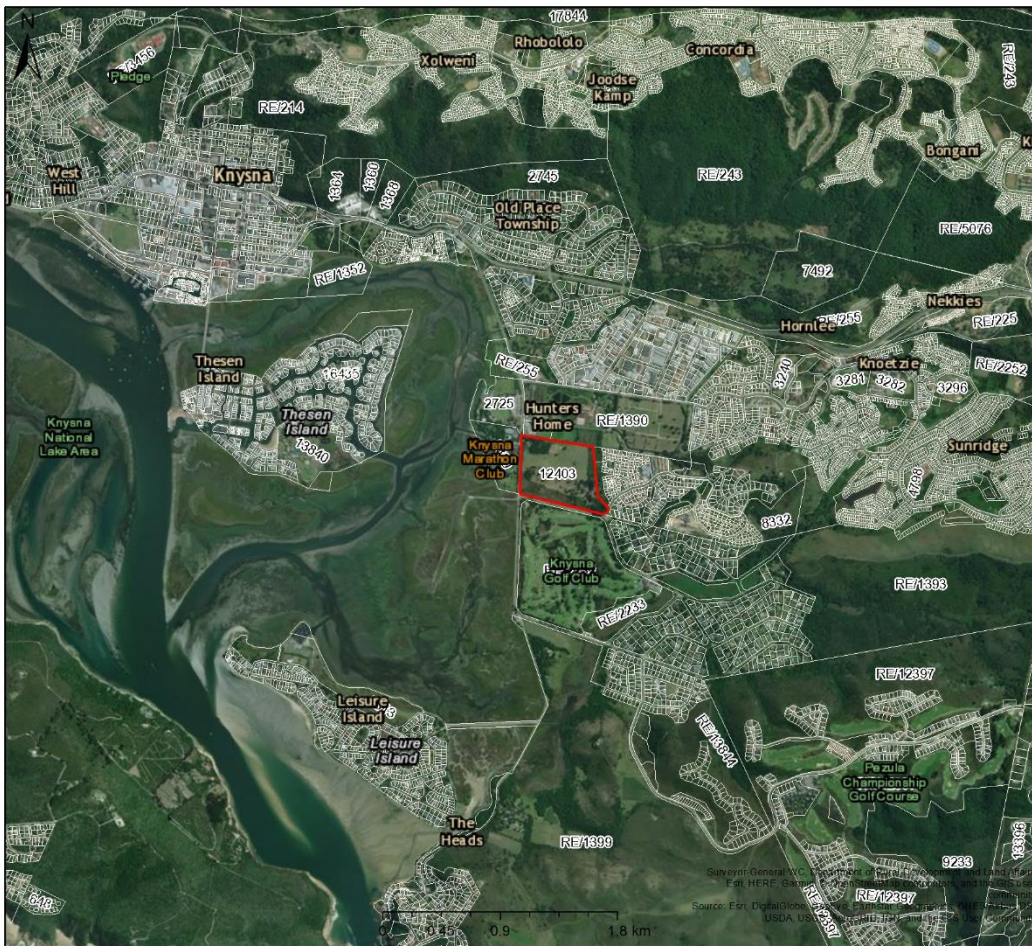
Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

In terms of the **National Environmental Management Act (Act No. 107 of 1998, as amended)** & 2017 Environmental Impact Regulations for:

The Proposed Construction of a Mixed Use, Sport, Adventure and Tourism Development on Erf 12403, George Rex, Knysna



Locality

Legend

Lat: -34.051187 | Lon: 23.073764
SG Erf Info

Erf Nr: 12403
Area (SQM): 194071.8
SG Code: C03990050001240300000
SG Region: KNYSNA
Legal Status: Registered

PROPERTY BOUNDARY

Scale: 1:36 112

Date created: February 18, 2019

Compiled with CapeFarmMapper



Western Cape
Government

Agriculture

PREPARED FOR THE APPLICANT:

PREPARED BY:

AUTHOR:

DATE:

JAZZ SPIRIT 130 (PTY)LTD

ECO ROUTE

JANET EBERSOHN EAPASA REF: 2019/1286

20/11/2021



ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS:

Appendix 4 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Management Programme (EMP). The table below serves as a summary of how these requirements were incorporated into this EMPR:

(1) An EMPr must comply with section 24N of the Act and include:-

<p>(a) Details of –</p> <ul style="list-style-type: none"> (i) The EAP who prepared the EMPr; and (ii) The expertise of the EAP to prepare an EMPr, including a curriculum Vitae; 	Section 1 and Appendix D
<p>(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;</p>	Section 1
<p>(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;</p>	Appendix C
<p>(d) A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including –</p> <ul style="list-style-type: none"> (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities; 	Section 2, 3 & 6
<p>(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to –</p>	Section 2, 3 & 6



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<ul style="list-style-type: none"> (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practises; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable; 	
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 2, 3, 5 & 6
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 5 & 6
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 5
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 6
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 5 & 6
(l) a program for reporting on compliance, taking into account the requirements as prescribed by Regulations;	Section 6
<p>(m) an environmental awareness plan describing the manner in which –</p> <ul style="list-style-type: none"> (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be DFFElT with in order to avoid pollution or the degradation of the environment; and 	Section 5 & 6
(n) any specific information that may be required by the competent authority.	



Glossary of Terms

BAR	Basic Assessment Report – A tool used by the EAP to submit to the competent authority if listed activities is triggered in Regulations GNR 327 and GNR 324 as per NEMA to make a decision regarding a proposed development.
DFFE	Department of Environmental Affairs – the national authority for sustainable environmental management and integrated development planning.
DFFE&DP	Department of Environmental Affairs and Development Planning – the provincial authority for sustainable environmental management and integrated development planning.
CBA	CBA Critical Biodiversity Area – Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.
EAP	<p>Environmental Assessment Practitioner – An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2) must –</p> <ul style="list-style-type: none"> (a) be independent. (b) Have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these regulations and any guidelines that have relevance to the proposed activity. (c) Ensure compliance with these Regulations (d) Perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application. (e) Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; and (f) Disclose to the proponent or applicant, registered and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing – <ul style="list-style-type: none"> i. Any decision to be taken with respect to the application by the competent authority in terms of these regulations; or ii. The objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority; unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority. <p>(2) In the event where the EAP or specialist does not comply with sub regulation (1)(a), the proponent or applicant must, prior to conducting public participation as contemplated in chapter 5 of</p>



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e-mail: janet@ecoroute.co.za

	<p>these regulations, appoint another EAP or specialist to externally review all work undertaken by the EAP or specialist, at the applicants cost.</p> <p>(3) An EAP or specialist appointed to externally review the work of an EAP or specialist as contemplated in sub regulation (2), must comply with sub regulation (1).</p>
ECO	Environmental Control Officer – A site agent who needs to ensure that all environmental authorisation and conditions are adhered to during the construction phase of the project
EMPr	Environmental Management Programme – can be defined as “an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced”.
ESA	Ecological Support Area – Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of Pas or CBAs, and are often vital for delivering ecosystem services.
MMP	Maintenance Management Plan – means a maintenance management plan for maintenance purposes defined and adopted by the competent authority
NEMA	National Environmental Management Act (Act 107 of 1998) as amended 2017 – national environmental legislation that provides principles for decision-making on matters that affect the environment.
PA	Protected Area - A protected area is an area of land or sea that is formally protected by law and managed mainly for biodiversity conservation. Protected areas recognised in the National Environmental Management: Protected Areas Act (Act 57 of 2003) (hereafter referred to as the Protected Areas Act) are considered formal protected areas in the NPAES. This is a narrower definition of protected areas than the International Union for Conservation of Nature (IUCN) definition. ¹ The NPAES distinguishes between land-based protected areas, which may protect both terrestrial and freshwater biodiversity features, and marine protected areas.



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APPENDIX C – ENVIRONMENTAL SENSITIVE MAPS

APPENDIX C – EAP QUALIFICATIONS AND CV

1. INTRODUCTION

Eco Route Environmental Consultancy has been appointed by the proponent Jazz Spirit 130 (Pty)Ltd to prepare an Environmental Management Programme (EMPr).

It is proposed to develop a mixed use development, with access to the northwest off George Rex Drive and an alternative access onto Howard Street to the south. The purpose of this development is to have a “sport; adventure and tourism” focus. The proposal will consist of a high-performance aquatic centre, a sport’s village (for accommodation for athletes and supporters), sports-orientated retail and professional services: physio-therapists, biokineticists, gym, massage, sport psychology, etc.

The proposed development will consists of the following mixed uses:

- 1 x “General Residential Zone III” portion (flats / sports village);
- 1 x “General Residential Zone V” portion (hotel);
- 5 x “Business Zone I” portions;
- 1 x “Business Zone II” with consent use for a ‘Place of Assembly’ portion;
- 2 x “Open Space Zone II” portions;
- 1 x “Open Space Zone III” portion;
- 1x Transport Zone II portion;

1.1 SITE DESCRIPTION

Location Information

Province:	Western Cape
District Municipality:	Garden Route Municipality
Local Municipality:	Knysna Municipality
Ward number(s):	Ward 9
Nearest town(s):	Knysna
Erf name(s) and number(s):	Erf 12403

Property Information

Erf Number	Erf 12403
Surveyor General 21 digit code:	C03900050001240300000
Zoning:	Undetermined
Urban Edge:	Yes
Applicant name:	Jazz Spirit 130 (Pty)Ltd



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Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Registration number (if applicant is a company):	2003/022155/07
Trading name (if any):	Jazz Spirit 130 (Pty)Ltd
Responsible person name:	Andries Adriaan Fourie
Applicant/ Responsible person ID number:	740606 5007 08 2
Responsible position, e.g. Director, CEO, etc.:	Director
Physical address of applicant:	6 Fish Eagle Drive. Belvidere Heights, Knysna 6571
Postal address:	P.O. Box 479, Knysna,
Postal code:	6570
Telephone:	082 925 4886
Fax:	086 402 9562
E-mail:	andries@kdpj.co.za
GPS point middle of property:	-34°052121 23°72477

Property Description

Erf 12403 is situated within the Knysna Municipal Area and is located directly West of George Rex Drive, between Marlin Street to the North and Howard Street to the South. The property is 19,4069ha in extent.

The George Rex Wetland is located on a very shallow gradient slope that was once linked directly with the Knysna Estuary. This type of flat wetland, dependent on a local or regional groundwater table, is not a typical valley bottom, surface water driven wetland type.

The entire property is elevated 2 to 3m above mean sea level and was historically within the associated floodplain of the estuary.

There has been a long history of impacts associated with the dumping of sawdust, invasion of alien trees and obstruction of the natural flow of fresh and estuarine water onto the property, as well as elevated nutrient inflows from the adjacent catchment and nearby Waste Water Treatment Works (WWTW). The wetland has thus been highly modified and is impacted as a result of the above-mentioned activities (Grobler and Belcher, 2009; 2010). The property is currently vacant.



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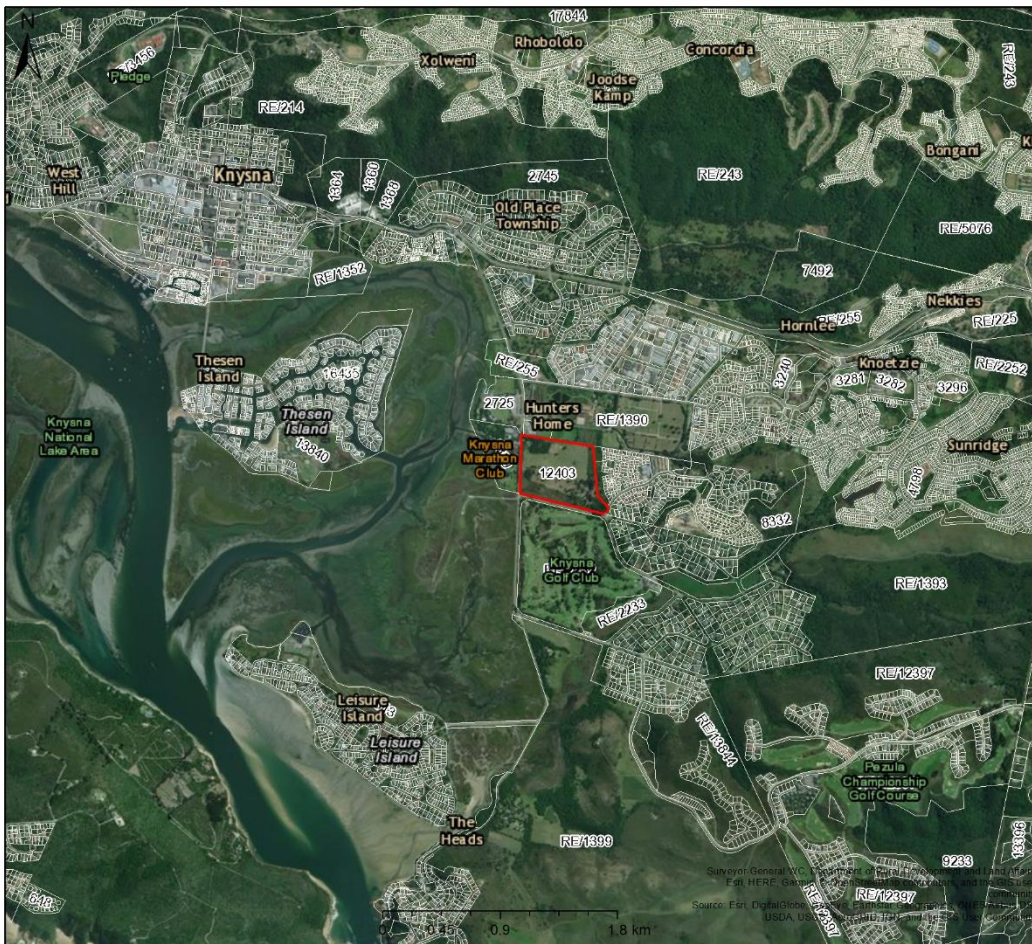
Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

1.2 LOCALITY



Locality

Legend

Lat: -34.051187 | Lon: 23.073764
SG Erf Info

Erf Nr: 12403
Area (SQM): 194071.8
SG Code: C03900050001240300000
SG Region: KNYSNA
Legal Status: Registered

PROPERTY BOUNDARY

Scale: 1:36 112

Date created: February 18, 2019

Compiled with CapeFarmMapper



1.3 PURPOSE OF THE EMPR

The purpose of this EMPR is to ensure that the negative environmental impacts of the proposed activities are managed, mitigated and kept to a minimum during the planning, construction and operation of the proposed upgrading of the slipway. The EMPR focuses on avoiding damage or loss on ecosystems and the services they provide, and to enhance positive environmental impacts where possible.

The EMPR is a living document that is flexible and responsive to new and changing circumstances, however should a change be made within the EMPR permission from DFFE first be obtained.

Once the EMPR is approved by DFFE it is seen as a legal binding document on the following affected parties:

- 1 Project Proponent
- 2 All contractors
- 3 Sub-contractors and construction staff



4 All business during operational phase

Copies of this EMPR must be kept on site and all senior personnel are expected to familiarise themselves with the content of this EMPR.

