BASIC ASSESSMENT REPORT
IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (AS AMENDED)

October 2017

PROJECT TITLE

KLIPHOEK RIVER RESORT EXPANSION ON PORTION 1 OF FARM 1196 AND FARM 1196, VELDDRIF

12 January 2018

REPORT TYPE CATEGORY	REPORT REFERENCE NUMBER	DATE OF REPORT
Pre-Application Basic Assessment Report (if applicable)[1]	16/3/3/6/7/1/F1/14/2210/16	12 May 2017
Draft Basic Assessment Report[2]	16/3/3/6/7/1/F1/14/2210/16	18 May 2018
Final Basic Assessment Report[3] or, if applicable Revised Basic Assessment Report[4] (strikethrough what is not applicable)	16/3/3/6/7/1/F1/14/2210/16	

Notes:

1. In terms of Regulation 40(3) potential or registered interested and affected parties, including the Competent Authority, may be provided with an opportunity to comment on the Basic Assessment Report prior to submission of the application but must again be provided an opportunity to comment on such reports once an application has been submitted to the Competent Authority. The Basic Assessment Report released for comment prior to submission of the application is referred to as the "Pre-Application Basic Assessment Report". The Basic Assessment Report made available for comment after submission of the application is referred to as the "Draft Basic Assessment Report". The Basic Assessment Report together with all the comments received on the report which is submitted to the Competent Authority for decision-making is referred to as the "Final Basic Assessment Report".

2. In terms of Regulation 19(1)(b) if significant changes have been made or significant new information has been added to the Draft Basic Assessment Report , which changes or information was not contained in the Draft Basic Assessment Report consulted on during the initial public participation process, then a Final Basic Assessment Report will not be submitted, but rather a "Revised Basic Assessment Report", which must be subjected to another public participation process of at least 30 days, must be submitted to the Competent Authority together with all the comments received.

DEPARTMENTAL REFERENCE NUMBER(S)

Pre-application reference number:	
File reference number (EIA):	DEA&DP - DM REFERENCE NO: 16/3/3/6/7/1/F1/14/2210/16
NEAS reference number (EIA):	
File reference number (Waste):	NA
NEAS reference number (Waste):	
File reference number (Air Quality):	NA
NEAS reference number (Air Quality):	
File reference number (Other):	NA
NEAS reference number (Other):	

CONTENT AND GENERAL REQUIREMENTS

Note that:

1. The content of the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended), any subsequent Circulars, and guidelines must be taken into account when completing this Basic Assessment Report Form.
2. This Basic Assessment Report is the standard report format which, in terms of Regulation 16(3) of the EIA Regulations, 2014 (as amended) must be used in all instances when preparing a Basic Assessment Report for Basic Assessment applications for an environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA")and the EIA Regulations, 2014 (as amended) and/or a waste management licence in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("NEM:WA"), and/or an atmospheric emission licence in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA") when the Western Cape Government: Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority/Licensing Authority.
3. This report form is current as of October 2017. It is the responsibility of the Applicant/ Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the report form have been released by the Department. Visit the Department's website at **http://www.westerncape.gov.za/eadp** to check for the latest version of this checklist.
4. The required information must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The tables may be expanded where necessary.
5. The use of "not applicable" in the report must be done with circumspection. All applicable sections of this report form must be completed. Where "not applicable" is used, this may result in the refusal of the application.
6. While the different sections of the report form only provide space for provision of information related to one alternative, if more than one feasible and reasonable alternative is considered, the relevant section must be copied and completed for each alternative.
7. Unless protected by law, all information contained in, and attached to this report, will become public information on receipt by the competent authority. If information is not submitted with this report due to such information being protected by law, the applicant and/or EAP must declare such non-disclosure and provide the reasons for believing that the information is protected.
8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this report must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.
9. This Report must be submitted to the Department and the contact details for doing so are provided below.
10. Where this Department is also identified as the Licencing Authority to decide applications under NEM:WA or NEM:AQA, the submission of the Report must also be made as follows, for-
    - Waste management licence applications, this report must also (*i.e.,* another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (tel: 021-483-2756 and fax: 021-483-4425) at the same postal address as the Cape Town Office.
    - Atmospheric emissions licence applications, this report must also be (*i.e.*, another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (tel: 021 483 2798 and fax: 021 483 3254) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE		GEORGE REGIONAL OFFICE
REGION 1 **(City of Cape Town & West Coast District)**	**REGION 2** **(Cape Winelands District & Overberg District)**	**REGION 3** **(Central Karoo District & Eden District)**
Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1) at: Tel.: (021) 483-5829 Fax: (021) 483-4372	Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 2) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 2) at: Tel.: (021) 483-5842 Fax: (021) 483-3633	Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530 Registry Office 4th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Development Management (Region 3) at: Tel.: (044) 805-8600 Fax: (044) 805 8650

TABLE OF CONTENTS:

ACRONYMS USED IN THIS BASIC ASSESSMENT REPORT AND APPENDICES:

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DEA	National Department of Environmental Affairs
DEA&DP	Western Cape Government: Environmental Affairs and Development Planning
DWS	National Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM:ICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
PPP	Public Participation Process

DETAILS OF THE APPLICANT

Applicant / Organisation / Organ of State:	Kliphoek Rivieroord		
Contact person:	NA		
Postal address:	P.O. Box 168, Velddrif		
Telephone:	(022) 783 0822	Postal Code:	7365
Cellular:	NA	Fax:	NA
E-mail:	kliphoekinfo@kliphoek.co.za		

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

Name of the EAP organisation:	Eco Impact Legal Consulting (Pty) Ltd		
Person who compiled this Report:	Nicolaas Hanekom		
EAP Reg. No.:	SACNASP Pri.Sci.Nat (Ecological Science) 400274/11. SAATCA Registration number 015. EMS ISO 14001 (Internal Auditor) International Association for Impact Assessment (Contact I.D. 106673)		
Contact Person (if not author):	NA		
Postal address:	P.O. Box 45070		
Telephone:	(021) 671 1660	Postal Code:	7735
Cellular:	NA	Fax:	(021) 671 9976
E-mail:	admin@ecoimpact.co.za		
EAP Qualifications:	M.Tech Nature Conservation. Cape Peninsula University of Technology. EMS ISO 14001. North West University Environmental Audit ISO 19011. North West University		

Please provide details of the lead EAP, including details on the expertise of the lead EAP responsible for the Basic Assessment process. Also attach his/her Curriculum Vitae to this BAR.

Mr Nicolaas Hanekom:

Mr. Hanekom is a registered Professional Natural Scientist in the ecological science field with the South African Council for Natural Scientific Professions ("SACNASP") and a qualified EAP who holds a Masters Technologiae, Nature Conservation ("Vegetation Ecology and Biodiversity Assessment") degree from the Cape Peninsula University of Technology.

He further qualified in Environmental Management Systems ISO 14001:2004, at the Centre for Environmental Management, North-West University, as well as Environmental Management Systems ISO 14001:2004 Audit: Internal Auditors Course to ISO 19011:2003 level, from the Centre for Environmental Management, North-West University qualifying him to audit to ISO/SANS environmental compliance and EMS standards.

Mr Hanekom has been responsible for many environmental impact assessments and several EIA, waste license and atmospheric emission license applications as well as being involved in the implementation of several environmental management systems.

EXECUTIVE SUMMARY OF THE BASIC ASSESSMENT REPORT:

The expansion of the existing resort will entail:

- the construction of 9 new jetties one with a deck and the extension of an existing jetty;
- The upgrade and restoration of 3 historical jetties on the same footprint
- the construction of 5 new units (cottages);
- the construction of a new boat storage unit (0.2ha);
- the construction of a new entertainment hall and ablution facilities on existing infrastructure;
- the construction of a new lapa and braai facilities on the foundation of the existing structure;
- the construction of new ablution facilities on existing infrastructure;

- the construction of new camping grounds with 16 stands (1.1ha);
- the conversion of the existing old quarry to a dam;
- the development of a BMX bicycle track (1.1ha);
- the development of a bird hide on the existing access trail to the island;

The proposed development is situated approximately 5.5km south of Velddrif on the southern bank of the Berg River.

Location alternatives – The property was the only alternative considered. Existing access, infrastructure, resort infrastructure and old disturbed and impacted areas were all considered when the location of the expansion facilities was taken into consideration on the property.

Activity alternatives - No other activity alternatives were assessed as no feasible or reasonable alternative exists. The only activity alternative considered is the expansion of resort facilities to expand the resort activities and infrastructure.

Layout alternatives – Two layout and design alternatives were considered. These layouts are however all situated in the same area but the location of some facilities is placed in other areas. The proposed BMX track was reduced in size from 2.4ha in the alternative layout to 1.1ha in the preferred alternative. The BMX track was moved out of the sensitive area close to the Berg River further back next to the camp site on ploughed agricultural lands and outside sensitive areas. The camp site was reduced in size from 1.6ha in the alternative layout to 1.1 ha in the preferred alternative, an the additional camp site area on the eastern edge of the chalets was removed from the layout due to the sensitivity close to the Berg River. The location of the 5 new chalet units on the bigger area was shifted more to the east in the preferred layout.

Technology alternatives - No technological alternatives other than duel flush toilet systems, low flow shower installations and energy efficient lighting and geysers are considered. Alternative measures to reduce water demand (reusing or recycling of grey water) must include utilisation of grey water from showers for reuse in toilets as well as rainwater harvesting. The use of alternative/renewable energy sources (solar panels for lighting and geysers, etc) must be investigated.

Operational alternatives – No operational alternatives are considered. The proposed development is an expansion of an existing resort and the operation of the resort will continue as is.

The No-Go Option - The No-Go option will result in the site remaining as is presently and the existing resort will continue as is without the expanded infrastructure.

Impact Summary
Potential negative impacts that may arise from the proposed construction phase include ecological effects due to:
- Disturbance to or alteration of soft sediment estuarine habitat;
- temporary loss of artificial wood/concrete habitat;
- mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary;
- mobilisation of sediment in the water column;
- loss of vegetation (including intact vegetation, ecologically important species and species of conservation concern);
- loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern;
- generation and disposal of waste;
- increased noise and vibration; and
- spillage of hazardous substances.

Possible environmental impacts caused during the operational phase that are likely to impact on estuarine communities include the effects of:
- altered quay design affecting hydrodynamics and sediment movement;

- increased foot and vessel traffic affecting sensitive biota;
- generation and disposal of waste; and,
- noise and vibration.

The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance. Cumulative estuarine environmental impacts associated with this project are primarily related to operational impacts resulting from increased vessel traffic and wastewater discharge, as well as increased risks from hazardous substances. It is envisioned that only minor routine maintenance will be required over the course of the design life of the proposed development. Impacts expected in the decommissioning phase have been dealt with in the construction phase.