The EMPR should be updated if required by DFFE should repairs to the upgraded slipway (concrete) be required to be made during the **operational phase**. It is suggested that the EMPR be reviewed on a 5 yearly basis if required.

2. The Proposed Construction of a Mixed Use, Sport, Adventure and Tourism Development on Erf 12403, George Rex, Knysna

2.1 PLANNING PHASE

This draft EMPR is being subjected to a 30 day public participation during the planning phase to ensure that all negative environmental impacts are managed, mitigated and avoided if possible. The draft EMPR will be sent to the following State Departments, Municipalities and Organs of State for comments:

STATE DEPARTMENTS			
Name	Contact Person	Postal Address	HC/CD/L
Department of Agriculture Western Cape	Mr Cor van der Walt	P/Bag X1 Elsenburg 7607	corvdw@elsenberg.com
Department of Agriculture - National		P/Bag X120 Pretoria 0001	info@elsenberg.com Enquiries@daff.gov.za
Department of Agriculture, Forestry & Fisheries	Mss Melanie Koen	P/Bag X12 Knysna 6570	mkoen@environment.gov.za
Department of Economic Development & Tourism- Western Cape	Mr Mark Lakay	P.O. Box 979 Cape Town 8000	mark.lakay@pgw.c.gov.za
Department of Environmental Affairs & Development Planning	Mr Danie Swanepoel Jessica Christie	P/Bag X6509 George. 6530	Danie.Swanepoel@westerncape.gov.za
Department of Provincial Health	Manie Abrahams	P/Bag X6592 George 6530	Manie.Abrahams@westerncape.gov.za
Department of Rural Develop. & Land Reform	Glen Smith	P.O. Box 872 George 6530	ghsmith@ruraldevelopment.gov.za



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Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

District Roads Engineer	John Daniel	Private Bag X12 George 6530	johnd@gardenroute.gov.za
Department of Transport & Public Works	Devlin Fortuin	P/Bag X617 Oudshoorn 6620	Devlin.Fortuin@westerncape.gov.za
Department of Water Affairs	C Abrahams	P/Bag X16 Sanlamhof 7532	cabrahams@bgcma.co.za
South African National Roads Agency	Colleen Runkel	P/Bag X19 Bellville 7535	Runkelc@nra.co.za
Gouritz WMA: BGCMA	Rabokale Mphahlele	Private Bag X16 Sanlamhof Bellville 7532	rmphahlele@bgcma.co.za

ORGANS OF STATE

Name	Contact Person	Postal Address	HC/CD/L
Cape Nature – Western Cape	Meghan Simons	P/Bag 6546, George. 6530	msimons@capenature.co.za
Eskom Western Cape – Land & Rights	Lianne Muller MullerLE@eskom.co.za HansSS@eskom.co.za	P.O. Box 222 Brackenfell 7561	WayleavesWesternOU@eskom.co.za
Heritage Western Cape	C. van Wijk	P/Bag X9067 Cape Town. 8000	info@hwc.co.za calvin.vanwijk@westerncape.gov.za
SANParks	Maretha Alant	P.O. Box 3542 Knysna 6570	maretha.alant@sanparks.org

NGO's

Name	Contact Person	Postal Address	HC/CD/L
Knysna Ratepayers Association	Mr. Ian Uys	P.O. Box 2475, Knysna. 6570	knysna.ratepayers.assoc@gmail.com
Knysna Catchment Management Forum	Johan de Klerk	P.O.Box Knysna 6570	johan.deklerk@sanparks.org
Ward 9 Councillor Knysna Municipality	MSrs Sharon Sabbagh	P.O. Box 21, Knysna.	St.sabbagh@gmail.com



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Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

		6570	
MUNICIPALIES			
Name	Contact Person	Postal Address	HC/CD/L
Knysna Municipality – Environmental Management	Pam Booth	P.O. Box 21 Knysna 6570	pbooth@knysna.gov.za
PUBLIC			
Name	EMAIL ADDRESS		
Lorna Watt - WESSA	lornawatt@telkomsa.net		
Pat Nurse -Chair Lakes Bird Club	jgn@lantic.net		
Roger and Stella Wain-Heapy	rwhbath@btinternet.com		
Chris Gow	chrisandtinx@telkomsa.net		
Dave Edge	orachrysops@gmail.com		
Steve Gettliffe (co-chair KEF) the Knysna Environmental Forum	stebar@barkly.co.za		
Judy Harrison	judyh883@gmail.com		
Lisa Elis	lisa.ellis100@gmail.com		
Julian Lincow	julian@primesecurity.co.za		
Ms. Althea Mason	altheamason@yahoo.com		
Claudia Pirker	pirker@afrihost.co.za		
Ms. Christel Riley Halse	rileyfirestarter@gmail.com		
Bridget O'Meara	omeara@telkomsa.net		
Judy Harrison	judyh883@gmail.com		
Mrs. Penny Foyn	pennyfoyn@yahoo.com		
Mrs. E.E. Pawson	elrob@isat.co.za		
Nadia Miln	nadiah@l2b.co.za		
Marius Kannenberg Hunters Village Home Owners Association	kannenbergmarius@gmail.com		
John Kennedy	jkennedy@telkomsa.net		



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Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Chris Gould Representing: Knysna Ratepayers Association	knysna.ratepayers.assoc@gmail.com
Charles Breen For Chairman, Hunters Village Home Owners Association	breenc39@gmail.com
Terry Cohen	accommodation@restinnknysna.co.za
Boets Smuts	boets@smutsdekokk.co.za
E. Pwason	elrob@isat.co.za
Brenton Rate Payers	brentonratepayers@gmail.com
Charles Breen	breenc39@gmail.com
Yvonne O'Neil	yvonne@mvp.co.za
Siphokazi Hans	HansSS@eskom.co.za
Ecoroqne	ecoroqne@superbia.aserv.co.za
Marius Kanneberg	kannenbergmarius@gmail.com
Rob Stocker	rstocker@knysnaprimary.co.za
	ecohead@westerncape.gov.za
Adrian Morison	morison@webmail.co.za
Heinie Dixon	kea@global.co.za
Noel Bell	pringlebell@cyberperk.co.za
Owen Roberts	ojroberts@telkomsa.net
Mr P van Halderen	vanhalderen@mweb.co.za
Douglas Fleet	douglasfleet@telkomsa.net
	elrob@isat.co.za
Debbie	debbiedv@value.co.za
	agriland@nda.agric.za



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Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Hans	hans@edendem.co.za
Roger Wain-Heapy	rwhbath@btinternet.com
Lisa Ellis	lisa.ellis100@gmail.com
	pirker@afrihost.co.za
Ms. Christel Riley Halse	rileyfirestarter@gmail.com
Ms. Althea Mason	altheamason@yahoo.com
Miss Bridget O'Meara	omeara@telkomsa.net
Mrs. Penny Foyn	pennyfoyn@yahoo.com

All comments and concerns will be addressed in the Draft EMPR before submission to DFFE for authorisation.

2.2 CONSTRUCTION PHASE

The applicant intends to develop a mixed use development, with access to the northwest off George Rex Drive and an alternative access onto Howard Street to the south. The purpose of this development is to have a “sport; adventure and tourism” focus. The proposal will consist of a high-performance aquatic centre, a sport’s village (for accommodation for athletes and supporters), sports-orientated retail and professional services (physio-therapists, biokineticists, gym, massage, sport psychology, etc.

The proposed development will consist of the following mixed uses:

- 1 x “General Residential Zone III” portion (flats / sports village);
- 1 x “General Residential Zone V” portion (hotel);
- 5 x “Business Zone I” portions;
- 1 x “Business Zone II” with consent use for a ‘Place of Assembly’ portion;
- 2 x “Open Space Zone II” portions;
- 1 x “Open Space Zone III” portion;
- 1x Transport Zone II portion; &
- 1x Transport Zone III portion.

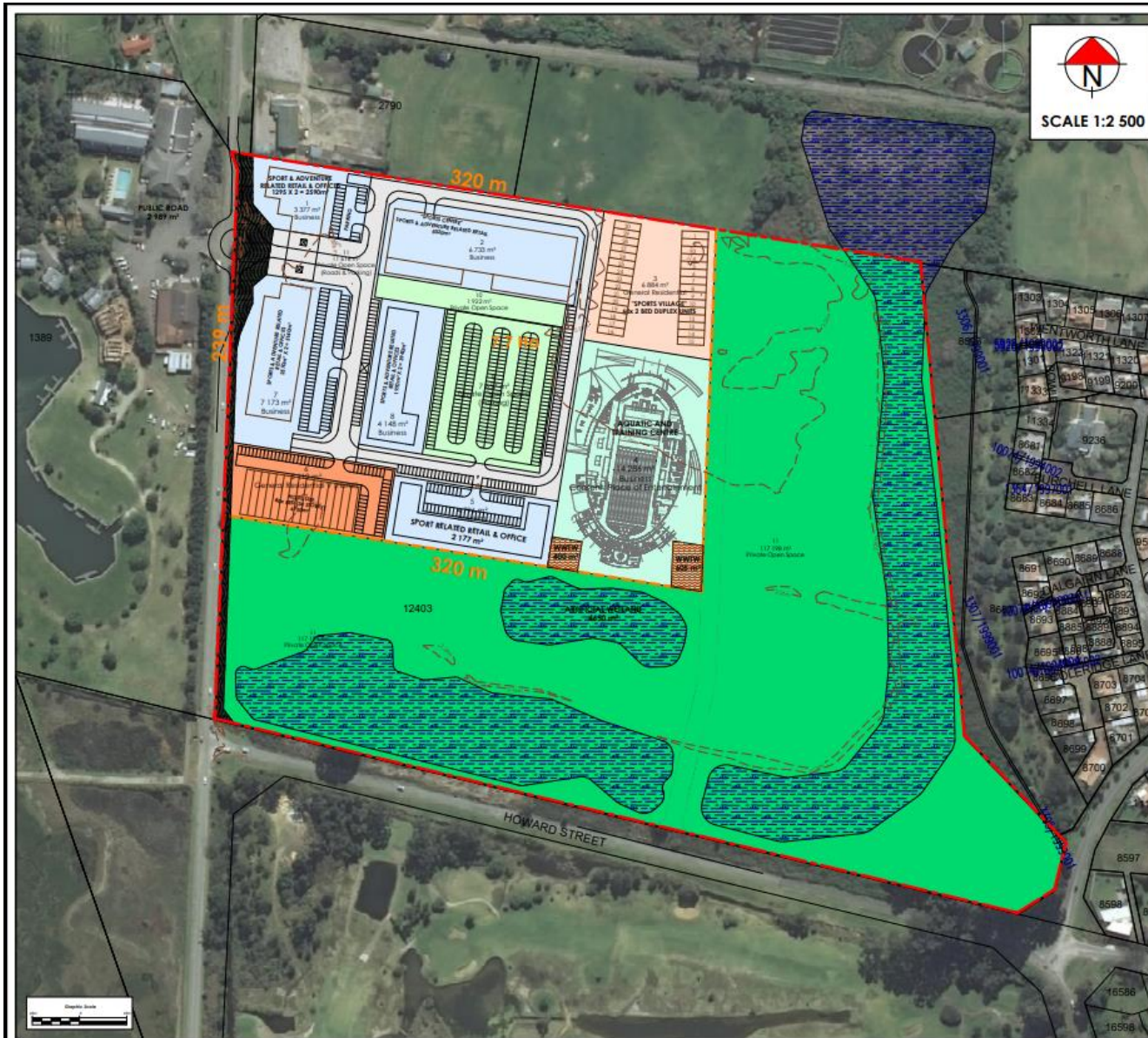


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PLAN 2

**KNYSNA
ERF 12403**

PREFERRED ALTERNATIVE

LEGEND			
ZONING:	QTY	AREA (ha)	%
General Residential Zone III	1	0,6884	3,55
General Residential Zone V	1	0,5112	2,63
Business Zone I	5	2,6227	13,51
Business Zone II & Place of Assembly	1	1,4286	7,36
Open Space Zone II	2	0,9579	4,94
Open Space Zone III	1	11,7198	60,39
Transport Zone III	1	1,1616	5,99
Transport Zone II	1	0,3167	1,63
TOTAL	13	19,4069	100

- NOTES**
- Sizes and dimensions are approximate and subject to final survey.
 - For Property details, refer to SG 8205/1994.
 - 7,7 ha (40%) of site developed, 60% remain undeveloped.
 - 2x servitudes for a WWTW to be created on the Aquatic Centre property (Erf 4).
 - the 2,26m above MSL is regarded as the 1:100yr Flood Line - indicated in brown dotted line

DRAWN:	MV	CHECKED:	MV
PLAN NO:	Pr1153kny12403dp08		
PLAN DATE:	December 2020		
STORED:	z:\drawings\Aapp\Pr1153kny12403DP08.dwg		

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APPROVED IN TERMS OF SECTION 23(1) OF THE KNYSNA MUNICIPALITY'S BY-LAW ON MUNICIPAL PLANNING AS PUBLISHED IN P.N. 7565/2016 ON 12 FEBRUARY 2016

MUNICIPAL MANAGER
DATE: _____

Marius Vreken
URBAN & ENVIRONMENTAL PLANNERS

21 Trotter Street, PO Box 2184
KNYSNA 6574

☎ (044) 382 0420
☎ 086 459 2987
e-mail: marius@vrekens.co.za
www.vrekens.co.za



General Residential Zone

Portion "3" is proposed as "General Residential Zone III" for flats, for the development of a "sports village". This property is 6884m² in extent and allows for approximately 60x 2-bdr flats. The new Integrated Knysna Zoning Scheme Bylaw allows for a 60% coverage for flats.

Portion "6" is proposed as "General Residential Zone V" for a Hotel, for the development of a 3-storey hotel, with approximately 80 beds. This property is 5112m² in extent. The new Integrated Knysna Zoning Scheme Bylaw allows for a 100% coverage for hotels. The hotel portions are positioned to abut the wetland area in order to capitalise on the birdlife and views of the Knysna Lagoon

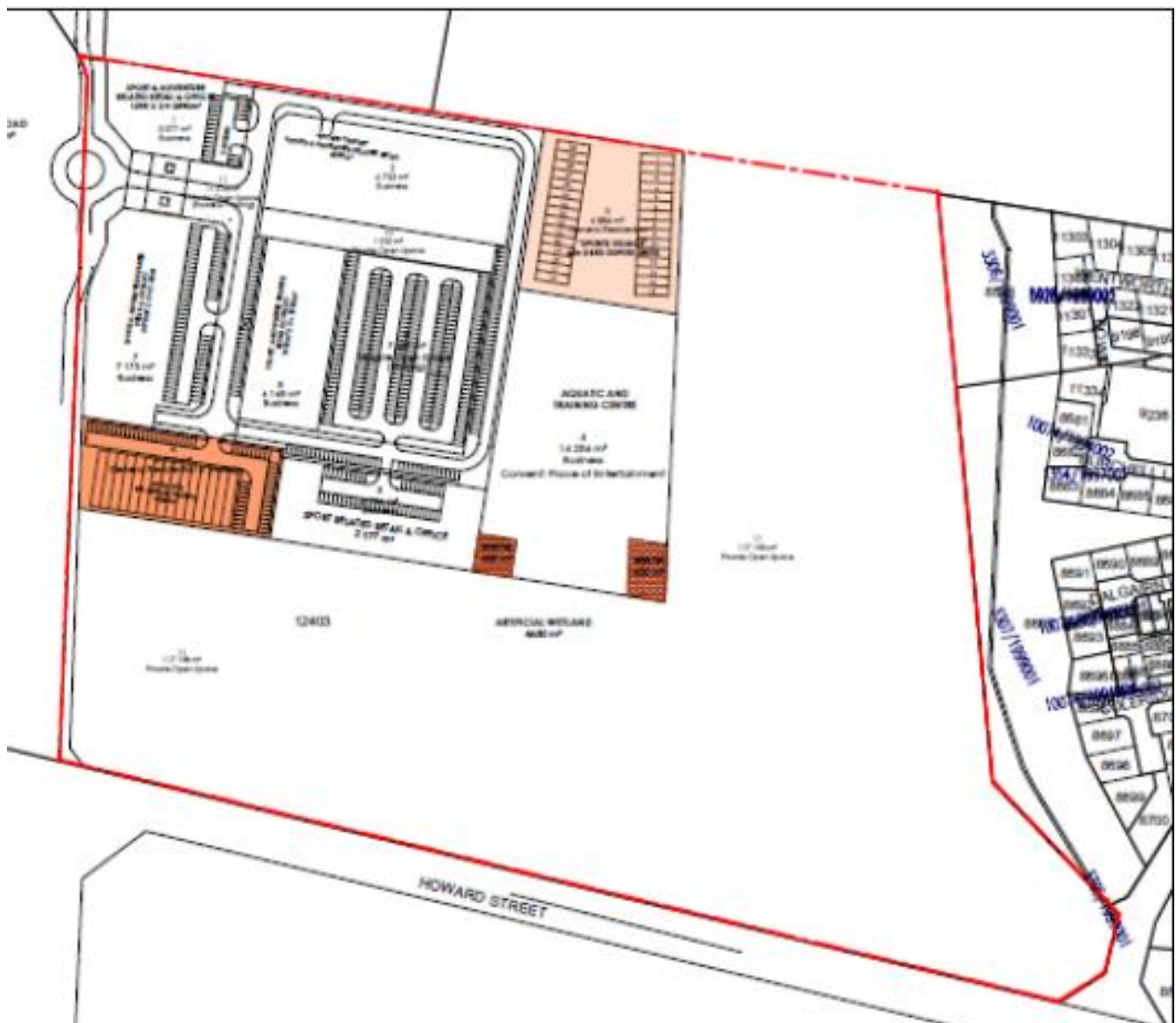


FIGURE 3: GENERAL RESIDENTIAL PROPERTIES



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Business Zone

Five (5) "Business Zone I" properties are proposed. These are indicated as portions "1", "2", "5", "7" and "8" on the site development plan. The extent of the "Business Zone" portions are:

Portion 1	3377m ²
Portion 2	6733m ²
Portion 5	4796m ²
Portion 7	7173m ²
Portion 8	4148m ²

The intention of these properties will be to be developed into sports and wellness-orientated retail and offices / consulting rooms for sport & wellness related Professional services. The Knysna Zoning Scheme Regulations allows a 100% coverage for business zoned properties.

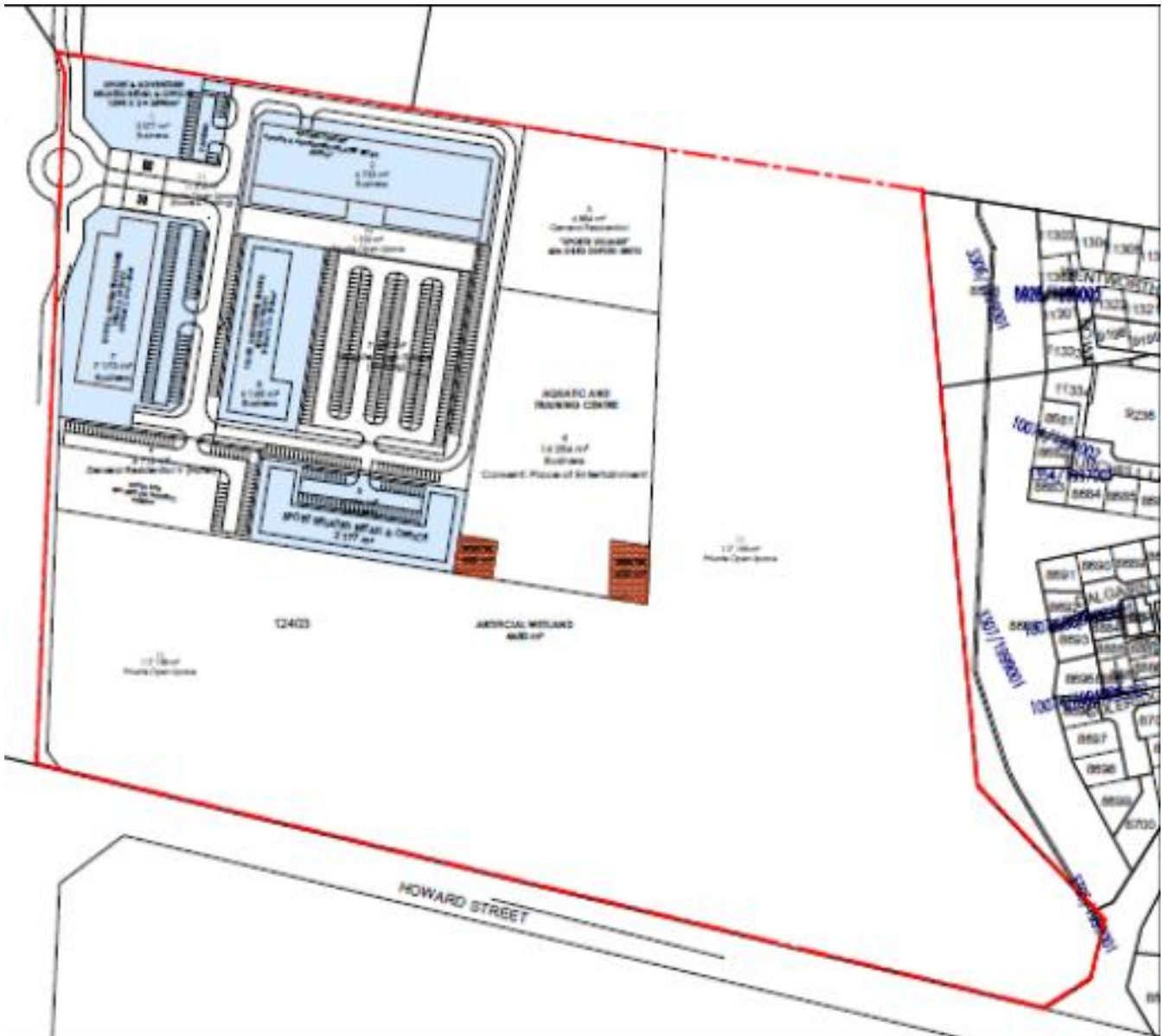


FIGURE 4: BUSINESS PROPERTIES

Business Zone II with Consent Use for a Place Of Assembly

One (1) "Business Zone II" property with a consent use to allow a 'Place of Assembly' is proposed. This portion is indicated as portion "4" on the site development plan.



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ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Portion "4" will be 14286m² in extent. The intention of this property is to be developed with a heated Olympic size indoor pool and ancillary high-performance sports facilities that will be developed with recreation areas that could be used for assemblies such as concerts, conventions, exhibitions, etc

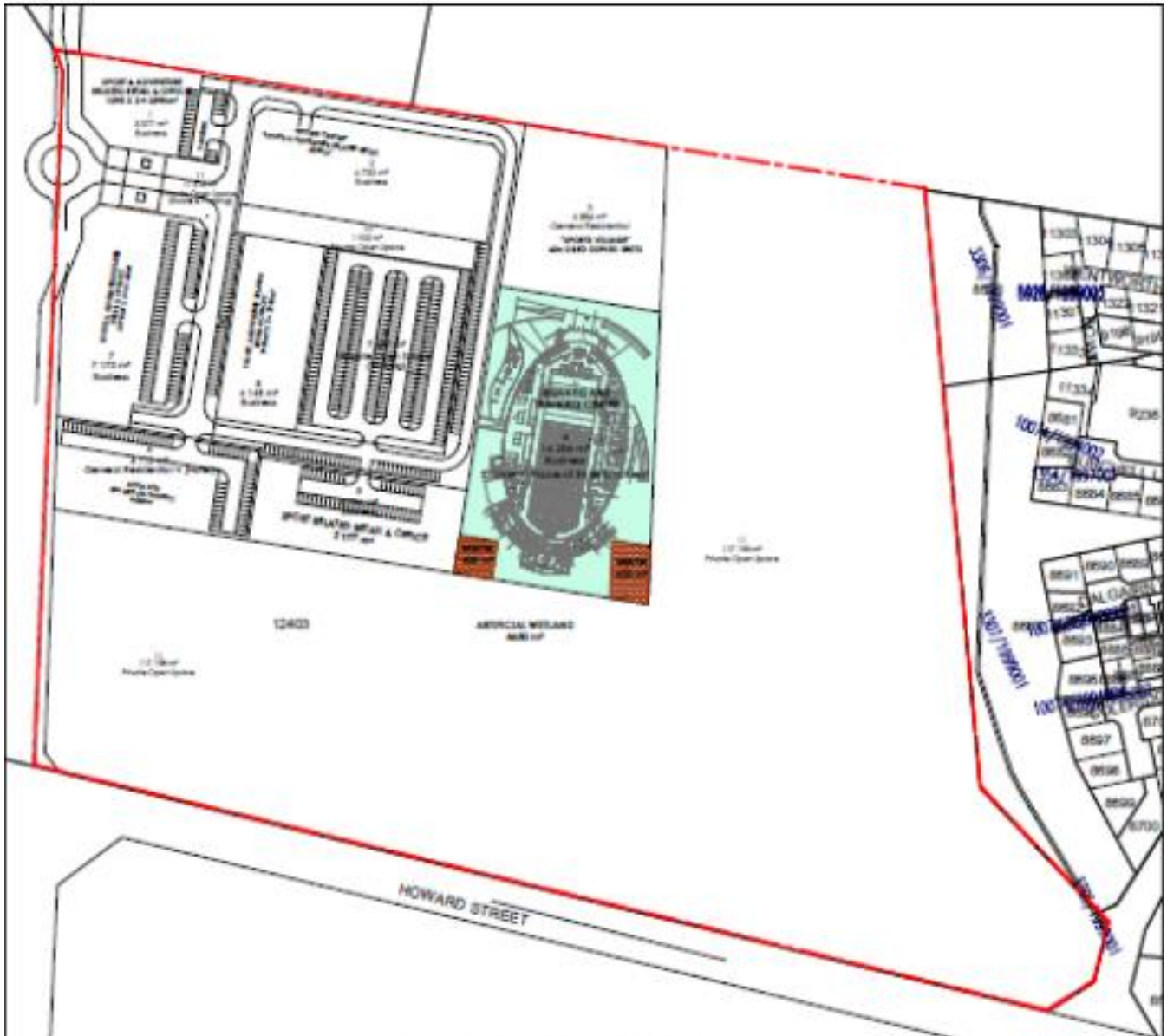


FIGURE 5: PROPOSED AQUATIC CENTRE



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ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Open Spaces

Three (3x) portions, portions “9” - “11”, are proposed as Open Spaces.

Portions 9 & 10 are proposed as Private open spaces (Open Space Zone II) for private recreation and private parking purposes.

Portion 11 contains the wetland area and this site will be a private “Nature Conservation Area”, with bird hides. Portion “11” is 11,7198ha in extent. This open space will be developed as an open space system that will be protected and conserved in perpetuity and accessible to the public.



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ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

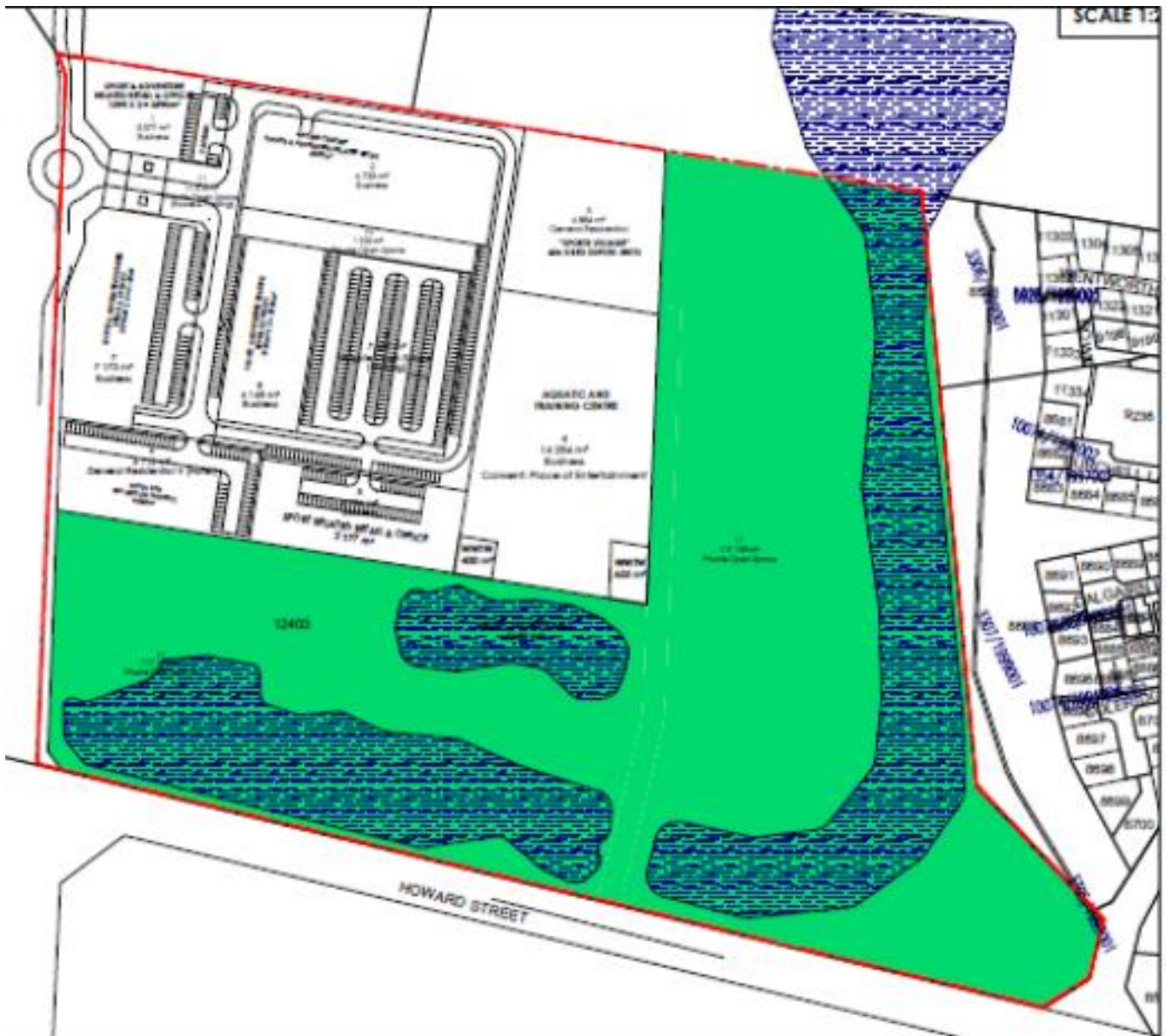


FIGURE 6: PROPOSED CONSERVATION AREA



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ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Transport Zones (Roads)

Two (2x) Road portions, portions "11" and "12", are proposed as Roads.