Construction phase:

- Disturbance to or alteration of soft sediment estuarine habitat – Insignificant
- Temporary loss of artificial wood/concrete habitat – Insignificant
- Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary – Low but with mitigation insignificant.
- Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure - Low but with mitigation insignificant.
- Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern – Low but with mitigation very low.
- Waste generation and disposal - medium but with mitigation low.
- Noise and vibration – Very low but with mitigation insignificant.
- Spillage of hazardous substances on estuarine biota - Low but with mitigation very low.
- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures);
- Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise due to construction machinery - (Low impact before mitigation and low impact with mitigation measures);
- Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures);

Operational phase:

- Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures);
- Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (medium impact before mitigation and low impact with mitigation measures);
- Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);

- Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise due to tourist activities - (Low impact before mitigation and low impact with mitigation measures);
- Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures);
- Altered quay design affecting hydrodynamics and sediment movement – Insignificant
- Increased foot and vessel traffic affecting sensitive biota – Insignificant
- Generation and disposal of waste - medium but with mitigation low.
- Noise and vibration – Insignificant

Decommissioning phase:

Similar to impacts associated with construction phase.

No Go or No Development option:

- The No-Go option will result in the site remaining as is presently.

SECTION A: PROJECT INFORMATION

1. ACTIVITY LOCATION

Location of all proposed sites:	The property is situated on the southern banks of the Berg River, approximately 5.5km southeast of Velddrif off the Velddrif/Hopefield road next to the existing Kliphoek River Resort.
Farm / Erf name(s) and number(s) (including Portions thereof) for each proposed site:	Portion 1 of Farm 1196 and Farm 1196, Velddrif
	NA
Property size(s) in m^2 for each proposed site:	Portion 1 of Farm 1196: 11.79ha Farm 1196: 2246.51ha
Development footprint size(s) in m^2:	Approximately 2.4ha
Surveyor General (SG) 21 digit code for each proposed site:	C04600000011960000001
	C04600000011960000000

2. PROJECT DESCRIPTION

(a) Is the project a new development? If "NO", explain:

YES	~~NO~~

NA

(b) Provide a detailed description of the scope of the proposed development (project).

The expansion of the existing resort will entail:

- the construction of 9 new jetties one with a deck and the extension of an existing jetty;
- the upgrade and restoration of 3 historical jetties on the same footprint
- the construction of 5 new units (cottages);
- the construction of a new boat storage unit (0.2ha);
- the construction of a new entertainment hall and ablution facilities on existing infrastructure;
- the construction of a new lapa and braai facilities on the foundation of the existing structure;
- the construction of new ablution facilities on existing infrastructure;
- the construction of new camping grounds with 16 stands (1.1ha);
- the conversion of the existing old quarry to a dam;
- the development of a BMX bicycle track (1.1ha);
- the development of a bird hide on the existing access trail to the island;

Please note: This description must relate to the listed and specified activities in paragraph (d) below.

(c) Please indicate the following periods that are recommended for inclusion in the environmental authorisation:

(i)	the period within which commencement must occur,	5 years
(ii)	the period for which the environmental authorisation should be granted and the date by which the activity must have been concluded, where the environmental authorisation does not include operational aspects;	10 years
(iii)	the period that should be granted for the non-operational aspects of the environmental authorisation; and	10 years
(iv)	the period that should be granted for the operational aspects of the environmental authorisation.	Unlimited.

Please note: The Department must specify the abovementioned periods, where applicable, in an environmental authorisation. In terms of the period within which commencement must occur, the period must not exceed 10 years and must not be extended beyond such 10 year period, unless the process to amend the environmental authorisation contemplated in regulation 32 is followed.

(d) List all the listed activities triggered and being applied for.

Please note: The onus is on the applicant to ensure that all the applicable listed activities are applied for and assessed as part of the EIA process. Please refer to paragraph (b) above.

EIA Regulations Listing Notices 1 and 3 of 2014 (as amended):

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1** (GN No. 327)	Describe the portion of the proposed project to which the applicable listed activity relates.
12	The development of— (i)~~dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or~~ (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area**;** (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.	The expansion of the existing resort will entail: • the construction of 9 new jetties one with a deck and the extension of an existing jetty; • the upgrade and restoration of 3 historical jetties on the same footprint • the construction of a new lapa and braai facilities on the foundation of the existing structure;
17	Development— (i) in the sea; (ii) in an estuary;	The expansion of the existing resort will entail: • the construction of 9 new jetties one

	(iii) within the littoral active zone; (iv) in front of a development setback; or (v) if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of— (a) fixed or floating jetties and slipways; (b) ~~tidal pools;~~ ~~(c) embankments;~~ ~~(d) rock revetments or stabilising structures including stabilising walls; or~~ **(f)** infrastructure or structures with a development footprint of 50 square metres or more — but excluding— (aa) the development of infrastructure and structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) the development of temporary infrastructure or structures where such structures will be removed within 6 weeks of the commencement of development and where coral or indigenous vegetation will not be cleared; or (dd) where such development occurs within an urban area.	with a deck and the extension of an existing jetty; • the upgrade and restoration of 3 historical jetties on the same footprint • the construction of 5 new units (cottages); • the construction of a new boat storage unit (0.2ha); • the construction of a new entertainment hall and ablution facilities on existing infrastructure; • the construction of a new lapa and braai facilities on the foundation of the existing structure; • the construction of new ablution facilities on existing infrastructure; • the construction of new camping grounds with 16 stands (1.1ha); • the conversion of the existing old quarry to a dam; • the development of a BMX bicycle track (1.1ha); • the development of a bird hide on the existing access trail to the island;
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving— (i) will occur behind a development setback; (ii) is for maintenance purposes undertaken in accordance with a maintenance management plan; (iii) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (iv) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or	The expansion of the existing resort will entail: • the construction of 9 new jetties one with a deck and the extension of an existing jetty; • the upgrade and restoration of 3 historical jetties on the same footprint • the development of a bird hide on the existing access trail to the island;

	(v) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	
19A	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from— (i) the seashore; (ii) the littoral active zone, an estuary or a distance of 100 metres inland of the highwater mark of the sea or an estuary, whichever distance is the greater; or (iii) the sea; — but excluding where such infilling, depositing , dredging, excavation, removal or moving— (i) will occur behind a development setback; (ii) is for maintenance purposes undertaken in accordance with a maintenance management plan; (iii) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (iv) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	The expansion of the existing resort will entail: • the construction of 9 new jetties one with a deck and the extension of an existing jetty; • the upgrade and restoration of 3 historical jetties on the same footprint • the development of a bird hide on the existing access trail to the island;
28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development: (ii)will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The expansion of the existing resort will entail: • the construction of a new boat storage unit (0.2ha); • the construction of a new entertainment hall and ablution facilities on existing infrastructure; • the construction of 5 new units (cottages); • the construction of a new lapa and braai facilities on the foundation of the existing structure; • the construction of new ablution facilities on existing infrastructure; • the construction of new camping

		grounds with 16 stands (1.1ha); • the conversion of the existing old quarry to a dam; • the development of a BMX bicycle track (1.1ha);
48	The expansion of— (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or (ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more; where such expansion occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding— (aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such expansion occurs within an urban area; or (ee) where such expansion occurs within existing roads, road reserves or railway line reserves.	The expansion of the existing resort will entail: • the construction of 9 new jetties one with a deck and the extension of an existing jetty; • the upgrade and restoration of 3 historical jetties on the same footprint • the development of a bird hide on the existing access trail to the island;
54	The expansion of facilities— (i) in the sea; (ii) in an estuary; (iii) within the littoral active zone; (iv) in front of a development setback; or (v) if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of— (a) fixed or floating jetties and slipways; (b) tidal pools; (c) embankments;	The expansion of the existing resort will entail: • the construction of 9 new jetties one with a deck and the extension of an existing jetty; • the upgrade and restoration of 3 historical jetties on the same footprint • the development of a bird hide on the existing access trail to the island;

	(d) rock revetments or stabilising structures including stabilising walls; or (e) infrastructure or structures where the development footprint is expanded by 50 square metres or more, but excluding— (aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; or (bb) where such expansion occurs within an urban area.	
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 3** (GN No. 325)	Describe the portion of the proposed project to which the applicable listed activity relates.
14	The development of— ~~(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or~~ (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **i. Western Cape** i. Outside urban areas: ~~(aa) A protected area identified in terms of NEMPAA, excluding conservancies;~~ ~~(bb) National Protected Area Expansion Strategy Focus areas;~~ ~~(cc) World Heritage Sites;~~ ~~(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;~~ (ee) Sites or areas listed in terms of an international convention; (ff) ~~Critical biodiversity areas or ecosystem service areas as identified in~~ ~~systematic biodiversity plans adopted by the competent authority or in bioregional plans;~~	The expansion of the existing resort will entail: • the construction of 9 new jetties one with a deck and the extension of an existing jetty; • the upgrade and restoration of 3 historical jetties on the same footprint • the development of a bird hide on the existing access trail to the island; • the construction of a new lapa and braai facilities on the foundation of the existing structure;

	(gg) Core areas in biosphere reserves; or (hh) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.	
17	The expansion of a resort, lodge, hotel, and tourism or hospitality facilities where the development footprint will be expanded and the expanded facility can accommodate an additional 15 people or more. **(i)In Western Cape:** **i. Western Cape** i. ~~Inside a protected area identified in terms of NEMPAA;~~ ii. Outside urban areas: ~~(aa) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; or~~ (bb) Within 5km from national parks, world heritage sites, areas identified in terms of NEMPAA or from the core area of a biosphere reserve; - excluding the conversion of existing buildings where the development footprint will not be increased.	The expansion of the existing resort will entail: • the construction of 9 new jetties one with a deck and the extension of an existing jetty; • the upgrade and restoration of 3 historical jetties on the same footprint • the construction of 5 new units (cottages); • the construction of a new boat storage unit (0.2ha); • the construction of a new entertainment hall and ablution facilities on existing infrastructure; • the construction of a new lapa and braai facilities on the foundation of the existing structure; • the construction of new ablution facilities on existing infrastructure; • the construction of new camping grounds with 16 stands (1.1ha); • the conversion of the existing old quarry to a dam; • the development of a BMX bicycle track (1.1ha); • the development of a bird hide on the existing access trail to the island;
23	The expansion of— (i) dams or weirs where the dam or weir is expanded by 10 square metres or more; or (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs— (a) within a watercourse; (b) in front of a development setback adopted in the prescribed manner; or (c) if no development setback has	• the conversion of the existing old quarry to a dam;

	been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	
Activity No(s):	Provide the relevant **Scoping and EIR Activity(ies)** as set out in **Listing Notice 2** (GN No. 324)	Describe the portion of the proposed project to which the applicable listed activity relates.
NOT APPLICABLE		

Note:

- A Scoping and Environmental Impact Reporting (S&EIR) process must be followed for all the activities (NEMA Listed Activities and/or Waste Management Activities) if any of the activities must be subjected to S&EIR.
- Only those activities listed above shall be considered for authorisation. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. Environmental Authorisation must be obtained prior to commencement with each applicable listed activity. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted.
- The Minister responsible for mineral resources is the competent authority to deal with all applications where the listed or specified activity is directly related to-

  (a) prospecting or exploration of a mineral or petroleum resource; or
  (b) extraction and primary processing of a mineral or petroleum resource.
- The national Minister for environmental affairs must be identified as the competent authority where a Cabinet decision stipulates that the Minister must be the competent authority for activities related to a matter declared as a national priority or matters related to such national priority (e.g. if Cabinet has decided that a strategic integrated project ("SIP") as contemplated in the Infrastructure Development Act, 2014 (Act No. 23 of 2014) is a national priority or relates to a national priority).

Waste management activities in terms of the NEM: WA (GN No. 921):

Category A Listed Activity No(s):	Describe the relevant Category A waste management activity in writing as per GN No. 921	Describe the portion of the development that relates to the applicable listed activity as per the project description
NA	NA	NA

Note: If any waste management activities are applicable, the **Listed Waste Management Activities Additional Information Annexure** must be completed and attached to this Basic Assessment Report as **Appendix I.**

Atmospheric emission activities in terms of the NEM: AQA (GN No. 893):

Listed Activity No(s):	Describe the relevant atmospheric emission activity in writing as per GN No. 893	Describe the portion of the development that relates to the applicable listed activity as per the project description.
NA	NA	NA

(e) Provide details of all components (including associated structures and infrastructure) of the proposed development and attach diagrams (*e.g.,* architectural drawings or perspectives, engineering drawings, process flowcharts, *etc*.).

Buildings Provide brief description below:	YES	~~NO~~
The expansion of the existing resort will entail: • the construction of 5 new units (cottages); • the construction of a new boat storage unit (0.2ha); • the construction of a new entertainment hall and ablution facilities on existing infrastructure; • the construction of a new lapa and braai facilities on the foundation of the existing structure; • the construction of new ablution facilities on existing infrastructure; • the development of a bird hide on the existing access trail to the island;		
Infrastructure (*e.g.,* roads, power and water supply/ storage) Provide brief description below:	YES	~~NO~~
The expansion of the existing resort will entail: • the construction of 9 new jetties one with a deck and the extension of an existing jetty; • The upgrade and restoration of 3 historical jetties on the same footprint • the construction of new camping grounds with 16 stands (1.1ha);		

• the conversion of the existing old quarry to a dam; • the development of a BMX bicycle track (1.1ha); • Five 5 cubic meter close sewerage tanks will be installed at the back (away from the river) of each chalets which can be serviced from the access road to the chalets above the 5m amsl contour, as well as two 5 cubic meters tanks (one on the male side and one on the female side) at the back of the newly to be constructed ablution facilities.		
Processing activities (*e.g.,* manufacturing, storage, distribution) Provide brief description below:	~~YES~~	NO
NA		
Storage facilities for raw materials and products (*e.g.,* volume and substances to be stored) Provide brief description below:	~~YES~~	NO
NA		
Storage and treatment facilities for effluent, wastewater or sewage: Provide brief description below:	~~YES~~	NO
Five 5 cubic meter close sewerage tanks will be installed at the back (away from the river) of each chalets which can be serviced from the access road to the chalets above the 5m amsl contour, as well as two 5 cubic meters tanks (one on the male side and one on the female side) at the back of the newly to be constructed ablusion facilities.		
Storage and treatment of solid waste Provide brief description below:	~~YES~~	NO
NA		
Facilities associated with the release of emissions or pollution. Provide brief description below:	~~YES~~	NO
NA		
Other activities (*e.g.,* water abstraction activities, crop planting activities) – Provide brief description below:	~~YES~~	NO
NA		

3. PHYSICAL SIZE OF THE PROPOSED DEVELOPMENT

(a) Property size(s): Indicate the size of all the properties (cadastral units) on which the development proposal is to be undertaken	Approximately 2.4 ha	m^2
(b) Size of the facility: Indicate the size of the facility where the development proposal is to be undertaken	• The construction of 9 new jetties one with a deck and the extension of an existing jetty **= 90m²** • the upgrade and restoration of 3 historical jetties on the same footprint **= 30m²** • the construction of 5 new units (cottages) **= 600m²** • the construction of a new boat storage unit **= 0.2Ha** • the construction of a new entertainment hall and ablution facilities on existing infrastructure **= 1000m²** • the construction of a new lapa and	m^2

	braai facilities on the foundation of the existing structure**= 120m²** • the construction of new ablution facilities on existing infrastructure**= 200m²** • the construction of new camping grounds with 16 stands **= 1.1Ha** • the development of a BMX bicycle track **= 1.1Ha** • the development of a bird hide on the existing access trail to the island **= 20m²**	
(c) Development footprint: Indicate the area that will be physically altered as a result of undertaking any development proposal (*i.e.,* the physical size of the development together with all its associated structures and infrastructure)	Approximately 2.4 ha	m^2
(d) Size of the activity: Indicate the physical size (footprint) of the development proposal	Approximately 2.4 ha	m^2
(e) For linear development proposals: Indicate the length (L) and width (W) of the development proposal	(L)	m
	(W)	m
(f) For storage facilities: Indicate the volume of the storage facility		m^3
(g) For sewage/effluent treatment facilities: Indicate the volume of the facility (Note: the maximum design capacity must be indicated		m^3

4. SITE ACCESS

(a) Is there an existing access road?	YES	~~NO~~
(b) If no, what is the distance in (m) over which a new access road will be built?		NA m

(c) Describe the type of access road planned:

NA

Please note: The position of the proposed access road must be indicated on the site plan.

5. DESCRIPTION OF THE PROPERTY(IES) ON WHICH THE LISTED ACTIVITY(IES) ARE TO BE UNDERTAKEN AND THE LOCATION OF THE LISTED ACTIVITY(IES) ON THE PROPERTY

5.1 Provide a description of the property on which the listed activity(ies) is/are to be undertaken and the location of the listed activity(ies) on the property, as well as of all alternative properties and locations (duplicate section below as required).

The expansion of the existing resort will entail:

- the construction of 9 new jetties one with a deck and the extension of an existing jetty. The new jetties will be situated next to and in-between the existing jetties on the bank of the Berg River next to the chalets and one camp site.
- the upgrade and restoration of 3 historical jetties on the same footprint. The old jetties to be restored are situated next to and in-between the existing jetties on the bank of the Berg River next to the chalets and one camp site.

- the construction of 5 new units (cottages). The proposed 5 new chalets are situated at the back of the existing chalets further away from the bank of the Berg River on an elevated area above the 5m contour line.
- the construction of a new boat storage unit (0.2ha). The proposed new boat house is situated on the edge of the resort, between the resort and the agricultural activities next to and on an old farmyard area.
- the construction of a new entertainment hall and ablution facilities on existing infrastructure. The proposed new entertainment hall and ablution facilities are situated next to and surrounding the current farmhouse which is already used for this purpose.
- The construction of a new lapa and braai facilities on the foundation of the existing structure. The proposed new lapa is situated on the edge of the Berg River close to the jetties and chalets.
- the construction of new ablution facilities on existing infrastructure. The proposed new ablution facilities will be constructed on existing farmyard infrastructure foundations next to the proposed camp site away from the Berg River.
- the construction of new camping grounds with 16 stands (1.1ha). The proposed camp site is situated on an old farmyard area away from the river and on the edge of the resort in between the resort and the farm activities.
- the conversion of the existing old quarry to a dam. The old quarry that will be converted into a dam is situated close to the lapa and the Berg River.
- the development of a BMX bicycle track (1.1ha). The proposed BMX track is situated on the western edge of the resort and lapa on old ploughed agricultural lands.
- the development of a bird hide on the existing access trail to the island. The proposed bird hide is situated on an area that is called the island in the Berg River. It will be accessed by an existing hiking track and will be placed on poles and elevated off the ground to minimize the impact on the area.

Coordinates of all the proposed activities on the property or properties (sites):	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec.)		
	32 °	49'	57.16"	18°	12‘	41.72“

Note: For land where the property has not been defined, the coordinates of the area within which the development is proposed must be provided in an addendum to this report.

5.2 Provide a description of the area where the aquatic or ocean-based activity(ies) is/are to be undertaken and the location of the activity(ies) and alternative sites (if applicable).

- the construction of 9 new jetties one with a deck and the extension of an existing jetty. The new jetties will be situated next to and in-between the existing jetties on the bank of the Berg River next to the chalets and one camp site.
- the upgrade and restoration of 3 historical jetties on the same footprint. The old jetties to be restored are situated next to and in-between the existing jetties on the bank of the Berg River next to the chalets and one camp site.

Coordinates of the boundary /perimeter of all proposed aquatic or ocean-based activities (sites) (if applicable):	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
	32 °	49'	53.54"	18°	12‘	48.66“
	32 °	49'	52.22"	18°	12‘	30.29“
	°	'	"	°	'	"
	°	'	"	°	'	"

5.3 For a linear development proposal, please provide a description and coordinates of the corridor in which the proposed development will be undertaken (if applicable).

NA

For linear activities:	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
• Starting point of the activity	°	‘	“	°	‘	“
• Middle point of the activity	°	‘	“	°	‘	“
• End point of the activity	°	‘	“	°	‘	“

Note: For linear development proposals longer than 1000m, please provide an addendum with co-ordinates taken every 250m along the route. All-important waypoints must be indicated and the GIS shape file provided digitally.

5.4 Provide a location map (see below) as **Appendix A** to this report that shows the location of the proposed development and associated structures and infrastructure on the property; as well as a detailed site development plan / site map (see

below) as **Appendix B** to this report; and if applicable, all alternative properties and locations. The GIS shape files (.shp) for maps / site development plans must be included in the electronic copy of the report submitted to the competent authority.

Locality Map:	The scale of the locality map must be at least 1:50 000. For linear development proposals of more than 25 kilometres, a smaller scale *e.g.*, 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • a linear scale; • the prevailing wind direction (during November to April and during May to October); and • GPS co-ordinates (to indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection). For an ocean-based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94; WGS84 co-ordinate system.

Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be indicated on the site plan. • The position of each element of the application as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the development must be indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands - including the 32 meter set back line from the edge of the bank of a river/stream/wetland; o Flood lines (*i.e.*, 1:100 year, 1:50 year and 1:10 year where applicable; o Ridges; o Cultural and historical features; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas. The GIS shape file for the site development plan(s) must be submitted digitally.

6. SITE PHOTOGRAPHS

Colour photographs of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached as **Appendix C** to this report. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.

SECTION B: DESCRIPTION OF THE RECEIVING ENVIRONMENT

Site/Area Description

For linear development proposals (pipelines, *etc*.) as well as development proposals that cover very large sites, it may be necessary to complete copies of this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area that is covered by each copy on the Site Plan.

1. GRADIENT OF THE SITE

Indicate the general gradient of the sites (highlight the appropriate box).