Portion 11 will be zoned as "Transport Zone III" for a private road and private parking, and Portion 12 will be zoned as "Transport Zone II" as a public road (i.e. the widening of George Rex Drive road reserve).

A circular movement system is proposed for the site. The proposed access road will be registered as an access servitude. The proposed private road covers approximately 1,1ha of the site. The proposed internal access road will circle through the site.



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REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

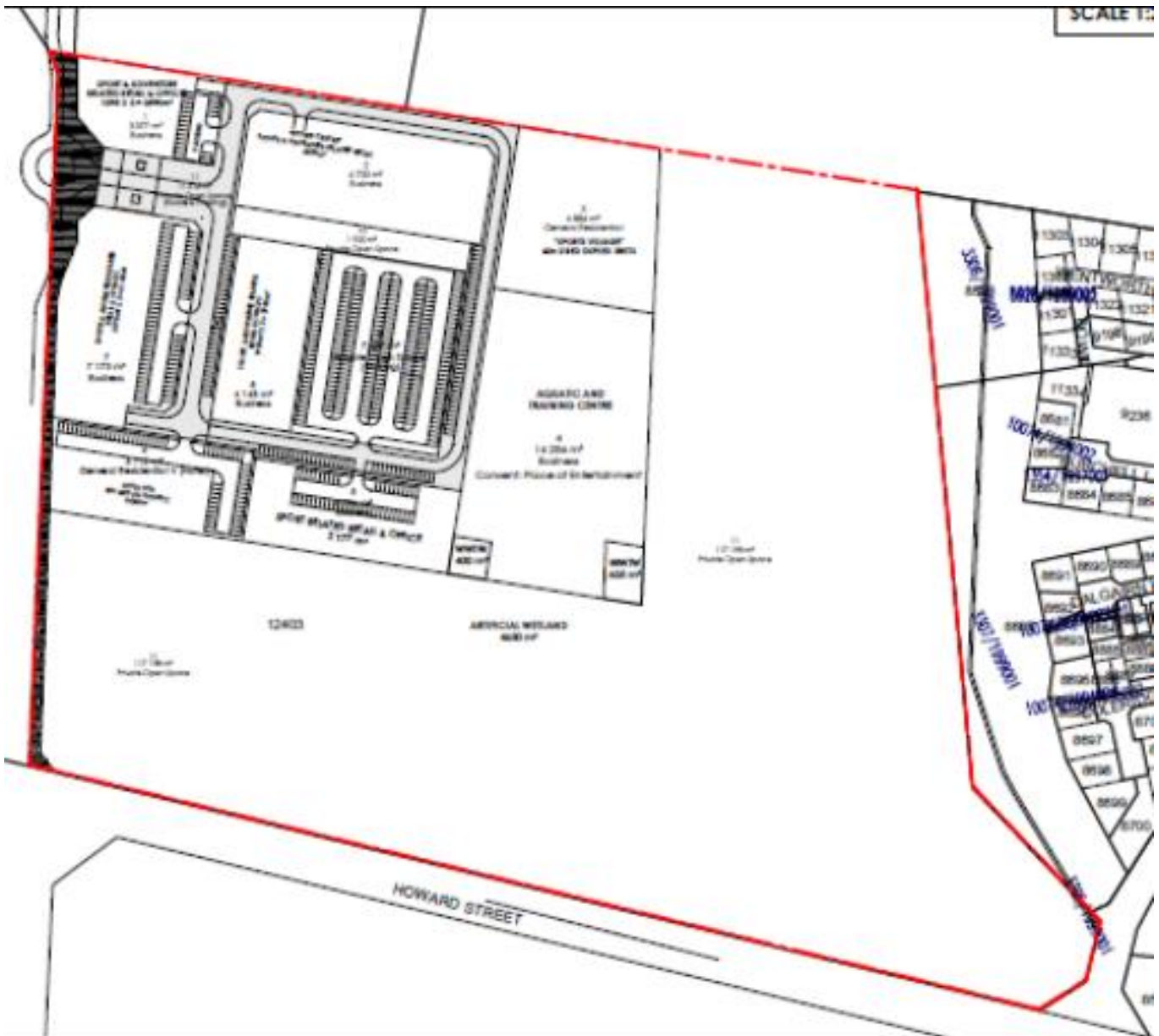


FIGURE 7: PROPOSED ROADS

Access and Egress

PO Box 1252 Sedgefield 6573

Fax: 086 402 9562

www.ecoroute.co.za

Access is proposed via a new traffic circle on George Rex Drive, opposite the entrance of the Premier hotel. A portion of land will be provided as widening of George Rex Drive. Figure 8 below shows the current access off George Rex Drive to the site.



FIGURE 8: CURRENT ACCESS TO ERF 12403

The above information was obtained from Knysna Erf 12403 Specialist Planning Report for Environmental Authorisation Purposes Prepared by Marike Vreken Urban and Environmental Planners December 2020. Please refer to full report attached as appendix B

2.2.1 METHOD STATEMENT

Method statements must be supplied by all contractors for approval by the appointed Eco prior to commencement of construction.

Pre-Construction:

1. The appointed contractor must have the signed appointment from the client in his possession.
2. The health and safety file must be prepared and approved, by the Health and Safety Officer, appointed by the client.
3. All personnel on site must be familiar with the approved EMPR.
4. All personnel on site must be inducted by the appointed ECO.



5. Construction work can only commence at this stage
6. Adhere to the Construction Environmental Management Plan (CEMP) during construction.

Construction Phase:

Recommendations made in the Water Use Licence include:

Recommendations during the construction phase:

- Any exposed earth must be rehabilitated by planting suitable vegetation to protect the exposed soils;
- The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;
- The scenario 3b of the approved wetland reserve (60% wetland and 40% development) that will meet the Recommended Ecological Category must be adhered to in order to reduce and minimize the impacts so as to protect the ecological integrity of the water resources.
- Installations of culverts under George Rex Drive must avoid disturbance of wetland vegetation as far as possible. Culverts should ideally be installed during the dry season.
- No dumping construction material on site may take place. All waste generated on site during construction must be adequately managed. Separation and recycling of different waste materials should be supported; and
- An emergency spill response procedure must be formulated and staff is to be trained in spill response. All necessary equipment for dealing with spills of fuels/chemicals must be available at the site. Spills must be cleaned up immediately and contaminated soil/ material disposed of appropriately at a registered site.

2.3 OPERATIONAL PHASE

The operational phase of this EMPR will entail the following:

1. Management, repair and maintenance of the buildings, roads and infrastructure.
2. Prior to any maintenance/repairs occurring DFFE to be notified, in writing.
3. Method statements to be submitted to DFFE for the maintenance and repair work prior to commencement.
4. Should DFFE request an updated EMPR, this should be adhered to.
5. Contractor appointed for the maintenance and repair of infrastructure, roads, etc needs to familiarize themselves with the EMPR.
6. An ECO must be appointed to oversee the maintenance and repair of infrastructure, roads, etc.
7. An Environmental Auditing Report to be submitted to DFFE after maintenance and repair has occurred on infrastructure, roads, etc, containing dated photographs and detailing compliance/ noncompliance with the EMPR.
8. Ongoing rehabilitation of the wetland.
9. Alien clearing during the operational phase.

2.4 CLOSURE AND DECOMMISSIONING PHASE



There is no defined operating life cycle associated with the new proposed development and management thereof, therefore there are no recommendations associated with the closure and decommissioning phase made in this EMPR.

Should it be decided at some stage to decommission the development the proponent is required to abide with the relevant legislations and environmental laws during that period.

3. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURE DURING THE DECOMMISSIONING, CONSTRUCTION AND OPERATIONAL PHASE

An environmental impacts can be defined as an effect or consequence that a development or activity will have on economic, social and ecological processes.

There are mainly three categories of environmental impacts:

Direct Impacts: These are caused by the development/activity itself on the receiving environment.

Indirect Impacts: These impacts are usually linked closely with a project and may have more profound results than the direct impacts for example pollution of the Knysna Estuary as a result of the construction of the slipway.

Cumulative impacts: These impacts can be defined as the ability of natural and social environments to incorporate cumulative stresses placed on them and the likelihood of negative synergistic effects. Cumulative impacts also arise when existing or future development rights set a precedent in an area. The process of cumulative impacts may arise from any of the following events:

- A single large event,
- Multiple interrelated events
- Sudden or catastrophic events or incremental change

The objectives of management of impacts is to:

- Protect the receiving environment against degradation as a result of the proposed development.
- Identify mitigation measures to minimize each identified impact before the impact even occurs.
- Ensure the mitigation measures are appropriate, cost effective and financially feasible.
- Avoid minimise or remedy adverse impacts
- Ensure that residual impacts are within acceptable levels
- Monitor the effectiveness of mitigation measures
- Take action when unforeseen impacts occur
- Have contingency plans at hand should an unforeseen event occur.

3.1 ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT

The preferred Alternative 1

40% developed area of the site and 60% of the site will be used for conservation and wetland rehabilitation



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

The applicant intends to develop a mixed use development, with access to the northwest off George Rex Drive and an alternative access onto Howard Street to the south. The purpose of this development is to have a “sport; adventure and tourism” focus. The proposal will consist of a high-performance aquatic centre, a sport’s village (for accommodation for athletes and supporters), sports-orientated retail and professional services (physio-therapists, biokineticists, gym, massage, sport psychology, etc.

The proposed development will consist of the following mixed uses:

- 1 x “General Residential Zone III” portion (flats / sports village);
- 1 x “General Residential Zone V” portion (hotel);
- 5 x “Business Zone I” portions;
- 1 x “Business Zone II” with consent use for a ‘Place of Assembly’ portion;
- 2 x “Open Space Zone II” portions; ▪ 1 x “Open Space Zone III” portion;
- 1x Transport Zone II portion; &
- 1x Transport Zone III portion,

Impacts that may result from the planning, design and construction 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 planning, design and construction phase.

Potential impacts on geographical and physical aspects:	
Nature of impact:	<p>Soil compaction as a result of the construction of:</p> <ul style="list-style-type: none"> ➤ 1 x “General Residential Zone III” portion (flats / sports village); ➤ 1 x “General Residential Zone V” portion (hotel); ➤ 5 x “Business Zone I” portions; ➤ 1 x “Business Zone II” with consent use for a ‘Place of Assembly’ portion; ➤ 2 x “Open Space Zone II” portions; ▪ 1 x “Open Space Zone III” portion; ➤ 1x Transport Zone II portion; & ➤ 1x Transport Zone III portion,
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	As a result of the construction this impact cannot be mitigated or reversed.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources anticipated



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Cumulative impact prior to mitigation:	Storm Water runoff
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Typical sustainable drainage systems, often referred to as SuDS, and the associated stormwater infrastructure and management thereof take the following key principles into account:</p> <ul style="list-style-type: none"> • Storing runoff and releasing it slowly (attenuation) • Harvesting and using the rain close to where it falls • Allowing water to soak into the ground (infiltration) • Slowly transporting (conveying) water on the surface • Filtering out pollutants • Allowing sediments to settle out by controlling the flow of the water <p>Each of the above and how they are accommodated/included in the proposed stormwater system are discussed below:</p> <p>1. Storing runoff and releasing it slowly (attenuation): This will be achieved in two ways. Firstly, all runoff from the roofs on the development will be harvested and stored in a lined surface water dam located within the open space portions allocated within the wetlands (refer to Section 8.5 of the report). This is a form of retention and will therefore have the benefit of attenuation. Secondly, the remaining surface water from grassed areas, parkings, etc. will be discharged into the wetlands as sheet flow (refer to Sections 8.3 and 8.5 of the report). This will dramatically increase the time that the water takes to reach the formal 'bulk' stormwater system and thus Page 3 of 4 attenuating the runoff and therefore releasing it slowly. In addition to this, a substantial amount of this water can be expected to soak into the ground causing further attenuation, albeit somewhat permanent.</p>



2. Harvesting and using the rain close to where it falls: As discussed above, all runoff from the roofs will be harvested by collecting and storing it within the wetlands (refer to Section 8.5 of the report). This is immediately adjacent to the area to be developed on the site. This water will be treated on-site and stored in reservoirs as potable water for use in the development. This will achieve the objective of both harvesting the rain water and using it close to where it falls.

3. Allowing water to soak into the ground (infiltration): As discussed above, the surface water from grassed areas, parkings, etc. will be discharged into the wetlands as sheet flow (refer to Sections 8.3 and 8.5 of the report). As the wetland area is for all intents and purposes flat, a substantial amount of this discharged water will initially soak into the ground and promote recharge of the aquifer. Some developments also encourage infiltration within the parking areas through the use of permeable paving, etc. In this case this is not recommended as the in-situ soils are not amenable for development directly on top of them. Therefore, an engineered fill will be constructed within the area to be developed. If one was to encourage infiltration through the parking surface and onto/through the engineered fill it would cause it to fail and substantially reduce the service life thereof. This would not be sustainable and therefore would be counterproductive to the purpose of a sustainable development. However, by recharging the aquifer in the wetland adjacent to the area to be developed, it would be quite likely that ground water mounding would take place and cause some lateral movement of the ground water. This would cause a measure of recharge to the aquifer below the developed area without having compromised the engineered fill above.

4. Slowly transporting (conveying) water on the surface: This is covered in items 1 and 3 above as it pertains to flow across the surface of the wetlands. Insofar as it pertains to the area to be developed; the site is particularly flat and will essentially be developed as such. Accordingly, with very flat lawns and parking areas the net result is slow flow of water across these surfaces and thus achieving the principle of this item.