Flat	Flatter than 1:10	~~1:10 – 1:4~~	~~Steeper than 1:4~~

2. LOCATION IN LANDSCAPE

(a) Indicate the landform(s) that best describes the site (highlight the appropriate box(es).

~~Ridgeline~~	~~Plateau~~	~~Side slope of hill / mountain~~	~~Closed valley~~	~~Open valley~~	Plain	~~Undulating plain/low hills~~	~~Dune~~	~~Sea-front~~

(b) Provide a description of the location in the landscape.

The site and proposed development is situated outside the 1 and 100 year flood line and 5m above mean sea level (AMSL) of the Berg River (except for the jetties) on the southern bank of the Berg River 5km south of Velddrif. The Berg River at the farm forms part of the Berg River Estuary. The proposed infrastructure is all situated next to existing resort infrastructure to strengthen the existing resort and on an active and operated farm.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

(a) Is the site(s) located on or near any of the following (highlight the appropriate boxes)?

Shallow water table (less than 1.5m deep) Jetties	YES	~~NO~~	~~UNSURE~~
Seasonally wet soils (often close to water bodies)	YES	~~NO~~	~~UNSURE~~
Unstable rocky slopes or steep slopes with loose soil	~~YES~~	NO	~~UNSURE~~
Dispersive soils (soils that dissolve in water)	~~YES~~	NO	~~UNSURE~~
Soils with high clay content	~~YES~~	NO	~~UNSURE~~
Any other unstable soil or geological feature	~~YES~~	NO	~~UNSURE~~
An area sensitive to erosion	~~YES~~	NO	~~UNSURE~~
An area adjacent to or above an aquifer.	~~YES~~	NO	~~UNSURE~~
An area within 100m of a source of surface water	YES	~~NO~~	~~UNSURE~~
An area within 500m of a wetland	YES	~~NO~~	~~UNSURE~~
An area within the 1:50 year flood zone	~~YES~~	NO	~~UNSURE~~
A water source subject to tidal influence	YES	~~NO~~	~~UNSURE~~

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (Information in respect of the above will often be available at the planning sections of local authorities. The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

(c) Indicate the type of geological formation underlying the site.

~~Granite~~	Shale	~~Sandstone~~	~~Quartzite~~	~~Dolomite~~	~~Dolorite~~	~~Other (describe)~~
Provide a description.						

The underlining bedrock of the area is granite. This is clearly visible in resistant headlands on large parts of the surrounding area.

The area is underlain by granites of the Vredenburg pluton of the Cape Granite Suite which intrudes the basement rocks of the Precambrian age Malmesbury Group. The granites have ages estimated to be approximately 550 Ma. The site is situated on the plain next to the river. Soils are also relatively thin particularly on the ridges where a coarse sandy hillwash layer overlies weathered rock. In general terms, the site is considered of very low sensitivity in terms of its geological environment. The ground is stable and there are no immediate or predictable geological hazards which may give rise to significant environmental impacts. There are also no geological features that have special scientific or historical significance.

Petrology

Ia type has been defined which are metaluminous, and typically show no "interesting" minerals in addition to biotite. **Ia** subtype is the dominant association (Paarl, Malmesbury, Vredenburg plutons). **Ia** granites are not deformed and can be either fine or coarse grained. They range from quartz monzonite to granite and alkali feldspar granite. They also contain xenoliths (generally rounded) and some MME.

The surface of the entire site is overlain by a colluvially transported gravelly silty sand horizon that varies in thickness from 0.3m to 0.8m thick. The gravelly silty sand is underlain by a dense to very dense horizon varying in composition from silty clayey sandy gravel to a clayey gravelly sand throughout the profile. The sand is fine to course grained and the clay content varies across the site. The gravel component generally consists of a fine to medium subangular ferricrete that is weakly cemented. There are also areas on the site where subangular quartz occur with the ferricrete. In some areas on site the horizon is partly ferruginized and calcretized.

4.SURFACE WATER

(a) Indicate the surface water present on and or adjacent to the site and alternative sites (highlight the appropriate boxes)?

Perennial River	YES	~~NO~~	~~UNSURE~~
Non-Perennial River	~~YES~~	NO	~~UNSURE~~
Permanent Wetland	YES	~~NO~~	~~UNSURE~~
Seasonal Wetland	~~YES~~	NO	~~UNSURE~~
Artificial Wetland	~~YES~~	NO	~~UNSURE~~
Estuarine / Lagoon	YES	~~NO~~	~~UNSURE~~

(b) Provide a description.

The Berg River Estuary is located on the West Coast of South Africa approximately 130 km north of Cape Town with tidal influence measurable up to ~70 km from the mouth. The Berg River Estuary is one of three permanently open estuaries on the west coast, and one of the largest estuaries in the country, with a total area of 61 km^2. The extensive floodplains, extensive dry pans, tidal flats and marsh areas in the middle and upper reaches of the system and the estuary's shallow gradient (rising 1 m in the first 50 km) make it atypical in relation to most South African estuaries. The estuary is considered one of the most important estuaries in South Africa in terms of conservation value - the system has been identified as an important bird area, and is also considered of high national conservation importance for estuarine fish, invertebrates and vegetation. Anthropogenic threats to the system include water abstraction and dams (there are four major dams within the Berg River Estuary catchment), agricultural and urban encroachment, specifically in terms of changes in hydrodynamics and water quality, frequency and intensity of the flooding of the floodplain and reduction of natural vegetation on the floodplain. The Berg River Estuary meets the ocean at St Helena Bay, a region that is influenced by the Benguela Current System, which is characterised by the upwelling of colder nutrient-rich deep water. The estuary has a permanently open mouth that was canalised in the late 1960s in an attempt to develop the estuary into a fishing harbour, and ensures a relatively unconstructed exchange of water between the estuary and ocean. A consequence of this stabilised mouth is a strong tidal current in the lower and middle reaches of the

estuary. Sediment in the lower reaches is extremely soft, and indicative of a high percentage of fine sediment particles and high organic content. The main channel at Velddrif is 100-200 m wide, and becomes progressively narrower and shallower moving upstream. The average depth ranges between 3-5 m, but reaches as much 9 m in areas, with the lower 4 km of the estuary dredged to a depth of at least 4 m to allow for boat navigation. The Kliphoek site vegetation includes supratidal salt marsh, and reed and sedge marsh areas. This vegetation is sensitive to trampling and grazing by livestock (Anchor 2010). The eastern and south eastern proposed development area (i.e. area where existing jetties are to be restored) is characterised by low gradients and extensive beds of *Phragmites australis*, which form persistent and dense monospecific stands that outcompete other indigenous estuary-associated species and encroach into the open water area. In terms of benthic invertebrates, the site is dominated by the polychaeta *Capitella capitate*, *Desdemona ornate* and *Ceratonereis erythraeensis*; the Anomuran *Callianassa kraussi* and the amphipod *Grandidierella lutosa*. Although the numbers of fish species present in west coast estuaries is low, they do represent a relatively high proportion (79%) of the total west coast inshore fish community, many of which are endemic to southern Africa and some of which are considered threatened. Marine migrant fish species in the Berg Estuary are represented mostly by juveniles. Some 127 water-associated species (passerine and non-passerine) have been recorded on the estuary and adjacent floodplain. The area is host to significant populations of several threatened bird species, including African marsh harrier and Caspian tern, Lesser flamingo, Black harrier, African black oystercatcher, Eastern white pelican, Cape cormorant, Greater flamingo, Greater painted snipe, and Chestnut-banded Plover. Waders are particularly attracted to the floodplain pans and artificial salt pans as their water levels drop, feeding on the newly exposed shorelines and in shallow water. The Kliphoek site is considered a very important winter feeding ground for wading birds and waterfowl. As such, the estuary is considered a top priority in terms of its overall biodiversity conservation importance. The economic valuation of the estuary has been estimated at R 75.6 million, which makes it one of the most valuable temperate estuaries in South Africa. The largest component of this value was derived from turnover in the property sector (R 48.6 million), followed closely by visitor expenditure (R 18.3 million) while subsistence and existence value made relatively small contributions to total estimated economic value[1].

The Berg River Estuary Important Bird Area ("IBA")[2] is located 140km north of Cape Town. The town of Laaiplek lies directly north of the river mouth, and 6 km upstream is the town of Velddrif. The Berg River forms one of only four perennial estuaries on the arid west coast of southern Africa. The IBA includes only the lower Berg River, but this system is reliant on the management of its catchment, which extends 160 km upstream from the river mouth to its source in the Franschhoek and Drakenstein mountains. From its source, the river flows through the towns of Paarl and Wellington before arching west and meeting the Atlantic Ocean at Laaiplek. The lower reaches of the river meander over very flat country so that, on average, the riverbed falls only 1 m in the last 50 km.

The Berg River Estuary is located on the West Coast of South Africa approximately 130 km north of Cape Town. The Berg River has its source in the Drakenstein and Franschhoek Mountains south of Franschhoek and flows into the sea at St Helena Bay (32°46' S; 18°08' E) some 285 km downstream DWA 2010). It is a river-dominated estuary with tidal influence measurable up to ~70 km from the mouth (Slinger & Taljaard 1994). The Berg River estuary is considered one of the most important estuaries in South Africa in terms of conservation value, and is categorised as a 'highly important estuary' by DWA (2010). The system has been identified as an important bird area (Barnes 1998), and is also considered of high national conservation importance for estuarine fish, invertebrates and vegetation. The estuary is a desired protected area in the conservation planning assessment conducted for C.A.P.E. (Turpie & Clark 2007) and other studies (e.g. Turpie *et al*. 2002; Turpie 2004). DWA (2010) list anthropogenic influences such as water abstraction and dams, agricultural and urban encroachment as the predominant treats to the ecological functioning of the estuary,

[1] Wright A.G. and Clark BM. 2017. Estuarine specialist study and impact assessment for the proposed expansion of Kliphoek Resort, Velddrif. Report prepared by Anchor Environmental Consultants (Pty) Ltd for Eco Impact Legal Consulting (Pty) Ltd. 43pp.

[2] http://www.birdlife.org.za/get-involved/join-birdlife-south-africa/item/246-sa104-berg-river-estuary

specifically in terms of changes in hydrodynamics and water quality, frequency and intensity of the flooding of the floodplain and reduction of natural vegetation on the floodplain[3].

5. THE SEAFRONT / SEA

(a) Is the site(s) located within any of the following areas? (highlight the appropriate boxes).
If the site or alternative site is closer than 100m to such an area, please provide the approximate distance in (m).

AREA	YES	NO	UNSURE	If "YES": Distance to nearest area (m)
An area within 100m of the high water mark of the sea	YES	~~NO~~	~~UNSURE~~	0m Jetties, other infrastructure more than 32m)
An area within 100m of the high water mark of an estuary/lagoon	YES	~~NO~~	~~UNSURE~~	0m Jetties, other infrastructure more than 32m)
An area within the littoral active zone	~~YES~~	NO	~~UNSURE~~	
An area in the coastal public property	~~YES~~	NO	~~UNSURE~~	
Major anthropogenic structures	~~YES~~	NO	~~UNSURE~~	
An area within a Coastal Protection Zone	YES	~~NO~~	~~UNSURE~~	0m Jetties, other infrastructure more than 32m)
An area seaward of the coastal management line	~~YES~~	NO	~~UNSURE~~	
An area within the high risk zone (20 years)	~~YES~~	NO	~~UNSURE~~	
An area within the medium risk zone (50 years)	~~YES~~	NO	~~UNSURE~~	
An area within the low risk zone (100 years)	~~YES~~	NO	~~UNSURE~~	
An area below the 5m contour	YES	~~NO~~	~~UNSURE~~	0m Jetties, other infrastructure more than 32m)
An area within 1km from the high water mark of the sea	YES	NO	UNSURE	
A rocky beach	~~YES~~	NO	~~UNSURE~~	
A sandy beach	~~YES~~	NO	~~UNSURE~~	

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

6. BIODIVERSITY

Note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed development. To assist with the identification of the biodiversity occurring on site and the ecosystem status, consult http://bgis.sanbi.org or BGIShelp@sanbi.org . Information is also available on compact disc ("cd") from the Biodiversity-GIS Unit, Tel.: (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) must be provided as an overlay map on the property/site plan as **Appendix D** to this report.

(a) Highlight the applicable biodiversity planning categories of all areas on preferred and alternative sites and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category. Also describe the prevailing level of protection of the Critical Biodiversity Area ("CBA") and Ecological Support Area ("ESA") (how many hectares / what percentages are formally protected).

Systematic Biodiversity Planning Category	CBA	~~ESA~~	Other Natural Area ("ONA")	No Natural Area Remaining ("NNR")
If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan and the conservation management objectives	All the facilities are situated on disturbed areas and not on any CBA area, but are surrounded by CBA's. The bird hide and jetties are inside an aquatic estuarine CBA.			
Describe the site's CBA/ESA quantitative values (hectares/percentage) in relation to the prevailing level of protection of CBA and ESA (how many hectares / what				

[3] Wright A.G. and Clark BM. 2017. Estuarine specialist study and impact assessment for the proposed expansion of Kliphoek Resort, Velddrif. Report prepared by Anchor Environmental Consultants (Pty) Ltd for Eco Impact Legal Consulting (Pty) Ltd. 43pp.

percentages are formally protected locally and in the province)	

(b) Highlight and describe the habitat condition on site.

Habitat Condition	**Percentage of habitat condition class (adding up to 100%) and area of each in square metre (m^2)**		**Description and additional comments and observations (including additional insight into condition, *e.g.* poor land management practises, presence of quarries, grazing/harvesting regimes, *etc.*)**
Natural	%	m^2	All the facilities are situated on disturbed areas and not on any CBA area, but are surrounded by CBA's. The bird hide and jetties are inside an aquatic estuarine CBA.
Near Natural (includes areas with low to moderate level of alien invasive plants)	%	m^2	
Degraded (includes areas heavily invaded by alien plants)	10%	m^2	
Transformed (includes cultivation, dams, urban, plantation, roads, *etc.*)	90%	m^2	

(c) Complete the table to indicate:
(i) the type of vegetation present on the site, including its ecosystem status; and
(ii) whether an aquatic ecosystem is present on/or adjacent to the site.

Terrestrial Ecosystems		**Description of Ecosystem, Vegetation Type, Original Extent, Threshold (ha, %), Ecosystem Status**
Ecosystem threat status as per the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	~~Critically~~	
	~~Endangered~~	
	~~Vulnerable~~	
	Least Threatened	

Aquatic Ecosystems						
Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
YES	~~NO~~	~~UNSURE~~	YES	~~NO~~	~~YES~~	NO

(d) Provide a description of the vegetation type and/or aquatic ecosystem present on the site, including any important biodiversity features/information identified on the site (e.g. threatened species and special habitats). Clearly describe the biodiversity targets and management objectives in this regard.

All the facilities are situated on disturbed areas and not on any CBA area, but are surrounded by CBA's. The bird hide and jetties are inside an aquatic estuarine CBA. The bird hide will impact on a small area of this vegetation type.

The property lies in the general area that supports Cape Estuarine Salt Marshes, according to the new vegetation map of South Africa (Mucina & Rutherford 2010)[4]. This vegetation type is listed as a least threatened vegetation type in the South African National Spatial Biodiversity Assessment (Driver et al. 2012)[5].

7. LAND USE OF THE SITE

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

Untransformed area	~~Low density residential~~	~~Medium density residential~~	~~High density residential~~	~~Informal residential~~
~~Retail~~	~~Commercial & warehousing~~	~~Light industrial~~	~~Medium industrial~~	~~Heavy industrial~~
~~Power station~~	~~Office/consulting room~~	~~Military or police base/station/compound~~	~~Casino/entertainment complex~~	Tourism and Hospitality facility
~~Open cast mine~~	~~Underground mine~~	~~Spoil heap or slimes dam~~	~~Quarry, sand or borrow pit~~	~~Dam or reservoir~~
~~Hospital/medical centre~~	~~School~~	~~Tertiary education facility~~	~~Church~~	~~Old age home~~
~~Sewage treatment plant~~	~~Train station or shunting yard~~	~~Railway line~~	~~Major road (4 lanes and more)~~	~~Airport~~
~~Harbour~~	~~Sport facilities~~	~~Golf course~~	~~Polo fields~~	~~Filling station~~
~~Landfill or waste treatment site~~	~~Plantation~~	Agriculture	River, stream or wetland	Nature conservation area
~~Mountain, koppie or ridge~~	~~Museum~~	~~Historical building~~	~~Graveyard~~	~~Archaeological site~~
Other land uses (describe):	NA			

(a) Provide a description.

All the facilities are situated on disturbed areas and not on any CBA area, but are surrounded by CBA's. The bird hide and jetties are inside an aquatic estuarine CBA.

8. LAND USE CHARACTER OF THE SURROUNDING AREA

(a) Highlight the current land uses and/or prominent features that occur within +/- 500m radius of the site and neighbouring properties if these are located beyond 500m of the site.

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

Untransformed area	~~Low density residential~~	~~Medium density residential~~	~~High density residential~~	~~Informal residential~~
~~Retail~~	~~Commercial & warehousing~~	~~Light industrial~~	~~Medium industrial~~	~~Heavy industrial~~
~~Power station~~	~~Office/consulting room~~	~~Military or police base/station/compound~~	~~Casino/entertainment complex~~	Tourism and Hospitality facility
~~Open cast mine~~	~~Underground mine~~	~~Spoil heap or slimes dam~~	~~Quarry, sand or borrow pit~~	~~Dam or reservoir~~
~~Hospital/medical centre~~	~~School~~	~~Tertiary education facility~~	~~Church~~	~~Old age home~~
~~Sewage treatment plant~~	~~Train station or shunting yard~~	~~Railway line~~	~~Major road (4 lanes and more)~~	~~Airport~~

[4] Mucina, L. & Rutherford, M.C. (eds) 2010. (CD Set). The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19.South African National Biodiversity Institute, Pretoria.

[5] Driver A., Sink, K.J., Nel, J.N., Holness, S., Van Niekerk, L., Daniels, F., Jonas, Z., Majiedt, P.A., Harris, L. & Maze, K. 2012. National Biodiversity Assessment 2011: An assessment of South Africa's biodiversity and ecosystems. Synthesis Report. South African National Biodiversity Institute and Department of Environmental Affairs, Pretoria.

~~Harbour~~	~~Sport facilities~~	~~Golf course~~	~~Polo fields~~	~~Filling station~~
~~Landfill or waste treatment site~~	~~Plantation~~	Agriculture	River, stream or wetland	Nature conservation area
~~Mountain, koppie or ridge~~	~~Museum~~	~~Historical building~~	~~Graveyard~~	~~Archaeological site~~
Other land uses (describe):	NA			

(b) Provide a description, including the distance and direction to the nearest residential area, industrial area, agri-industrial area.

The proposed development is situated approximately 5km south Velddrif.

9. SOCIO-ECONOMIC ASPECTS

a) Describe the existing social and economic characteristics of the community in the vicinity of the proposed site, in order to provide baseline information (for example, population characteristics/demographics, level of education, the level of employment and unemployment in the area, available work force, seasonal migration patterns, major economic activities in the local municipality, gender aspects that might be of relevance to this project, *etc.*).

Dominant economic sectors (GDP)
In 2004 the area had the largest economy in the WCDM, accounting for 33.5% of the district's total regional gross domestic product (GDPR). The largest sectors were Manufacturing (29,5%), Transport & Communication (14,9%), Wholesale & Retail trade; Catering & Accommodation (14,7%), with a relatively smaller contribution from the Agriculture, Forestry & Fishing sector (11,9%).

Dominant economic sectors (Employment)
Agriculture, forestry and fishing were the biggest employer in the area, contributing 23.6% to employment. The Manufacturing sector contributed 17.8% to total local employment, followed by CSP services (14,4%) and Wholesale & Retail trade; Catering & Accommodation (13,3%). Collectively, these four sectors represented about 70 % of the workforce in 2001. Major employers in the fishing industry included Sea Harvest, Oceana, Southern Seas and West Point; within the steel and mineral-processing industry, the Saldanha Steel Project (Arcelor/Mittal SA), Namakwa Sands and Duferco.

Decline of fishing industry and growing importance of tourism
Commercial fishing and fish processing have historically been dominant within the local economies of coastal towns such as Veldrif and St Helena Bay. Due to natural declines in fishing stocks and other factors over the past two to three decades there has been a significant increase in the role of tourism in the local economy. During the same period, the coastline has become an important retirement, holiday and "lifestyle" resettlement destination.

The area is characterized by exquisite natural beauty. The Langebaan Lagoon, a Ramsar site and popular recreational area, as well as the major portion of the West Coast National Park, the Berg River Estuary, the Cape Columbine Nature Reserve (Paternoster) and the West Coast Fossil Park (Langebaanweg), are all located within the area. Other major tourism attractions include the region's internationally recognized wild flower displays (late August to mid October), as well as whale, dolphin and bird watching opportunities. The coastline is also used extensively for recreational uses such as angling, crayfishing and various water sports. The regions tourism and recreational potential is enhanced by its proximity to Cape Town and a number of large towns in the Boland, such as Stellenbosch, Paarl and Wellington.

Population and population groups
The West Coast district's total population projection for 2006 was estimated at 320 929 people, with the area accounting for 25.3% of this figure. Between 2001 and 2006, the area's average annual growth rate of 2.6%. The population is expected to grow at an annual average rate of 2.3% a year between 2006 and 2010, reaching 88 656 people by 2010 or 25.6 % of the estimated district population. In 2006 the population was predominantly Coloured (73,0%), followed by White (16%) and the Black African (11%).

KLIPHOEK, one of the oldest family farms on the West Coast, has its own distinctive charm. Here, on the banks of the Berg River near Velddrif, guest immediately feels welcome and at home. West

Coast hospitality, coupled with modern comfort, ensures an unforgettable experience.