	<p>5. Filtering out pollutants: All rainwater from the roofs is to be harvested. This water will be treated on-site prior to use as a potable water. This treatment would remove any pollutants in this water. Water discharging from the remaining surface areas, namely grassed and parking areas, etc., will be discharged into the wetlands. This water will be treated in the wetlands through environmental contact and exposure to UV in the wetlands (refer to Section 8.5 of the report). The extent to which this treatment will act will require input from a suitable specialist.</p> <p>The above mitigation measures were identified in the Storm water management plan by Tony Liebold Pr Tech Eng Appendix L.</p> <ul style="list-style-type: none"> • No dumping construction material on site may take place. All waste generated on site during construction must be adequately managed. Separation and recycling of different waste materials should be supported; and • An emergency spill response procedure must be formulated and staff is to be trained in spill response. All necessary equipment for dealing with spills of fuels/chemicals must be available at the site. Spills must be cleaned up immediately and contaminated soil/ material disposed of appropriately at a registered site. • Any exposed earth must be rehabilitated by planting suitable vegetation to protect the exposed soils; • The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;
<p>Cumulative impact post mitigation:</p>	<p>No impact is expected after mitigation measures are set in place to redirect water runoff</p>
<p>Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)</p>	<p>Low</p>
<p>Potential impact on biological aspects:</p>	



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Nature of impact:	<p>Loss of vegetation as a result of:</p> <ul style="list-style-type: none"> ➤ 1 x "General Residential Zone III" portion (flats / sports village); ➤ 1 x "General Residential Zone V" portion (hotel); ➤ 5 x "Business Zone I" portions; ➤ 1 x "Business Zone II" with consent use for a 'Place of Assembly' portion; ➤ 2 x "Open Space Zone II" portions; ▪ 1 x "Open Space Zone III" portion; ➤ 1x Transport Zone II portion;
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	No loss of natural resources are expected, 40% of the site is to be developed and 60% of the site will be rehabilitated and conserved. The 40% development will occur on an area where soil was stored in a heap that is covered with alien vegetation.
Cumulative impact prior to mitigation:	Loss of ecological corridors
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<ol style="list-style-type: none"> 1. It is imperative that impacts on the continuity of ecological processes and corridors be taken into consideration irrespective of the type of land use proposed or envisaged in the region as a whole. 2. Open Space III contains the wetland area and this site will be a wetland conservation area. This area will be used to ensure ecological corridor connectivity. The open spaces will be developed as an open space system that will be protected and conserved in perpetuity and be accessible to the public. 3. An onsite nursery needs to be established and a plant rescue needs to be carried out prior to any construction activities occurring on site.



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation measures are implemented.
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact on biological aspects:	
Nature of impact:	Impact on the wetland and drainage canals
Extent and duration of impact:	During construction phase
Probability of occurrence:	High
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	High
Cumulative impact prior to mitigation:	Pollution of wetland may lead to pollution of the Knysna Estuary
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Open Space III contains the wetland area and this site will be a wetland conservation area. This area will be used to ensure ecological corridor connectivity. The open spaces will be developed as an open space system that will be protected and conserved in perpetuity and be accessible to the public and needs to be demarcated as a "No-Go" area and fenced off. No person may be allowed to enter this area during the construction phase. All construction water used on site, needs to be stored in sediment ponds, to prevent polluted water entering the system.</p> <ul style="list-style-type: none"> No dumping construction material on site may take place. All waste generated on site during construction must be adequately managed. Separation and recycling of different waste materials should be supported; and An emergency spill response procedure must be formulated and staff is to be trained in spill



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	<p>response. All necessary equipment for dealing with spills of fuels/chemicals must be available at the site. Spills must be cleaned up immediately and contaminated soil/ material disposed of appropriately at a registered site.</p> <ul style="list-style-type: none"> • Any exposed earth must be rehabilitated by planting suitable vegetation to protect the exposed soils; • The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;
Cumulative impact post mitigation:	Pollution of the Knysna Estuary
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

The Environmental Impacts associated with the proposed development within 100 meters from the high water mark of the Knysna Estuary and infilling within 100 meters from the high water mark of the Knysna Estuary.

The impacts associated with this listed activity is few as a result of the construction of George Rex Road and the Premier hotel informant of Erf 12403. The clearing and construction of culverts will only result in positive Environmental impacts.

Positive Environmental Impacts:

- Reduce risk of flooding
- Salt water intrusion into wetland
- Wetland Rehabilitation

The construction of the proposed development within 100 meters from the high water mark of the Estuary:

Negative Environmental Impacts:

- Increased hard surfaces = increased amount of storm water
- Sedimentation of the Knysna Estuary
- Pollution entering the Knysna Estuary
- Soil compaction
- Flow and water quality of hydrological linkages entering the system.



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

<p>Potential impacts on geographical and physical aspects:</p>	
<p>Nature of impact:</p>	<p>Climate Change and Storm Surges</p> <p>The property itself is generally low lying and very flat. Ground levels vary only slightly with the average contour line at 2,0m MSL. This is lower than both the road level along George Rex Drive which is at +/-2,5m MSL, as well as the ground level at The Moorings, which is positioned between the subject property and the Knysna Lagoon.</p> <p>Ponding and flooding on the property and surrounding streets have been experienced in recent flood conditions.</p> <p>Drainage of runoff towards the Knysna Lagoon from Erf 12403 is impacted upon by the higher road and ground levels adjacent to the site. Additionally, there is only a single pipe culvert (450mm diameter) provided under George Rex Drive in the South West corner of the property (corner of George Rex Drive and Howard Street).</p> <p>No other culverts could be found along the 400m long property boundary with George Rex Drive. This is unlike the rest of George Rex Drive where culvert spacing is much more regular and of a bigger size.</p> <p>An open earth drainage channel, approximately 2m x 1m in size, is used to convey runoff across/around Erf 12403, from East to West. This channel terminates at the above mentioned 450mm diameter culvert under George Rex Drive. This channel is routed along the Eastern and Southern sides of the property over a distance of approximately 800m. There is practically no fall along the entire length of this channel and it is totally overgrown.</p> <p>During periods of exceptional high tide, the culvert under George Rex Drive gets submerged. This will dictate the water level in the rehabilitated wetlands on the property.</p> <p>This situation will be the same as the rest of the culvert outlets along George Rex Drive and elsewhere along the Knysna Lagoon.</p> <p>The above information was obtained from the Civil Engineering report</p>
<p>Extent and duration of impact:</p>	<p>During the lifespan of the project</p>
<p>Probability of occurrence:</p>	<p>High</p>



Eco Route

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PhD Univ. Pretoria

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e-mail: colleen@ecoroute.co.za

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Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Degree to which the impact can be mitigated:	High
Degree to which the impact may cause irreplaceable loss of resources:	No loss of irreplaceable resources is anticipated.
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> • Storm water runoff resulting in erosion. • Pollution of the Knysna Estuary. • Loss and damage to infrastructure.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Firstly, the overgrown storm water channels should be rehabilitated.</p> <p>Secondly, it is proposed that storm water runoff from the development be planned in such a way that the runoff be conveyed to the Private Open Space portions. This runoff should be discharged onto the surface of these portions to promote both attenuation and ground water recharge. This surface flow should then discharge into the rehabilitated channels where it will be conveyed to the South West corner of the property (corner of George Rex Drive and Howard Street) where the existing 450mm diameter pipe culvert presently drains the area. However, this culvert is undersized and has a shallow invert level.</p> <p>This impacts on the overall effectiveness and hydraulic capacity of the drainage system on the property and results in regular flooding of Howard Street.</p> <p>Due to the above restriction it is proposed to provide a connection to the existing Municipal storm water trench/channel on the south side of Howard Street and to upgrade the existing pipe culverts under George Rex Drive at the Knysna Golf Course. The invert level of this culvert is 700mm deeper than the 450mm culvert referenced above. The resulting drainage should be improved by using this 'lower' culvert.</p> <p>The upgrading of the existing pipe culverts under George Rex Drive at the Knysna Golf Course has been previously recommended to the KM by SSI engineering consultants.</p> <p>The motive for this recommendation was to alleviate flooding of the lower lying sections of the residential area of Hunters Home. It is proposed to upgrade this culvert to at least a 1500 x 900mm box culvert.</p>



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	<p>Detailed storm water runoff calculations and culvert sizing will be performed during the detailed design stage of the project. The KM will be provided with a suitable design report and drawings for review and approval prior to implementation.</p> <p>The above information was obtained from the Civil engineering report.</p> <ul style="list-style-type: none"> • No dumping construction material on site may take place. All waste generated on site during construction must be adequately managed. Separation and recycling of different waste materials should be supported; and • An emergency spill response procedure must be formulated and staff is to be trained in spill response. All necessary equipment for dealing with spills of fuels/chemicals must be available at the site. Spills must be cleaned up immediately and contaminated soil/ material disposed of appropriately at a registered site. • Any exposed earth must be rehabilitated by planting suitable vegetation to protect the exposed soils; • The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;
<p>Cumulative impact post mitigation:</p>	<p>Biodiversity reduction as a result of the construction of the preferred alternative. However it needs to be noted as mentioned in the wetland report the site has been transformed greatly as a result of:</p> <ul style="list-style-type: none"> • The saw dust dump • The Stockpile of soil on site • The alien trees • The mowing of the site, requested by the Fire Department as it poses a fire risk to neighbouring properties
<p>Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)</p>	<p>Low</p>
<p>Potential impacts on geographical and physical aspects:</p>	
<p>Nature of impact:</p>	<p>Soil compaction as a result of the proposed development</p>



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be mitigated:	As a result of the construction this impact cannot be mitigated or reversed, however it must be noted that the preferred alternative will only result in 40% of the property being developed and the remaining 60% will be conserved and the wetland rehabilitated.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of irreplaceable resources are anticipated, in all probability the wetlands rehabilitation efforts will improve the conditions on site and off site.
Cumulative impact prior to mitigation:	Storm water runoff resulting in erosion and siltation.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Concentration of street and surface runoff is to be limited by diverting runoff to suitable open areas at regular intervals/spacing. This will facilitate the recharging of the aquifer through surface percolation.</p> <p>To prevent erosion and siltation during and after construction use will be made of silt traps, silt screens, at suitable locations.</p> <p>Rainwater harvesting of runoff from roofs will form a substantial part of the planned water resources for the project. This water will not be collected in rainwater tanks, but rather will be directed to a lined surface water dam located within the open space portions allocated within the wetlands. This pond can be developed in such a way that it looks natural and part of the environment. It will also form a surface water for bird and aquatic life and therefore contribute to the environmental benefit of the project.</p> <ul style="list-style-type: none"> • Overgrown storm water channels on site are to be rehabilitated. • Surface runoff from hardened areas, such as roads and parking areas is to be diverted and discharged onto the surface of the open space areas/wetlands. In doing this one is able to promote natural treatment of pollutants in the water through environmental contact time and exposure to UV. In addition to this it will have the added benefits of promoting attenuation and recharge of ground water resources. • Surface water that does not percolate into the ground water system but that continues to travel across the surface of the wetlands will ultimately discharge into



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	<p>the existing rehabilitated surface channel around the perimeter of the site and leave the site via further formal drainage infrastructure.</p> <ul style="list-style-type: none"> • Upgrades to the existing offsite storm water infrastructure will further ensure better management of peak runoff and prevent or minimize the current localized flooding experienced in the immediate vicinity of the site. • Erosion and siltation during and after construction will be achieved by the use of silt traps and silt screens, at suitable locations along energy dissipaters at storm water outlets. <p>The above was taken from the Civil Engineering report</p> <ul style="list-style-type: none"> • Any exposed earth must be rehabilitated by planting suitable vegetation to protect the exposed soils; • The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact on biological aspects:	
Nature of impact:	<p>Loss of indigenous vegetation (biodiversity) as a result of construction of the proposed development.</p> <p>The site has been largely modified by the dumping of saw dust, the mowing and the presence of alien vegetation.</p>
Extent and duration of impact:	During the construction phase only
Probability of occurrence:	Low
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	With correct management in all probability the degree to which the impact may cause irreplaceable loss of resources is low.
Cumulative impact prior to mitigation:	Loss and further degradation of the wetland on site



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e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>It is imperative that impacts on the continuity of ecological processes and corridors be taken into consideration irrespective of the type of land use proposed or envisaged in the region as a whole.</p> <p>The proposed development should allow for a vegetated buffer strip, set back from the wetland. Stormwater erosion control measures need to be implemented regardless of development being authorised on the property.</p> <ol style="list-style-type: none"> 1. Removal of Alien Invasive Species during construction phase 2. The proposal now is to rehabilitate the wetland, include more Private Open Space as a green buffer. Please refer to the attached SDP. Operational wula
Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation measure are implemented
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact on biological aspects:	
Nature of impact:	Pollution of the salt marshes and wetlands.
Extent and duration of impact:	Throughout the lifespan of the proposed development
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	Medium
Cumulative impact prior to mitigation:	Pollution of the Knysna Estuary
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High



Proposed mitigation:	<p>The rehabilitation of the wetland and the introduction of wetland vegetation will mitigate this impact.</p> <ul style="list-style-type: none"> • No dumping construction material on site may take place. All waste generated on site during construction must be adequately managed. Separation and recycling of different waste materials should be supported; and • An emergency spill response procedure must be formulated and staff is to be trained in spill response. All necessary equipment for dealing with spills of fuels/chemicals must be available at the site. Spills must be cleaned up immediately and contaminated soil/ material disposed of appropriately at a registered site. • Any exposed earth must be rehabilitated by planting suitable vegetation to protect the exposed soils; • The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas;
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Identified Noise Impacts during the construction phase

Potential noise impacts:	
Nature of impact:	Impacts associated with general building construction noise
Extent and duration of impact:	Only during construction phase
Probability of occurrence:	High
Degree to which the impact can be reversed:	None
Degree to which the impact may cause irreplaceable loss of resources:	None
Cumulative impact prior to mitigation:	No cumulative impact foreseen



Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	Construction work and noise generation only allowed during weekday working hours
Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation measures are implemented
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

3.2 ENVIRONMENTAL IMPACTS DURING OPERATIONAL PHASE

Identified Noise Impacts during the operational phase

Potential noise impacts:	
Nature of impact:	Impacts associated with sport events
Extent and duration of impact:	During the life Span of the proposed development
Probability of occurrence:	High
Degree to which the impact can be reversed:	None
Degree to which the impact may cause irreplaceable loss of resources:	None
Cumulative impact prior to mitigation:	No cumulative impact foreseen
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	Most sporting events are scheduled during the day
Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation measures are implemented
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low



Visual Impacts associated with the proposed development

Potential visual impacts:	
Nature of impact:	The proposed development will be visible from Hunters home and George Rex drive.
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>The design of the proposed development must account for visual impacts. The development must blend into the natural environment as much as possible – down lighting, earthy colours and strategic placement of satellite dishes is a sensible mitigation measure.</p> <p>During construction phase the proposed development will be screened off from the N2 using green shade cloth.</p>
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A

(b) Impacts that may result from the construction and operational phase for increased traffic (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 operational phase.