Kliphoek is only a short 1½ hour drive from Cape Town and is situated in the heart of a bird sanctuary. A vast variety of bird species are found here. Relaxation is the keyword at Kliphoek and during the day, guests can undertake hikes along the river or in the veld, ski on the Berg River, swim and play tennis. A West Coast sunset is an experience not to be missed and at the onset of spring the West Coast flower carpet is an unbelievable sight.

Accommodation includes self-catering cottages located on the banks of the river.

10. HISTORICAL AND CULTURAL ASPECTS

(a) Please be advised that if section 38 of the NHRA is applicable to your proposed development, you are requested to furnish this Department with written comment from Heritage Western Cape as part of your public participation process. Heritage Western Cape must be given an opportunity, together with the rest of the I&APs, to comment on any Pre-application BAR, a Draft BAR, and Revised BAR.

Section 38 of the NHRA states the following:
"*38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-*
(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000m² in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000m² in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,
must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development".

(b) The impact on any national estate referred to in section 3(2), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii), of the NHRA, must also be investigated, assessed and evaluated. Section 3(2) states the following:
"*3(2) Without limiting the generality of subsection (1), the national estate may include—*
(a) places, buildings, structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and palaeontological sites;
(g) graves and burial grounds, including—
(i) ancestral graves;
(ii) royal graves and graves of traditional leaders;
(iii) graves of victims of conflict;
(iv) graves of individuals designated by the Minister by notice in the Gazette;
(v) historical graves and cemeteries; and
(vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
(h) sites of significance relating to the history of slavery in South Africa;
(i) movable objects, including—
(i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens;
(ii) objects to which oral traditions are attached or which are associated with living heritage;
(iii) ethnographic art and objects;
(iv) military objects;
(v) objects of decorative or fine art;
(vi) objects of scientific or technological interest; and
(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996)".

Is Section 38 of the NHRA applicable to the proposed development?	~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), is not applicable to the proposed development as the activity will change the character of the site that will not exceeds 5 000 sq m in extent. No archaeologically significant resources were found during the foot survey. The development will not impact on any national estate referred to in section 3(2) of the National Heritage Resources Act,		

	1999 or impact on any building or structure older than 60 years in any way.			
Will the development impact on any national estate referred to in Section 3(2) of the NHRA?		~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	NA			
Will any building or structure older than 60 years be affected in any way?		~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	NA			
Are there any signs of culturally or historically significant elements, as defined in section 2 of the NHRA, including Archaeological or paleontological sites, on or close (within 20m) to the site?		~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	NA			

Note: If uncertain, the Department may request that specialist input be provided **and** Heritage Western Cape must provide comment on this aspect of the proposal. (Please note that a copy of the comments obtained from the Heritage Resources Authority must be appended to this report as Appendix E1).

11. APPLICABLE LEGISLATION, POLICIES, CIRCULARS AND/OR GUIDELINES

(a) Identify all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to the development proposal and associated listed activity(ies) being applied for and that have been considered in the preparation of the BAR.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	**ADMINISTERING AUTHORITY and how it is relevant to this application**	**TYPE Permit/license/authorisation/comment / relevant consideration** (*e.g.* rezoning or consent use, building plan approval, Water Use License and/or General Authorisation, License in terms of the SAHRA and CARA, coastal discharge permit, *etc.*)	**DATE** (if already obtained)**:**
National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] and relevant regulations	Western Cape Department of Environmental Affairs and Development Planning	Environmental Authorisation Application	N/A
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [NEMWA] and relevant regulations	Western Cape Department of Environmental Affairs and Development Planning	N/A	N/A
National Environmental Management: Biodiversity Act 10 of 2004 [NEMBA]	Western Cape Department of Environmental Affairs and Development Planning	N/A	N/A
National Environmental Management: Air Quality Act, 39 of 2004 [NEMAQA] and Relevant Regulations	Western Cape Department of Environmental Affairs and Development Planning	N/A	N/A
National Water Act, 1998 (Act No. 36 of 1998) [NWA]	Department of Water Affairs	Water Use Authorization	N/A

and relevant regulations			
Conservation of Agricultural Resources Act, 43 of 1983 [CARA]	National Department of Agriculture, forestry and Fisheries Western Cape Department of Agriculture	N/A	N/A
National Health Act, 61of 2003 [NHA]		N/A	N/A
Constitution of the Republic of South Africa, 1996 [CRSA]		General application of individual rights of all on and adjacent to the sites	N/A
National Building Regulations and Building Standards Act 103 of 1977 [NBRBSA] and relevant regulations		N/A	N/A
National Heritage Resources Act 25 of 1999 [NHRA]	Heritage Western Cape South African Heritage Resource Agency	NID	In progress
National Veld and Forest Fire Act 101 of 1998 [NVFFA]		N/A	N/A
Fertilizers, Farm Feeds, Agricultural Remedies And Stock Remedies Act, 36 Of 1947 [FFFARSRA] and Relevant Regulations	National Department of Agriculture, forestry and Fisheries Western Cape Department of Agriculture	N/A	N/A
Section 42 of Spatial Planning and Land Use Management Act (16 of 2013) ("SPLUMA")	Berg River Municipality	N/A	N/A
Western Cape Land Use Planning Act, 2014 ("LUPA")	Berg River Municipality	N/A	N/A

(b) Describe how the proposed development **complies with and responds** to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	**Describe how the proposed development complies with and responds:**
NEMA	Various general activities, including but not limited to, the control of emergency incidents and the care and remediation of environmental damage.
NEMWA	Listed waste management activities and the requirements for a license for usage of general waste.
NEMBA	The management and conservation of biological diversity and the sustainable use of indigenous biological resources.
NEMAQA	Activities that may affect the air quality on site and the environment surrounding it.
NWA	Impacts and pollution to ground and surface water. Assessed if a water use authorisation under section 21 is required.
CARA	Weeds and the tolerance thereof.
National Health Act	Littering and causing a nuisance.
Constitution of the RSA	General application to individual rights of all on and adjacent to the sites.
Fencing Act	The erection and maintenance of fences.

National Building Regulations and Building Standards Act	The erection of new buildings.
NHRA	Development of the site and dealing with graves and burial sites and any structures older than 60 years.
NVFFA	Any activities that could result in the start of veld fires.
FFFARSRA	• Activities associated with pest control and the use of agricultural remedies. • Activities associated with providing / manufacturing fertiliser.
Guideline on Public Participation	The public participation guideline was used to determine the best way to define and inform all relevant I&APs of the project. The guideline was also used to determine the most effective communication strategies for public participation.
Guidelines on Alternatives	The guidelines for alternatives assessment was used to develop a methodology for alternatives assessment. This methodology was applied to determine and assess the most viable alternatives to the project. The assessment was undertaken against the base environment (i.e. the no-go option).
Guideline on Need and desirability	The guideline was taken into account to determine whether the project complied according to the concept of Best Practicable Environmental Option as well as environmental and social sustainability.
Guideline for EMP's	The guideline for EMP's was taken into account to determine the most effective minimize, mitigation and management measures to minimise or prevent the impacts identified in the report

Note: Copies of any comments, permit(s) or licences received from any other Organ of State must be attached to this report as **Appendix E**.

Section C: PUBLIC PARTICIPATION

The PPP must fulfil the requirements outlined in the NEMA, the EIA Regulations, 2014 (as amended) and if applicable, the NEM: WA and/or the NEM: AQA. This Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must also be taken into account.

1. Please highlight the appropriate box to indicate whether the specific requirement was undertaken or whether there was an exemption applied for.

In terms of Regulation 41 of the EIA Regulations, 2014 (as amended) -			
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -			
(i) the site where the activity to which the application relates, is or is to be undertaken; and	YES	~~EXEMPTION~~	
(ii) any alternative site	YES	~~EXEMPTION~~	~~N/A~~
(b) giving written notice, in any manner provided for in Section 47D of the NEMA, to –			
(i) the occupiers of the site and, if the applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	~~YES~~	~~EXEMPTION~~	N/A
(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	YES	~~EXEMPTION~~	
(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;	YES	~~EXEMPTION~~	
(iv) the municipality (Local and District Municipality) which has jurisdiction in the area;	YES	~~EXEMPTION~~	
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	YES	~~EXEMPTION~~	
(vi) any other party as required by the Department;	YES	~~EXEMPTION~~	~~N/A~~
(c) placing an advertisement in -			
(i) one local newspaper; or	YES	~~EXEMPTION~~	
(ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	~~YES~~	~~EXEMPTION~~	N/A

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken	~~YES~~	~~EXEMPTION~~	N/A
(e) using reasonable alternative methods, as agreed to by the Department, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	YES	~~EXEMPTION~~	~~N/A~~
If you have indicated that "EXEMPTION" is applicable to any of the above, proof of the exemption decision must be appended to this report.			
Please note that for the NEM: WA and NEM: AQA, a notice must be placed in at least two newspapers circulating in the area where the activity applied for is proposed.			
If applicable, has/will an advertisement be placed in at least two newspapers?	~~YES~~	NO	
If "NO", then proof of the exemption decision must be appended to this report.			

2. Provide a list of all the State Departments and Organs of State that were consulted:

State Department / Organ of State	**Date request was sent:**	**Date comment received:**	**Support / not in support**
BirdLifeSA	12/05/2017	15/06/2017	Has concerns
CapeNature	12/05/2017	06/06/2017	Has concerns
DEA&DP: Chemical and Pollution Management	12/05/2017	15/06/2017	Has concerns
DEA&DP: Waste Management	12/05/2017	08/06/2017	Support
Department of Water and Sanitation	12/05/2017	01/06/2017	Requested WUA regsitartion
Heritage Western Cape	12/05/2017	03/08/2017	Support

3. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated, or the reasons for not including them.
   (The detailed outcomes of this process, including copies of the supporting documents and inputs must be included in a Comments and Response Report to be attached to the BAR (see note below) as **Appendix F**).

Public participation is an integral part of the environmental assessment process, and affords potentially interested and affected parties (I&APs) an opportunity to participate in the EIA process, or to comment on any aspect of the development proposals. The public participation process undertaken thus far and to be undertaken for this project complies with the requirements of the EIA Regulations. The description of the public participation process as included below itemizes the steps and actions undertaken to date and as appropriate at this stage of the project.

Notification of I&APs

Potential I&AP's have been notified about the project in the following manner (this is in compliance with Regulation 41 of GN R982).

- Fixing notice boards at the boundary of the property in compliance with Regulation 41(2)(a)(i) of GN R982;
- Written notifications were sent to potential I&APs inviting them to register and give comments on the proposed development. These notifications are in line with the requirements of Regulation 41(2)(b) of GN R982; and
- Placing an advertisement in a local newspaper in compliance with Regulation 41(2)(c)(i) of GN R982.

All potential I&APs were afforded the opportunity to register for the project. All registered I&APs will be informed of further activities regarding the project.