Potential traffic impacts:	
Nature of impact:	The TIA report investigates the expected transport related impacts of a sport and adventure centre planned on Erf 12403 in Knysna. Based on the findings of this investigation, the following are concluded:



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	<p>Existing Traffic: N2/George Rex Drive intersection currently operates at capacity. It is recommended that this intersection be upgraded to a traffic signal.</p> <p>Background Traffic: George Rex Drive/Bokmakierie Street operates at capacity. The traffic along Bokmakierie Street has alternative routes to access the larger road network. Signal control at this intersection will not be warranted and the relatively low side road traffic volume along Bokmakierie Street compared to the volumes along George Rex Drive does not justify a roundabout.</p> <p>Total Traffic: George Rex Drive/Bokmakierie Street will operate at capacity. Although traffic along Bokmakierie Street has alternative routes to access the larger road network. Signal control at this intersection will not be warranted and the relatively low side road traffic volume along Bokmakierie Street compared to the volumes along George Rex Drive does not justify a roundabout.</p>
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Existing Traffic: N2/George Rex Drive intersection currently operates at capacity. It is recommended that this intersection be upgraded to a traffic signal.</p> <p>Total Traffic: George Rex Drive/Bokmakierie Street will operate at capacity. Although traffic along Bokmakierie Street has alternative routes to access the larger road network. Signal control at this intersection will not be warranted and the relatively low side road traffic volume along Bokmakierie Street compared to the volumes along George Rex Drive does not justify a roundabout.</p>



Eco Route

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REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

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Bsc. Hons. Environmental Management

Cell: 082 557 7122

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	A Roundabout should be considered at this intersection in the long term depending on the availability of funding. George Rex Drive/Marlin Road will also operate close to capacity and westbound right-turn traffic along Marlin Road will experience long average delays per vehicle. However, there is still sufficient capacity for side road traffic to safely enter the traffic stream along George Rex Drive.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A

The following environmental impacts has been identified during the operational phase:

1. Solid waste pollution through litter
2. Soil erosion caused by storm water runoff from road surfaces
3. Vehicles using the road resulting in pollution

Potential impacts on Geographical and Physical aspects:	
Nature of impact:	Solid waste Pollution
Extent and duration of impact:	During the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be mitigated:	High
Degree to which the impact may cause irreplaceable loss of resources:	Medium to low
Cumulative impact prior to mitigation:	Loss of fauna and flora
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Staff should be appointed to clean up any litter within the site including the wetland. Signs on road warning people if they litter they could be liable to a fine will also assist. Rubbish bins to be placed in strategic places and be emptied on a regular basis.
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Potential impacts on Geographical and Physical aspects:	
Nature of impact:	Soil erosion resulting from storm water runoff from road surfaces.
Extent and duration of impact:	During the lifespan of the project
Probability of occurrence:	High



Eco Route

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REGISTRATION NO. 1998/031976/23

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PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Degree to which the impact can be mitigated:	High
Degree to which the impact may cause irreplaceable loss of resources:	High
Cumulative impact prior to mitigation:	Sedimentation within the wetland which results in a serious risk to the health and functioning of wetlands.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Unstable banks needs to be stabilised using gabion baskets/coarse rock to slow down the water velocity</p> <ul style="list-style-type: none"> • Any erosion gullies/channels leading downslope from road surfaces should be filled and stabilized immediately. • Re-vegetate all disturbed surfaces with suitable indigenous species to stabilise soils. • Culverts below the road surface should adequately convey water through to downstream areas without resulting in scouring of receiving wetlands • Storm water drainage systems should be designed to encourage infiltration through porous materials, and mechanisms to reduce flow rate and scouring of downstream wetland soils needs to be encouraged. The SUDS (Sustainable Urban Drainage System) proposed for this development is such a mechanism, which should be implemented. <p>Litter traps should be installed to prevent pollution of the wetland and estuary.</p>
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impacts on Geographical and Physical aspects:	
Nature of impact:	Vehicles using the road resulting in pollution
Extent and duration of impact:	During the lifespan of the project
Probability of occurrence:	Medium
Degree to which the impact can be mitigated:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	High
Cumulative impact prior to mitigation:	Pollution of the wetland will result in poor water quality that will impact on sensitive fauna and flora within the wetland
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	
Proposed mitigation:	Pollution prevention infrastructure to be installed where necessary to control pollutants entering storm water. Spills noted to be cleared immediately
Cumulative impact post mitigation:	None



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
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The Environmental Impacts associated with the proposed development within 100 meters from the high water mark of the Knysna Estuary and infilling within 100 meters from the high water mark of the Knysna Estuary.

The impacts associated with this listed activity is few as a result of the construction of George Rex Road and the Premier hotel informant of Erf 12403. The clearing and construction of culverts will only result in positive Environmental impacts.

Positive Environmental Impacts:

- Reduce risk of flooding
- Salt water intrusion into wetland
- Wetland Rehabilitation

The construction of the proposed development within 100 meters from the high water mark of the Estuary:

Negative Environmental Impacts:

- Increased hard surfaces = increased amount of storm water
- Sedimentation of the Knysna Estuary
- Pollution entering the Knysna Estuary
- Soil compaction
- Flow and water quality of hydrological linkages entering the system.

Potential impacts on geographical and physical aspects:	
Nature of impact:	<p>Climate Change and Storm Surges</p> <p>The property itself is generally low lying and very flat. Ground levels vary only slightly with the average contour line at 2,0m MSL. This is lower than both the road level along George Rex Drive which is at +/-2,5m MSL, as well as the ground level at The Moorings, which is positioned between the subject property and the Knysna Lagoon.</p> <p>Ponding and flooding on the property and surrounding streets have been experienced in recent flood conditions.</p> <p>Drainage of runoff towards the Knysna Lagoon from Erf 12403 is impacted upon by the higher road and ground levels adjacent to the site. Additionally, there is only a single pipe culvert (450mm diameter) provided under George Rex Drive in the South West corner of the property (corner of George Rex Drive and Howard Street).</p>



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	<p>No other culverts could be found along the 400m long property boundary with George Rex Drive. This is unlike the rest of George Rex Drive where culvert spacing is much more regular and of a bigger size.</p> <p>An open earth drainage channel, approximately 2m x 1m in size, is used to convey runoff across/around Erf 12403, from East to West. This channel terminates at the above mentioned 450mm diameter culvert under George Rex Drive. This channel is routed along the Eastern and Southern sides of the property over a distance of approximately 800m. There is practically no fall along the entire length of this channel and it is totally overgrown.</p> <p>During periods of exceptional high tide, the culvert under George Rex Drive gets submerged. This will dictate the water level in the rehabilitated wetlands on the property.</p> <p>This situation will be the same as the rest of the culvert outlets along George Rex Drive and elsewhere along the Knysna Lagoon.</p> <p>The above information was obtained from the Civil Engineering report</p>
Extent and duration of impact:	During the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be mitigated:	High
Degree to which the impact may cause irreplaceable loss of resources:	No loss of irreplaceable resources is anticipated.
Cumulative impact prior to mitigation:	<ul style="list-style-type: none"> • Storm water runoff resulting in erosion. • Pollution of the Knysna Estuary. • Loss and damage to infrastructure.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Firstly, the overgrown storm water channels should be rehabilitated.</p> <p>Secondly, it is proposed that storm water runoff from the development be planned in such a way that the runoff be conveyed to the Private Open Space portions. This runoff should be discharged onto the surface of these portions to promote both attenuation and ground water recharge. This surface flow should then discharge into the rehabilitated</p>



channels where it will be conveyed to the South West corner of the property (corner of George Rex Drive and Howard Street) where the existing 450mm diameter pipe culvert presently drains the area. However, this culvert is undersized and has a shallow invert level.

This impacts on the overall effectiveness and hydraulic capacity of the drainage system on the property and results in regular flooding of Howard Street.

Due to the above restriction it is proposed to provide a connection to the existing Municipal storm water trench/channel on the south side of Howard Street and to upgrade the existing pipe culverts under George Rex Drive at the Knysna Golf Course. The invert level of this culvert is 700mm deeper than the 450mm culvert referenced above. The resulting drainage should be improved by using this 'lower' culvert.

The upgrading of the existing pipe culverts under George Rex Drive at the Knysna Golf Course has been previously recommended to the KM by SSI engineering consultants.

The motive for this recommendation was to alleviate flooding of the lower lying sections of the residential area of Hunters Home. It is proposed to upgrade this culvert to at least a 1500 x 900mm box culvert.

Detailed storm water runoff calculations and culvert sizing will be performed during the detailed design stage of the project. The KM will be provided with a suitable design report and drawings for review and approval prior to implementation.

The above information was obtained from the Civil engineering report.

Concentration of street and surface runoff is to be limited by diverting runoff to suitable open areas at regular intervals/spacing. This will facilitate the recharging of the aquifer through surface percolation. To prevent erosion and siltation during and after construction use will be made of silt traps, silt screens, at suitable locations.

Rainwater harvesting of runoff from roofs will form a substantial part of the planned water resources for the project. This water will not be collected in rainwater tanks, but rather will be directed to a lined surface water dam located within the open space portions allocated within the wetlands. This pond can be developed in such a way that it looks natural and part of the environment. It will also form a surface water



Eco Route

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PhD Univ. Pretoria

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Cell: 082 557 7122

Tell: 044 343 2232

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	<p>for bird and aquatic life and therefore contribute to the environmental benefit of the project.</p> <ul style="list-style-type: none"> • Overgrown storm water channels on site are to be rehabilitated. • Surface runoff from hardened areas, such as roads and parking areas is to be diverted and discharged onto the surface of the open space areas/wetlands. In doing this one is able to promote natural treatment of pollutants in the water through environmental contact time and exposure to UV. In addition to this it will have the added benefits of promoting attenuation and recharge of ground water resources. • Surface water that does not percolate into the ground water system but that continues to travel across the surface of the wetlands will ultimately discharge into the existing rehabilitated surface channel around the perimeter of the site and leave the site via further formal drainage infrastructure. • Upgrades to the existing offsite storm water infrastructure will further ensure better management of peak runoff and prevent or minimize the current localized flooding experienced in the immediate vicinity of the site. • Erosion and siltation during and after construction will be achieved by the use of silt traps and silt screens, at suitable locations along energy dissipaters at storm water outlets. <p>The above was taken from the Civil Engineering report</p>
<p>Cumulative impact post mitigation:</p>	<p>Biodiversity reduction as a result of the construction of the preferred alternative. However it needs to be noted as mentioned in the wetland report the site has been transformed greatly as a result of:</p> <ul style="list-style-type: none"> • The saw dust dump • The alien trees • The mowing of the site, requested by the Fire Department as it poses a fire risk to neighbouring properties
<p>Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)</p>	<p>Low</p>
<p>Potential impacts on geographical and physical aspects:</p>	



Eco Route

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DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

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e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

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Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

Nature of impact:	Soil compaction as a result of the proposed development
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be mitigated:	As a result of the construction this impact cannot be mitigated or reversed, however it must be noted that the preferred alternative will only result in 40% of the property being developed and the remaining 60% will be conserved and the wetland rehabilitated.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of irreplaceable resources are anticipated, in all probability the wetlands rehabilitation efforts will improve the conditions on site and off site.
Cumulative impact prior to mitigation:	Storm water runoff resulting in erosion and siltation.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Concentration of street and surface runoff is to be limited by diverting runoff to suitable open areas at regular intervals/spacing. This will facilitate the recharging of the aquifer through surface percolation.</p> <p>To prevent erosion and siltation during and after construction use will be made of silt traps, silt screens, at suitable locations.</p> <p>Rainwater harvesting of runoff from roofs will form a substantial part of the planned water resources for the project. This water will not be collected in rainwater tanks, but rather will be directed to a lined surface water dam located within the open space portions allocated within the wetlands. This pond can be developed in such a way that it looks natural and part of the environment. It will also form a surface water for bird and aquatic life and therefore contribute to the environmental benefit of the project.</p> <ul style="list-style-type: none"> • Overgrown storm water channels on site are to be rehabilitated. • Surface runoff from hardened areas, such as roads and parking areas is to be diverted and discharged onto the surface of the open space areas/wetlands. In doing this one is able to promote natural treatment of pollutants in the water through environmental contact time and exposure to UV. In addition to this it will have the added benefits of promoting attenuation and recharge of ground water resources.



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	<ul style="list-style-type: none"> • Surface water that does not percolate into the ground water system but that continues to travel across the surface of the wetlands will ultimately discharge into the existing rehabilitated surface channel around the perimeter of the site and leave the site via further formal drainage infrastructure. • Upgrades to the existing offsite storm water infrastructure will further ensure better management of peak runoff and prevent or minimize the current localized flooding experienced in the immediate vicinity of the site. • Erosion and siltation during and after construction will be achieved by the use of silt traps and silt screens, at suitable locations along energy dissipaters at storm water outlets. <p>The above was taken from the Civil Engineering report</p>
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact on biological aspects:	
Nature of impact:	<p>Loss of indigenous vegetation (biodiversity) as a result of construction of the proposed development.</p> <p>The site has been largely modified by the dumping of saw dust, the mowing and the presence of alien vegetation.</p>
Extent and duration of impact:	During the construction phase only
Probability of occurrence:	Low
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	With correct management in all probability the degree to which the impact may cause irreplaceable loss of resources is low.
Cumulative impact prior to mitigation:	Loss and further degradation of the wetland on site
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	It is imperative that impacts on the continuity of ecological processes and corridors be taken into consideration



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PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

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Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	<p>irrespective of the type of land use proposed or envisaged in the region as a whole.</p> <p>The proposed development should allow for a vegetated buffer strip, set back from the wetland. Stormwater erosion control measures need to be implemented regardless of development being authorised on the property.</p> <ol style="list-style-type: none"> 1. Removal of Alien Invasive Species during construction phase 2. The proposal now is to rehabilitate the wetland, include more Private Open Space as a green buffer. Please refer to the attached SDP
Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation measure are implemented
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact on biological aspects:	
Nature of impact:	Pollution of the salt marshes and wetlands.
Extent and duration of impact:	Throughout the lifespan of the proposed development
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	Medium
Cumulative impact prior to mitigation:	Pollution of the Knysna Estuary
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>Recommendations as per the Water Use License during the operational phase:</p> <ul style="list-style-type: none"> ➤ All storm water outlets should be monitored regularly to ensure that no preferential flow paths from which may lead to erosion of wetland habitat.