Public Meetings and Workshops:

No public meetings have been held as of yet. The need for public meetings and / or workshops will be determined during the course of the public participation process. None is planned to date.

Availability of the draft Basic Assessment Report:

As per the requirements of GN R982, the draft Basic Assessment Report (BAR) will be made available to all relevant state departments and all registered I&APs for a 30 day commenting period.

The BAR will be included for statutory comment with the written notice as sent to the commenting organs of state. Electronic copies (CDs) will be made available to any department or I&AP on request. A copy of the BAR will be made available for viewing and comment on Eco Impact's website.

Proof of delivery and document placement will be attached to the BAR. Additionally, the report will be made available to any I&AP upon request, as advised on the notice boards, notices and advertisements referred to above.

Comments received will be responded to as per the requirements of GN R982. The comments and response report as well as all comments received will be attached to the final BAR.

Decision and Appeal Period:

Once the DEA&DP have reviewed the final BAR and are satisfied that it contains sufficient information to make an informed decision, the DEA&DP will use the information contained within the BAR to determine the environmental acceptability of the proponent's preferred options. A decision on the applications and associated reports will be made by the DEA&DP based on the findings of the BAR.

Following the issuing of the decision, all registered I&APS will be notified. All I&APs will be provided with the opportunity to appeal the decision to the MEC of the DEA&DP in terms of the NEMA.

4. Provide a summary of any conditional aspects identified / highlighted by any Organs of State, which have jurisdiction in respect of any aspect of the relevant activity.

The Department of Water And Sanitation requested WUA registration that will have its own conditions.

Note:

Even if pre-application public participation is undertaken as allowed for by Regulation 40(3), it must be undertaken in accordance with the requirements set out in Regulations 3(3), 3(4), 3(8), 7(2), 7(5), 19, 40, 41, 42, 43 and 44.

If the "exemption" option is selected above and no proof of the exemption decision is attached to this BAR, the application will be refused.

A list of all the potential I&APs, including the Organs of State, notified and a list of all the registered I&APs must be submitted with the BAR. The list of registered I&APs must be opened, maintained and made available to any person requesting access to the register in writing.

The BAR must be submitted to the Department when being made available to I&APs, including the relevant Organs of State and State Departments which have jurisdiction with regard to any aspect of the activity, for a commenting period of at least 30 days. Unless agreement to the contrary has been reached between the Competent Authority and the EAP, the EAP will be responsible for the consultation with the relevant State Departments in terms of Section 24O and Regulation 7(2) – which consultation must happen simultaneously with the consultation with the I&APs and other Organs of State.

All the comments received from I&APs on the BAR must be recorded, responded to and included in the Comments and Responses Report included as **Appendix F** of the BAR. If necessary, any amendments made in response to comments received must be effected in the BAR itself. The Comments and Responses Report must also include a description of the PPP followed.

The minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded, must also be submitted as part of the public participation information to be attached to the final BAR as **Appendix F.**

Proof of all the notices given as indicated, as well as notice to I&APs of the availability of the Pre-Application BAR (if applicable), Draft BAR, and Revised BAR (if applicable) must be submitted as part of the public participation information to be attached to the BAR as **Appendix F**. In terms of the required "proof" the following must be submitted to the Department:

- a site map showing where the site notice was displayed, a dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:
  - if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
  - if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
  - if a facsimile was sent, a copy of the facsimile report;
  - if an electronic mail was sent, a copy of the electronic mail sent; and
  - if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION D: NEED AND DESIRABILITY

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website: **http://www.westerncape.gov.za/eadp**). In this regard, it must be noted that the *Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010* published by the national Department of Environmental Affairs on 20 October 2014 (GN No. 891 on Government Gazette No. 38108 refers) (available at: http://www.gov.za/sites/www.gov.za/files/38108_891.pdf) also applied to EIAs in terms of the EIA Regulations, 2014 (as amended).

1. Is the development permitted in terms of the property's existing land use rights?	YES	~~NO~~	Please explain
The area for the proposed expansions of the resort is situated inside an area rezoned for resort purposes and links to existing resort infrastructure in order to expand and strengthens the existing resort.			
2. Will the development be in line with the following?			
(a) Provincial Spatial Development Framework ("**PSDF**").	YES	~~NO~~	Please explain
The area for the proposed expansions of the resort is situated inside an area rezoned for resort purposes and link to existing resort infrastructure in order to expand and strengthens the existing resort.			
(b) Urban edge / edge of **built environment** for the area.	YES	~~NO~~	Please explain
The area is outside the approved urban edge			
(c) Integrated Development Plan and Spatial Development Framework of the Local Municipality (*e.g.,* would the approval of this application compromise the integrity of the existing approved and credible municipal **IDP and SDF**?).	YES	~~NO~~	Please explain
The proposed facility is in line with municipal IDP and will not affect the IDP and its outcomes. The area for the proposed expansions of the resort is situated inside an area rezoned for resort purposes			

and link to existing resort infrastructure in order to expand and strengthens the existing resort.			
(d) An Environmental Management Framework ("**EMF**") adopted by this Department. (*e.g.,* Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	~~NO~~	Please explain
The area for the proposed expansions of the resort is situated inside an area rezoned for resort purposes and links to existing resort infrastructure in order to expand and strengthens the existing resort.			
(e) Any **other** Plans (*e.g.,* Integrated Waste Management Plan (for waste management activities), *etc.*)).	YES	~~NO~~	Please explain
No EMF adopted for the area. EMF process in place but not adopted by the competent authority yet.			
3. Is the land use (associated with the project being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (in other words, is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	~~NO~~	Please explain
The area for the proposed expansions of the resort is situated inside an area rezoned for resort purposes and links to existing resort infrastructure in order to expand and strengthens the existing resort.			
4. Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur on the proposed site at this point in time?	YES	~~NO~~	Please explain
The area for the proposed expansions of the resort is situated inside an area rezoned for resort purposes and links to existing resort infrastructure in order to expand and strengthens the existing resort.			
5. Does the community/area need the project and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (*e.g.,* development is a National Priority, but within a specific local context it could be inappropriate.)	YES	~~NO~~	Please explain
The proposed expansion to the resort is as a result of the needs that were identified operating the existing resort over several years.			
6. Are the necessary **services** available together with adequate unallocated municipal capacity (at the time of application), or must additional capacity be created to cater for the project? (Confirmation by the relevant municipality in this regard must be attached to the BAR as **Appendix E**.)	YES	~~NO~~	Please explain
Solid waste generated will be collected and disposed of at the municipal landfill site. Electricity will be connected to the onsite ESKOM. Sewerage will be collected in close tanks and disposed at the Velddrif municipal Waste Water Treatment Works.			
7. Is this project provided for in the **infrastructure planning** of the municipality and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant municipality in this regard must be attached to the BAR as **Appendix E**.)	YES	~~NO~~	Please explain
Solid waste generated will be collected and disposed of at the municipal landfill site. Electricity will be connected to the onsite ESKOM. Sewerage will be collected in close tanks and disposed at the Velddrif municipal Waste Water Treatment Works.			
8. Is this project part of a **national programme** to address an issue of national concern or importance?	~~YES~~	NO	Please explain
NA			
9. Do location factors favour this land use (associated with the development proposal and associated listed activity(ies) applied for) at this place? (This relates to the contextualisation of the proposed land use on the proposed site within its broader context.)	YES	~~NO~~	Please explain
The area for the proposed expansions of the resort is situated inside an area rezoned for resort purposes and links to existing resort infrastructure in order to expand and strengthens the existing resort.			
10. Will the development proposal or the land use associated with the development proposal applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	~~YES~~	NO	Please explain
All the facilities are situated on disturbed areas and not on any CBA area, but are surrounded by CBA's. The bird hide and jetties are inside an aquatic estuarine CBA.			
11. Will the development impact on people's health and well-being (*e.g.,* in terms of noise, odours, visual character and 'sense of place', *etc.*)?	~~YES~~	NO	Please explain
All waste and sewerage generated will be handled in closed systems and in accordance with best practice and disposed of at municipal treatment facilities.			
12. Will the proposed development or the land use associated with the proposed development applied for, result in unacceptable opportunity costs?	~~YES~~	NO	Please explain

Existing supporting infrastructure is in place. Facility will link to existing access road.			
13. What will the **cumulative impacts** (positive and negative) of the proposed land use associated with the development proposal and associated listed activity(ies) applied for, be?			
More facilities to cater for higher numbers of tourist and visitors. The sensitive areas will be avoided by the tourist and areas that will be impacted will be limited and within confined areas in line with the existing policies for the area.			
14. Is the development the **best practicable environmental option** for this land/site?	YES	NO	Please explain
The proposed development will link to existing infrastructure. The area for the proposed expansions of the resort is situated inside an area rezoned for resort purposes and links to existing resort infrastructure in order to expand and strengthens the existing resort.			
15. What will the benefits be to society in general and to the local communities?			Please explain
Expansion of the resort will provide more facilities for tourist to visit and experience this unique area.			
16. Any **other** need and desirability considerations related to the proposed development?			Please explain
NA			
17. Describe how the **general objectives of Integrated Environmental Management** as set out in Section 23 of the NEMA have been taken into account:			
All decisions during the planning and assessment by all involved for the activity promote the integration of the principles of environmental management set out in section 2 to minimize and mitigate any significant effect on the environment. All these mitigations and management measures are included and written into the EMP. All involved in the planning and design identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage. The risks, consequences, alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2 were taken into consideration and used in the assessments, mitigations and recommendations throughout this report. Specialists involved in the planning and design of the activity are independent and ensure that the effects of the activities on the environment receive adequate consideration before recommendations and actions are taken for inclusion in the EA conditions and EMP. Adequate and appropriate opportunity for public participation will be provided and included in Appendix F as per the guidelines and regulations in decisions that may affect the environment. The consideration of environmental attributes in management and decision making which may have a significant effect on the environment was ensured. The modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2 were identified and employed. Refer to the section below.			
18 Describe how the **principles of environmental management** as set out in Section 2 of the NEMA have been taken into account:			
All the facilities are situated on disturbed areas and not on any CBA area, but are surrounded by CBA's. The bird hide and jetties are inside an aquatic estuarine CBA.			

SECTION E: DETAILS OF ALL THE ALTERNATIVES CONSIDERED

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website **http://www.westerncape.gov.za/eadp**.

The EIA Regulations, 2014 (as amended) defines "*alternatives*" as " *in relation to a proposed activity, means different means of fulfilling the general purpose and requirements of the activity, which may include alternatives to the—*
(a) property on which or location where the activity is proposed to be undertaken;
(b) type of activity to be undertaken;
(c) design or layout of the activity;
(d) technology to be used in the activity; or
(e) operational aspects of the activity;
(f) and includes the option of not implementing the activity;"

The NEMA (section 24(4)(a) and (b) of the NEMA, refers) prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, with respect to every application for environmental authorisation –

- ensure that the general objectives of integrated environmental management laid down in the NEMA and the National Environmental Management Principles set out in the NEMA are taken into account; and

- include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.