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PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

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e-mail: janet@ecoroute.co.za

	<ul style="list-style-type: none"> ➤ Existing offsite storm water infrastructure must be upgraded to ensure better management of peak runoff and prevent or minimize the current localised flooding experienced in the immediate vicinity. ➤ Access points and routes into the wetland should be carefully planned to minimize excessive traffic through and disturbance to wetland. ➤ Any activities requiring vehicular access (e.g. removal of berms and clearing of felled alien invasive trees) should ideally be undertaken during the dry season to minimize disturbance to the wetland. ➤ Openings in the existing storm water drainage channel should be made in locations with abundant alien vegetation, causing minimal disturbance to indigenous plants. ➤ Cleared vegetation must be removed from site and dumped at a municipal waste site. ➤ Mowing of wetland vegetation must be ceased. ➤ Retain a network of mown paths from which to access areas of regenerating vegetation as well as established vegetation to control alien plants; and ➤ The wetland should be monitored annually to ensure that a trajectory towards and improved PES is achieved. Monitoring must be done according to the monitoring plan in the George Rex Wetland Rehabilitation Plan. ➤ The developer must ensure that their wetland rehabilitation plan/program for bigger area incorporate work with other property owners and the municipality to improve the status of wetlands and rivers in town. This is in line with the DWS no net loss principle for wetlands and rivers in the town. This is in line with the DWS no net loss principle for wetlands and to manage the resources at Recommended Ecological Category of at least a C. ➤ The mitigation and rehabilitation measures proposed in the July 2019 Technical Report, aquatic rehabilitation plan and previously suggested should be carried out. E.g enlarging the culvert underneath George Rex drive to improve water exchange with the estuary etc.
Cumulative impact post mitigation:	N/A



Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
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The Socio-economic impacts associated with the proposed Development

Potential impacts on socio-economic aspects:	No negative impacts on the socio-economic aspects are foreseen as the proposed construction will create work opportunities during construction and operational phases.
Nature of impact:	Job creation- Positive Impact
Extent and duration of impact:	During the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	Not a negative impact on socio-economic aspects
Degree to which the impact may cause irreplaceable loss of resources:	Not applicable
Cumulative impact prior to mitigation:	Not applicable
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	Not applicable
Proposed mitigation:	Not applicable
Cumulative impact post mitigation:	Not applicable
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Not applicable

Identified Noise Impacts during the operational phase

Potential noise impacts:	
Nature of impact:	Impacts associated with sport events
Extent and duration of impact:	During the life Span of the proposed development
Probability of occurrence:	High
Degree to which the impact can be reversed:	None



Degree to which the impact may cause irreplaceable loss of resources:	None
Cumulative impact prior to mitigation:	No cumulative impact foreseen
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	Most sporting events are scheduled during the day
Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation measures are implemented
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Visual Impacts associated with the proposed development

Potential visual impacts:	
Nature of impact:	The proposed development will be visible from Hunters home and George Rex drive.
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A
Degree to which the impact can be mitigated:	High
Proposed mitigation:	The design of the proposed development must account for visual impacts. The development must blend into the natural environment as much as possible – down lighting, earthy colours and strategic placement of satellite dishes is a sensible mitigation measure.



	During construction phase the proposed development will be screened off from the N2 using green shade cloth.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A

4. LEGISLATIVE REQUIREMENTS

The proponent, Jazz Spirits, is required to comply with all necessary legislation, policies and guidelines. These include, but are not limited to:

4.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA, ACT 107 OF 1998)

The National Environmental Management Act (NEMA, Act No. 107 of 1998, as amended) embraces the notion of sustainable development as contained in the Constitution in that everyone has the right:

- to an environment that is not harmful to their health or well-being; and
- to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures.

Principles contained in Section 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA), which, amongst other things, indicates that environmental management should:

- In order of priority aim to: avoid, minimise or remedy disturbance of ecosystems and loss of biodiversity;
- Avoid degradation of the environment and avoid jeopardising ecosystem integrity;
- Pursue the best practicable environmental option by means of integrated environmental management;
- Protect the environment as the people's common heritage;
- Control and minimise environmental damage; and
- Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic or stressed ecosystems.

Section 28 Duty under the National Environmental Management Act (NEMA) to take reasonable measures to prevent pollution or degradation to the marine environment throughout all proposed project phases.

All probable listed activities has been identified, the below table indicates all listed activities associated with a proposed development. The table provides a description of the listed activity and the reason why /why not the activity is not applicable to the proposed upgrade of the existing slipway:

Listed Activity described in GN R. 325, 324, 327	Activity description	Identified Impacts
GN R. 327 Activity 12	The development of – (ii) infrastructure or structures with a physical footprint of 100 square meters or more Where such development occurs –	<ul style="list-style-type: none"> • Increased hard surfaces = increased amount of storm water



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	<p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse</p>	<ul style="list-style-type: none"> • Sedimentation of the Knysna Estuary & Wetland • Pollution entering the Knysna Estuary & wetland • Soil compaction • Flow and water quality of hydrological linkages entering the system.
<p>GN R.327 activity 17:</p>	<p>Development – (v) if no development setback exists, within a distance of 100 meters inland of the high-water mark of the sea or an estuary, whichever is the greater;</p> <p>In respect of – (e) infrastructure or structures with a development footprint of 50 square meters or more</p>	<p>The impacts associated with this listed activity is few as a result of the construction of George Rex road and the Premier hotel informant of Erf 12403. The clearing and construction of culverts will only result in positive Environmental impacts.</p> <p>Positive Environmental Impacts:</p> <ul style="list-style-type: none"> • Reduce risk of flooding • Salt water intrusion into wetland • Wetland Rehabilitation <p>The construction of the proposed development within 100 meters from the high water mark of the Estuary:</p> <p>Negative Environmental Impacts:</p> <ul style="list-style-type: none"> • Increased hard surfaces = increased amount of storm water • Sedimentation of the Knysna Estuary • Pollution entering the Knysna Estuary • Soil compaction • Flow and water quality of hydrological linkages entering the system.
<p>GN R.327 activity 19:</p>	<p>The infilling or depositing of any material of more than 10m³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m³ from –</p> <p>(iii) the littoral active zone, an estuary or a distance of 100 meters or more inland of the high-water</p>	<p>The impacts associated with this listed activity is few as a result of the construction of George Rex road and the Premier hotel informant of Erf 12403. The clearing and construction of culverts will only result in positive Environmental impacts.</p> <p>Positive Environmental Impacts:</p>



Eco Route

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PhD Univ. Pretoria

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e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

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e-mail: janet@ecoroute.co.za

	<p>mark of the sea or estuary, whichever distance is the greater</p>	<ul style="list-style-type: none"> • Reduce risk of flooding • Salt water intrusion into wetland • Wetland Rehabilitation <p>The construction of the proposed development within 100 meters from the high water mark of the Estuary:</p> <p>Negative Environmental Impacts:</p> <ul style="list-style-type: none"> • Increased hard surfaces = increased amount of storm water • Sedimentation of the Knysna Estuary • Pollution entering the Knysna Estuary • Soil Compaction • Flow and water quality of hydrological linkages entering the system.
<p>GN R.327 activity 19A:</p>	<p>The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from –</p> <p>(ii) the littoral active zone, an estuary or a distance of 100 meters inland of the high-water mark of the sea or an estuary, whichever distance is the greater</p>	<p>The impacts associated with this listed activity is few as a result of the construction of George Rex road and the Premier hotel informant of Erf 12403. The clearing and construction of culverts will only result in positive Environmental impacts.</p> <p>Positive Environmental Impacts:</p> <ul style="list-style-type: none"> • Reduce risk of flooding • Salt water intrusion into wetland • Wetland Rehabilitation <p>The construction of the proposed development within 100 meters from the high water mark of the Estuary:</p> <p>Negative Environmental Impacts:</p> <ul style="list-style-type: none"> • Increased hard surfaces = increased amount of storm water • Sedimentation of the Knysna Estuary • Pollution entering the Knysna Estuary • Soil Compaction



Eco Route

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REGISTRATION NO. 1998/031976/23

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PhD Univ. Pretoria

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Cell: 082 557 7122

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		<ul style="list-style-type: none"> Flow and water quality of hydrological linkages entering the system.
GN R.327 activity 27:	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.	<p>The proposed 40% development on Erf 12403 will result in the following:</p> <p>Positive Environmental Impacts:</p> <ul style="list-style-type: none"> Alien Control Plan Rehabilitation of Wetland (60% of site) <p>Negative Environmental Impacts:</p> <ul style="list-style-type: none"> Loss of indigenous vegetation
GN R.327 activity 28:	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <p>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares;</p> <p>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p>	<p>The subject property is situated within the urban edge of Knysna, the Knysna SDF demarcate the area in which the property is situated as "New Development". The Proposed development will be larger than 5 hectares.</p> <p>The property is zoned undetermined but has been used to mow vegetation for agricultural feed.</p> <p>No negative impacts are associated with the development as a result of Agricultural Practises.</p> <p>Positive impacts for not using the property for agricultural practises include:</p> <ul style="list-style-type: none"> Pesticides and fertilizers carried in rainwater, and irrigation runoff can pollute waterways and harm wildlife. Soil carried off in rain or irrigation water can lead to sedimentation of wetlands, estuary and coastal areas. Food production is one of the primary causes of biodiversity loss through habitat degradation.



Eco Route

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DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

		<ul style="list-style-type: none"> • Surface water pollution owing to livestock wastes. • Trampling and consumption of wetland vegetation.
<p>GN R.324 activity 12:</p>	<p>The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>i. Western Cape</p> <p>i. Within a critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as a critically endangered in the National Biodiversity Assessment 2004.</p> <p>(iii) Within the littoral active zone or 100 meters inland from the high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind a development setback line on erven in urban areas.</p>	<p>The vegetation on site is classed as Garden Route Shale Fynbos which has an ecosystem status of Endangered as per Cape Farm Mapper.</p> <p>“The vegetation of Erf 12403 are currently characterised by predominantly freshwater wetlands with some brackish/estuarine communities occurring in the vicinity of the culvert. The 20 ha site contain 7.3 ha of intact freshwater wetlands, 0.7 ha of estuarine wetlands and 5.1 ha of reeds and rushes. Approximately 7.5 ha are degraded by alien trees and sawdust dumping.</p> <p>The majority of the property is covered in vegetation characteristic of wetland environments. Large areas have been invaded by alien (exotic) species. The past and present vegetation distribution is discussed below.” <i>Bornman, T.G. 2006. Biodiversity Impact Assessment of the wetlands and vegetation of Erf 12403, Knysna. Confidential report prepared for Pieter Badenhorst Professional Services CC. CER Report No. C07/06. 105 pp.</i></p> <p>T.G Borman further states “From the 1936 aerial photograph it can be assumed that the vegetation on Erf 12403 consisted of 5.8 ha of estuarine wetlands, 10.4 ha of brackish wetland and 2.3 ha of freshwater wetlands”</p>



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PhD Univ. Pretoria

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e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

"The vegetation of the George Rex development is currently characterised by predominantly freshwater wetlands with some brackish/estuarine communities occurring in the vicinity of the culvert. The wetlands on the property fall within the southern coast wetland region (Cowan 1995). Adopting the classification system for the South African National Wetland Inventory, estuarine wetlands are present near the south-western corner of the property (Juncus community) and palustrine wetlands cover the majority of the remainder of the property. Within the Palustrine System, the wetlands on Erf 12403 may be classed as Emergent Wetlands. This wetland class is characterised by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years, usually maintaining the same appearance from one year to another."

The Area has been frequently mowed as a result of the property being identified as a high fire risk area which impacted the vegetation on site.

The authors therefore still endorse the findings of Bornman (2006) who recognised that, whilst historically almost the entire site would have been covered by wetland vegetation, under the present day conditions some of these areas have been lost as functional wetlands due to infilling at the site. Based on the findings of Bornman (2006), in 2008



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e-mail: colleen@ecoroute.co.za

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Bsc. Hons. Environmental Management

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		<p>the DWS accepted that 71% of the site was regarded as wetland and the remaining 29% of the site could be regarded as “non-wetland” due to the degraded nature of some portions of the site. Under present conditions, because the hydrological drivers are still operating, if the mowing of the vegetation was stopped, alien vegetation removed and the draining of flows around and across the site reduced through rehabilitation of the excavated canal and drain, then wetland vegetation is likely to re-establish across the majority of the site, as was documented in 2003 and observed by this author in 2008. <i>Scherman Colloty & Associates cc. 2017.</i></p> <p>Therefor the vegetation on site is not classed as Garden Route Shale Fynbos.</p> <p>The Area to be developed is not adjacent to the Estuary with development having occurred to the west of the development (Premier hotel, George Rex Drive) therefor the negative impacts are minimal.</p> <p>Negative impacts</p> <ul style="list-style-type: none"> • Increased hard surfaces = increased amount of storm water • Sedimentation of the Knysna Estuary • Pollution entering the Knysna Estuary • Soil Compaction • Flow and water quality of hydrological linkages entering the system
<p>GN R.324 activity 6:</p>	<p>The development of resorts, lodges, hotels, tourism or hospitality</p>	<p>Erf 12403 lies within a protected area, Knysna National Lakes Area.</p>



	<p>facilities that sleeps 15 people or more</p> <p>i. Western Cape</p> <p>i. Inside a protected area identified in terms of NEMA</p>	<p>The hotel will in all probability be 120 beds and a sports village will have 60 units to provide accommodation.</p> <p>To the west of the proposed development is an already establish Premier Hotel.</p> <p>Negative impacts</p> <ul style="list-style-type: none"> • Increased hard surfaces = increased amount of storm water • Sedimentation of the Knysna Estuary • Pollution entering the Knysna Estuary • Soil Compaction <p>Flow and water quality of hydrological linkages entering the system.</p> <p>Positive Impacts:</p> <ul style="list-style-type: none"> • Only 40% of the site will be developed and the remaining 60% will be conserved.
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4.2 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1983)

The Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work. In terms of this Act, a Health and Safety Officer and Protocol must be implemented on the site during construction.

4.3 INTEGRATED COASTAL MANAGEMENT ACT (ACT 24 OF 2008)

In general, integrated coastal management (ICM) promotes the use of defensible scientific information in conjunction with the principles of cooperative governance in order to achieve sustainable coastal development.

4.4 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT NO. 57 OF 2003) GN 1175 OF 2009

The purpose of the Regulations is-



(a) To provide for-

- (i) The management of the protected environment in accordance with the Act; and
- (ii) The management and protection of the ecological integrity of the protected environment;

(b) To ensure that-

- (i) The use of natural and biological resources in the protected environment is undertaken in a sustainable manner;
- (ii) the supply of environmental goods and services within the protected environment is undertaken in an equitable and sustainable manner and is consistent with the Act and the purpose for which the protected environment has been declared a protected environment; and
- (iii) All development as well as any other activity carried out in the protected environment is appropriate for the area and consistent with the Act, given the purpose for which the protected environment has been declared as such;

(c) To control-

- (i) change in the use of land situated within the protected environment;
- (ii) The use of public amenities within the biodiversity control area. N declared a protected environment; and

5. EMPR ROLES AND RESPONSIBILITIES

Responsibilities must be clearly identified for the different parties involved in implementing the management actions and monitoring.

The following parties play an important role in ensuring compliance to the EMPR:

1. Project Proponent –
2. Engineers and Contractors
3. Environmental Control Officer

All fines for noncompliance of EMPR to be predetermined by Engineer, Eco and Project Proponent, this needs to be included in method statement.

5.1 PROJECT PROPONENT

Jazz Spirit Pty) Ltd is the project proponent and will be responsible for the following:

- Adhering to the approved EMPR.
- Ensure that all employed Contractors and Engineers are aware of and understand the conditions of the EMPR.
- Has the right to remove any person or appointed contractors or personnel from site if the contravene with the EMPR.
- Ensure that all contracts with contractors/engineers include the authorised EMPR.
- Appoint an Environmental Control Officer.



- The project proponent (holder of the Environmental Authorisation of the EMPR) must notify the competent authority of the commencement of maintenance management activities **14 days prior to such commencement taking place.**

5.2 ENVIRONMENTAL CONTROL OFFICER

The name and contact details of the ECO must be forwarded to DFFE case officer, prior to the commencement of construction activities. In the appointment the Engineer delegates authority to this Representative to oversee the environmental requirements of the project. The ECO's specific function will be to monitor the Contractor's compliance to the EMPR and the impact on the environment and thus help the Engineer in this regard.

The ECO is responsible for environmental awareness training of contractors, engineers, site personnel and construction workers receive an induction presentation on the importance and implications of the EMPR prior to commencement of construction of the slipway. The Training must include the following:

- The importance of complying with the EMPR
- Identification of no-go areas
- The identified negative environmental impacts and the mitigation measures
- Request method statements prior to construction allowed to commence

It is envisaged that the ECO will be on site for the following periods:

- A site visit or visits at the start of the project for as many hours as required.
- A site visit or visits at the completion of the project for as many hours as required.
- Site visits at the start and completion of major portions of the contract as required.
- A minimum of one visit per week for the construction period presuming no major problems.
- Site visits immediately after any heavy rain, in order to assess erosion and/or sedimentation damage on site.
- Whenever there is an emergency environmental incident
- The ECO should attend all monthly site meetings

The ECO will be responsible for monitoring, reviewing and verifying compliance with the EMPR by the Contractor. The ECO's duties in this regard will include the following:

- Assisting the Engineer in ensuring that the necessary environmental authorizations and permits have been obtained;
- Promote sustainable practices along the Knysna Estuary;
- Monitoring and verifying that the EMPR is adhered to at all times and taking action if the specifications are not followed;
- The ECO must keep compliance and noncompliance records and made available to the relevant authorities within 5 days of receipt of this request;
- Monitoring and verifying that environmental impacts are kept to a minimum;
- Reviewing and approving construction method statements together with the Engineer;
- Assisting the Contractor in finding environmentally responsible solutions to problems;
- Giving a report back on the environmental issues at the monthly site meetings and other meetings that may be called regarding environmental matters;



- Keeping records of all activities! Incidents on Site in the Site Diary concerning the environment;
- Inspecting the Site and surrounding areas regularly with regard to compliance with the EMPR;
- Keeping a register of complaints in the Site Office and recording and DFFEling with any community comments or issues;
- Monitoring the undertaking by the Contractor of environmental awareness training for all new personnel coming onto site;
- Ordering the removal of person(s) and/or equipment not complying with the specifications;
- Issuing of fines for transgressions of site rules and EMPR;
- Suspending all environmental activities should a serious environmental transgression occur, until the transgression is fixed.
- Ensuring that activities on site comply with other relevant environmental legislation;
- Completing start-up, weekly, monthly and site closure checklists;
- Keeping a photographic record of progress on Site from an environmental perspective;
- Engage in regular discussions with relevant authorities on any significant non-compliance by the applicant and the steps to be taken to rectify this.
-
- Undertaking a continual internal review of the EMPR and submitting a monthly Eco Report to SANParks and DFFE.

5.3 ENGINEERS AND CONTRACTORS

The Engineers and Contractors, are responsible for physically demolition of the existing slipway and construction of the concrete slipway. The responsibilities indicated here are also relevant to Sub-Contractors.

The responsibilities of the Engineers and Contractors include but are not limited to the following:

- Adhere with the conditions and recommendations of the EMPR or any other legally binding documentation;
- Prevent actions that may cause harm to the environment;
- Be responsible for any remedial activities in response to an environmental incident within their scope of influence;
- Ensure compliance of all site personnel and / or visitors to the EMPR and any other authorisations.



6. ENVIRONMENTAL MANAGEMENT PROGRAMME

PRE-CONSTRUCTION PHASE			
TASK	MANAGEMENT TOOLS	RESPONSIBILITY	TIMEFRAME
EMPR INDUCTION	PLANNING		
	The EMPR applies to all appointed Engineers, contractors, Eco and their staff	All	Ongoing
	The contractor to provide the engineer with a programme	E/C	Prior to construction commencement
	Provide the Eco with all method statements and contingency plans	E/C	
	All site staff, contractors, engineers to have environmental training on the EMPR prior to construction and identifications of no-go areas.	Eco	
	Notify DFFE and SANParks 14 days prior to commencement of construction	Eco/Proponent	
	Induction of Health and safety	Health	
	The required emergency numbers and protocol must be displayed on site	Health	
	Fire prevention equipment must be provided as per the Occupational Health and Safety Act	E/C	
	CODE OF CONDUCT		
	Identify no go areas and site demarcation around the building footprint. No damage to the environment prohibited within the no go areas	Eco	Ongoing
	No fishing, pumping of prawns or disturbing of fauna is permitted from the Knysna Estuary and will be subjected to disciplinary action.		
	No Harvesting, trampling, cutting and disturbing of flora (outside the active site) from the Knysna Estuary is permitted and will be subjected disciplinary action.		
	Pollution of the construction site and surrounding areas will be subjected to disciplinary action.		
SITE ESTABLISHMENT	SITE CAMP ESTABLISHMENT		
	An Area for the site/ office if required and storage of construction material to be identified, this area to be away from storm water runoff and at least 10 meters away from the Knysna Estuary.	E/Eco	Before site setup
The site office must make provision for: <ul style="list-style-type: none"> • Parking facilities • Ablution facilities • First aid area • Hazardous substance storage area 	All		



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ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

	The site area to be fenced off and secured to prevent non-construction staff entering and posing a risk to security and safety protocols		
	Site signs warning public of construction in progress to be put in place.	E/C	
	Waste bins to be placed according to the waste hierarchy	C	
CONSTRUCTION PHASE			
SITE ACCESS	ROUTING/VEHICLES		
	The existing access to the proposed development to be used.	All	During construction
	All vehicles to adhere to speed limit and traffic rules		
Care should be taken that local traffic flow patterns is not significantly disturbed			
VEHICLE & EQUIPMENT	MAINTENANCE		
	No vehicles may be repaired on site.	C	During Construction
	No re-fuelling of vehicles on site.	C	
	Emergency repair of equipment should only occur in site camp and not within the estuary or building footprint area	C	
	Tarpaulin must be laid down if equipment is to be repaired in designated area to prevent environmental pollution	C	
	All equipment to be serviced and adequately maintained to prevent oil spills, diesel or fuel leaks	C	
	Should the equipment/machinery used be deemed a pollution risk by the Eco this equipment must be repaired or removed from site	ECO	
WASTE MANAGEMENT AND TOILET FACILITIES	WASTE MANAGEMENT		
	The waste hierarchy must be followed (reduce, Re-use and Recycle). It is suggested that bins be placed according to the waste hierarchy (recycling bins, glass, plastic and paper). The Eco must inspect the waste storage and removal facilities regularly and ensure that the waste levels are acceptable. The bins must be water tight and scavenger proofed.	ALL	Ongoing
	Bins must be provided for builders waste. These bins should be covered and emptied on a regular basis.	C	
	TOILET FACILITIES		
Chemical toilet facilities or other approved toilet facilities must be provided on site (1 toilet for every 10 workers). If Chemical toilet facilities is used they must be located as far away from the wetland as possible to prevent pollution of the wetland. Toilets must be placed in an area approved by the ECO.	ECO/C	Ongoing	



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	The toilets to be cleaned once a week or when required. The contractor to supply the ECO with toilet slips if a chemical toilet is being used. The contractor must ensure that no leakage or spillage occurs when chemical toilets are replaced. The contractor to ensure sufficient toilet paper is placed every day in the toilets. The Eco must regularly inspect the state of chemical toilets.	C	
	Performing ablution outside toilet facilities are strictly prohibited.	ECO/C	
STORAGE AND MANAGEMENT OF HAZARDOUS AMD CONSTRUCTION MATERIALS	STORAGE AREA		
	Storage of material must be placed as far away as possible from the wetland and storm water runoff.	ALL	Ongoing
	Storage areas must be demarcated and no unauthorised access is allowed.		
	Storage areas must be secure to minimize crime and general public access.	E/C	
	HAZARDOUS SUBSTANCES AND MATERIALS		
	Hazardous waste should be stored in a separate bin and be disposed of at a landfill licenced in terms of section 20 of the Environmental Conservation Act 1989 (Act No 73 of 1989) or the National Environmental Management: Waste Act (Act No. 59 of 2008). Any builder's waste that can be re-used can be stockpiled in an area identified by the ECO.	ECO/C	Ongoing
	All Hazardous substances and chemicals to be used on site, must be reported to the Eco in order to ensure possible negative environmental impacts are mitigated. This should be written in a contingency plan to be approved by the ECO.	ECO/C/E	Prior to construction
	A re-fuelling area of machines and equipment must be identified by the ECO and Engineer. Drip trays to be placed under refuelling areas. The proximity of buildings and public walkways of these storage areas must be taken into consideration.	ALL	Ongoing
	Firefighting equipment must be placed in close proximity to the refuelling designated area.	C	
	Contractors to submit a method statement and contingency plan for refuelling to be approved by the ECO	C	Prior to construction
No materials are to be stored in unstable or high risk areas	ALL	Ongoing	
FIRE PREVENTION			
No open fires allowed on site	ALL	Ongoing	



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FIRE AND SAFETY MANAGEMENT	No burning of waste is permitted on site		
	Working fire extinguishers and firefighting equipment must be available all times on site		
	In case of an accidental fire the contractor must alert Knysna Fire Department immediately	C	
	SAFETY		
	A Health and Safety Officer to be appointed	C/E	Prior to construction
	A first aid kit to be on site and all emergency numbers to be displayed on site	C	
EARTHWORKS AND EXCAVATION	UNDERTAKING OF EXCAVATION AND EARTHWORKS		
	The Area within the slipway to be clearly demarcated for earthworks	C	Ongoing
	No heavy machinery will be permitted at all within the wetland. All earthwork machinery to stay within the parking area	C	
	Any area to be excavated to be discussed with the appointed ECO prior to commencement of excavation	C/E	
	No excavations allowed outside the footprint of the existing slipway.	C/E	
	STORAGE OF EXCAVATED MATERIALS		
	In-situ materials to be excavated will not be allowed to be stored on site and must be removed immediately to a licensed facility	C/E	Ongoing
	SOURCING OF CONSTRUCTION MATERIAL		
	The Material used for fill must be approved by the Engineer And ECO	ALL	Prior to construction
	STORMWATER	STORMWATER CONTROL MEASURES	
Redirect all storm water away from the construction slipway site using sandbags		C	Ongoing
NOISE AND VISUAL IMPACTS	NOISE IMPACTS		
	Noise levels must comply with health and safety regulations. The health and safety consultant should ensure compliance with legal limits.	E/C	Ongoing
	VISUAL IMPACTS		
	Storage facilities to be demarcated with Green netting where possible	E/C	Ongoing
POLLUTION – METHOD STATEMENT AND CONTINGENCY PLANS	POLLUTION PREVENTION MEASURES		
	The pollution of the receiving environment must be prevented at all costs, therefore it is required to prevent and manage the sources of pollution. The probable sources of pollution is listed below: <ol style="list-style-type: none"> 1. Spillage and contamination from oil 2. Spillage and contamination of hydraulic fluids 3. Spillage and contamination from fuel 4. Spillage and contamination from chemical toilets 	E/C	Prior to construction and ongoing



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	<p>5. Spillage and contamination from construction chemicals, concrete and cement</p> <p>A method statement and contingency plan written by the contractor to be submitted to ECO for approval</p>		
KNYSNA ESTUARY	FAUNA & FLORA		
	No fishing or pumping of prawns permitted.	ALL	Ongoing
	Any fauna found on site may not be harmed, and the ECO is to determine appropriate relocation procedures should this become necessary.		
	No-go areas to be adhered too and no damage or people walking will be permitted in the identified no-go areas.		
No harvesting of plants permitted.			
HERITAGE	DISCOVERY OF HERITAGE RESOURCES		
	<p>If any heritage resources are discovered work will be suspended immediately and the appropriate authorities must be contacted</p> <p>Examples of heritage resources are as follow:</p> <ul style="list-style-type: none"> ➤ Human remains ➤ Coins/Gold/Silver ➤ Fossils ➤ Fossils shell middens/ marine shell heaps ➤ Pottery/ceramics 	ALL	Ongoing
RECORD KEEPING	APPOINTED ECO		
	All administrative procedures, permits, required licences to be submitted to ECO.	E/C/PROponent	Ongoing
	Record keeping of all site meetings, monitoring reports, approved EMPR, contingency plans and method statements must be clearly documented and kept on site of easy referral.	ECO	
	A site register should also be kept on site for recording of any emergency incidents, negative environmental impacts.	ALL	
ECO reports to be submitted to DFFE/SANParks on a weekly basis	ECO		
SITE CLOSURE			
SITE CAMP AND STORAGE AREA	SITE CLEAN-UP		
	All Areas cleared of any stockpiled materials.	C	After Construction Completion
	All rubble to be removed to a licensed waste facility.		
	The site to be cleared of all litter.		
Fences, barriers and demarcations associated with the construction phase are to be removed from site.			



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	All leftover building material to be removed from site.		
	All sandbags to be removed from site.		
	All chemical toilets to be removed.		
	ROADS		
	Any damaged road surfaces as a result of construction vehicles entering and leaving the site to be repaired to the satisfaction of the engineer.	C	After Construction Completion
	The engineer to provide a snag list to the contractor for site closure	E	
	AUDIT REPORT		
An environmental audit report must be completed for the closure of the site and submitted to DFFE and SANParks	ECO	After Construction Completion	

ALIEN PLANT CONTROL

Benefits of control

- Elimination of spread of these species into non-affected areas.
- Improvement of water quality and quantity.
- Legal compliance: landowners are required to eradicate or control declared weed and alien invader plants in terms of the Conservation of Agricultural Resources Act 43 of 1983 and the National Environmental Management: Biodiversity Act 10 of 2004.
- Improvement of biodiversity in conservation areas. Fast growing invader plants suppress indigenous flora, with a resultant loss in overall biodiversity.
- Commercial reasons: alien vegetation can spread from conservation areas into production land resulting in greater weed control costs.

Important factors influencing the effectiveness of a control programme

- Timeous implementation of control operations is important for alien plants.
- Operations must be directed towards killing alien vegetation. This is best achieved by using an effective herbicide chosen by the ECO and applied by using the "cut-stump; frilling or ring barking methods. Under no circumstances may spraying with a "Rose" or multi- stream nozzle head be done.

Requirements for an effective alien vegetation control programme

- Identify the problem: extent, location and species of problem plant.
- Divide the problem areas into manageable units, taking budget and resource constraints into account.
- Identify any sensitive ecosystems, rare or endangered plants etc. which may be affected by a control programme. Identify the original ecosystem applicable to the area.
- Make provision for a number of follow up operations. The initial clearing operation is only part of the total programme. Failure to follow up will result in a failure of the entire programme.

While the importance of removing or clearing of alien or exotic vegetation is recognised, there should be control over the way in which this takes place. Often what generally appears to be covered by alien vegetation, actually contains pockets of sensitive vegetation or protected species. It is for this reason that clearing of such areas must be



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undertaken by hand (*Guidelines for the Control and Management of Activities in Sensitive Coastal Areas, first edition, 1998*).

It is important to note that all of the above must be performed with instruction by a suitably qualified Botanical Specialist, as well as in the presence of the specialist.

Aquatic Rehabilitation Plan

Please refer to the attached Appendix L Aquatic Rehabilitation Report that forms part of the EMPr.

CONCLUSION

This is a draft EMPr and the comments of all Authorities and Registered I&AP's will be taken into consideration for the Final Report.