The general objective of integrated environmental management (section 23 of NEMA, refers) is, *inter alia*, to "*identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management*" set out in the NEMA.

The identification, evaluation, consideration and comparative assessment of alternatives directly relate to the management of impacts. Related to every identified impact, alternatives, modifications or changes to the activity must be identified, evaluated, considered and comparatively considered to:

- in terms of negative impacts, firstly avoid a negative impact altogether, or if avoidance is not possible alternatives to better mitigate, manage and remediate a negative impact and to compensate for/offset any impacts that remain after mitigation and remediation; and
- in terms of positive impacts, maximise impacts.

1. DETAILS OF THE IDENTIFIED AND CONSIDERED ALTERNATIVES AND INDICATE THOSE ALTERNATIVES THAT WERE FOUND TO BE FEASIBLE AND REASONABLE

Note: A full description of the investigation of alternatives must be provided and motivation if no reasonable or feasible alternatives exists.

(a) Property and **location/site** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

The property was the only alternative considered. Existing access, infrastructure, resort infrastructure and old disturbed and impacted areas were all considered when the location of the expansion facilities was taken in consideration on the property.

(b) **Activity** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No other activity alternatives were assessed as no feasible or reasonable alternative exists. The only activity alternative considered is the expansion of resort facilities to expand the resort activities and infrastructure.

(c) **Design or layout** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Two layout and design alternatives were considered. These layouts are however all situated in the same area but the location of some facilities is placed in other areas. The proposed BMX track was reduced in size from 2.4ha in the alternative layout to 1.1ha in the preferred alternative. The BMX track was moved out of the sensitive area close to the Berg River further back next to the camp site on ploughed agricultural lands and outside sensitive areas. The camp site was reduced in size from 1.6ha in the alternative layout to 1.1 ha in the preferred alternative, an the additional camp site area on the eastern edge of the chalets was removed from the layout due to the sensitivity close to the Berg River. The location of the 5 new chalet units on the bigger area was shifted more to the east in the preferred layout.

(d) **Technology** alternatives (*e.g.,* to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No technological alternatives other than duel flush toilet systems, low flow shower installations and energy efficient lighting and geysers are considered. Alternative measures to reduce water demand (reusing or recycling of grey water) must include utilisation of grey water from showers for reuse in toilets as well as rainwater harvesting. The use of alternative/renewable energy sources (solar panels for lighting and geysers, etc) must be investigated.

(e) **Operational** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No operational alternatives are considered. The proposed development is an expansion of an existing resort and the operation of the resort will continue as is.

(f) The option of **not implementing** the activity (the '*No-Go*' Option):

The No-Go option will result in the site remaining as is presently and the existing resort will continue as is without the expanded infrastructure.

(g) **Other** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No additional alternatives to avoid negative impacts were considered.

(h) Provide a **summary** of all alternatives investigated and the outcome of each investigation:

Location alternatives – The property was the only alternative considered. Existing access, infrastructure, resort infrastructure and old disturbed and impacted areas were all considered when the location of the expansion facilities was taken into consideration on the property.

Activity alternatives - No other activity alternatives were assessed as no feasible or reasonable alternative exists. The only activity alternative considered is the expansion of resort facilities to expand the resort activities and infrastructure.

Layout alternatives – Two layout and design alternatives were considered. These layouts are however all situated in the same area but the location of some facilities is placed in other areas. The proposed BMX track was reduced in size from 2.4ha in the alternative layout to 1.1ha in the preferred alternative. The BMX track was moved out of the sensitive area close to the Berg River further back next to the camp site on ploughed agricultural lands and outside sensitive areas. The camp site was reduced in size from 1.6ha in the alternative layout to 1.1 ha in the preferred alternative, an the additional camp site area on the eastern edge of the chalets was removed from the layout due to the sensitivity close to the Berg River. The location of the 5 new chalet units on the bigger area was shifted more to the east in the preferred layout.

Technology alternatives - No technological alternatives other than duel flush toilet systems, low flow shower installations and energy efficient lighting and geysers are considered. Alternative measures to reduce water demand (reusing or recycling of grey water) must include utilisation of grey water from showers for reuse in toilets as well as rainwater harvesting. The use of alternative/renewable energy sources (solar panels for lighting and geysers, etc) must be investigated.

Operational alternatives – No operational alternatives are considered. The proposed development is an expansion of an existing resort and the operation of the resort will continue as is.

The No-Go Option - The No-Go option will result in the site remaining as is presently and the existing resort will continue as is without the expanded infrastructure.

(i) Provide a detailed **motivation for not further considering** the alternatives that were found not feasible and reasonable, including a description and proof of the investigation of those alternatives:

The property was the only alternative considered. No feasible or reasonable alternative properties existed to be used as alternatives. Existing access, infrastructure, resort infrastructure, the berg River and its buffer areas and old disturbed and impacted areas were all considered when the location of the expansion facilities was taken in consideration on the property. The application is to expand the existing resort to be operated together with the agricultural activities on site. The applicant is the land owner and no other properties were available or considered for the proposed application. The sites selected exclude sensitive areas and provide a buffer to protect the Berg River and is strategically placed not to impact on the agricultural activities on site.

2. PREFERRED ALTERNATIVE

(a) Provide a **concluding statement** indicating the preferred alternative(s), including preferred location, site, activity and technology for the development.

Two layout and design alternatives were considered. These layouts are however all situated in the same area but the location of some facilities is placed in other areas. The proposed BMX track was reduced in size from 2.4ha in the alternative layout to 1.1ha in the preferred alternative. The BMX track was moved out of the sensitive area close to the Berg River further back next to the camp site on ploughed agricultural lands and outside sensitive areas. The camp site was reduced in size from 1.6ha in the alternative layout to 1.1 ha in the preferred alternative, an the additional camp site area on the eastern edge of the chalets was removed from the layout due to the sensitivity close to the Berg River. The location of the 5 new chalet units on the bigger area was shifted more to the east in the preferred layout. Duel flush toilet systems, low flow shower installations and energy efficient lighting and geysers are considered. Alternative measures to reduce water demand (reusing or recycling of grey water) must include utilisation of grey water from showers for reuse in toilets as well as rainwater harvesting. The use of alternative/renewable energy sources (solar panels for lighting and geysers, etc) are considered in the preferred alternative. All sewerage collection tanks is situated at the back of the newly constructed facilities away from the river edge and outside the flood line areas and above the 5m amsl contour to mitigate any possible pollution of the river. The lapa will not have any ablution facilities. The near by ablution facilities ill be used.

SECTION F: ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE ALTERNATIVES

Note: The information in this section must be DUPLICATED for all the feasible and reasonable ALTERNATIVES.

1. DESCRIBE THE ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT AND ITS ALTERNATIVES, FOCUSING ON THE FOLLOWING:

(a) Geographical, geological and physical aspects:

The proposed action will not have a significant adverse cumulative effect on topography, slopes, soils and groundwater resources, if operational and construction mitigation measures are implemented. The proposed development will not be a potential source of contamination to the underlying groundwater and will cause no significant degradation of the potable drinking water supply.

(b) Ecological aspects:

Will the proposed development and its alternatives have an impact on CBAs or ESAs? If yes, please explain: Also include a description of how the proposed development will influence the quantitative values (hectares/percentage) of the categories on the CBA/ESA map.	YES	~~NO~~
All the facilities are situated on disturbed areas and not on any CBA area, but are surrounded by CBA's. The bird hide and jetties are inside an aquatic estuarine CBA.		
Will the proposed development and its alternatives have an impact on terrestrial vegetation, or aquatic ecosystems (wetlands, estuaries or the coastline)? If yes, please explain:	YES	~~NO~~
The bird hide and jetties are inside an aquatic estuarine CBA.		
Will the proposed development and its alternatives have an impact on any populations of threatened plant or animal species, and/or on any habitat that may contain a unique signature of plant or animal species? If yes, please explain:	~~YES~~	NO
Ploughed and areas disturbed as a result of previous agricultural and tourist activities. The jetties will be floating jetties anchored to the bank of the river with no impact on the ecological functioning. The bird hide will have a small impact on least threatened vegetation.		
Describe the manner in which any other biological aspects will be impacted:		
Not applicable. The proposed development will not impact of the ecological functioning of the area.		
Will the proposed development also trigger section 63 of the NEM: ICMA?	YES	~~NO~~
If yes, describe the following: (i) the extent to which the applicant has in the past complied with similar authorisations; (ii) whether coastal public property, the coastal protection zone or coastal access land will be affected, and if so, the extent to which the proposed development proposal or listed activity is consistent with the purpose for establishing and protecting those areas; (iii) the estuarine management plans, coastal management programmes, coastal management lines and coastal management objectives applicable in the area; (iv) the likely socio-economic impact if the listed activity is authorised or is not authorised; (v) the likely impact of coastal environmental processes on the proposed development; (vi) whether the development proposal or listed activity—		

(a) is situated within coastal public property and is inconsistent with the objective of conserving and enhancing coastal public property for the benefit of current and future generations; (b) is situated within the coastal protection zone and is inconsistent with the purpose for which a coastal protection zone is established as set out in section 17 of NEM: ICMA; (c) is situated within coastal access land and is inconsistent with the purpose for which coastal access land is designated as set out in section 18 of NEM: ICMA; (d) is likely to cause irreversible or long-lasting adverse effects to any aspect of the coastal environment that cannot satisfactorily be mitigated; (e) is likely to be significantly damaged or prejudiced by dynamic coastal processes; (f) would substantially prejudice the achievement of any coastal management objective; or (g) would be contrary to the interests of the whole community; (vii) whether the very nature of the proposed activity or development requires it to be located within coastal public property, the coastal protection zone or coastal access land; (viii) whether the proposed development will provide important services to the public when using coastal public property, the coastal protection zone, coastal access land or a coastal protected area; and (ix) the objects of NEM: ICMA, where applicable.
The estuary is considered one of the most important estuaries in South Africa in terms of conservation value - the system has been identified as an important bird area, and is also considered of high national conservation importance for estuarine fish, invertebrates and vegetation. Anthropogenic threats to the system include water abstraction and dams (there are four major dams within the Berg River Estuary catchment), agricultural and urban encroachment, specifically in terms of changes in hydrodynamics and water quality, frequency and intensity of the flooding of the floodplain and reduction of natural vegetation on the floodplain. The Kliphoek site is considered a very important winter feeding ground for wading birds and waterfowl. As such, the estuary is considered a top priority in terms of its overall biodiversity conservation importance. The DWA (2010) determination of the Environmental Water Requirements (EWR) study for the Berg River Estuary included an economic valuation of the estuary (an estimated R 75.6 million) that placed it "firmly on the upper end of the value spectrum for temperate estuaries in South Africa" (DWA 2010). The largest component of this value was derived from turnover in the property sector (R 48.6 million), followed closely by visitor expenditure (R 18.3 million) and nursery value (R 8.1 million) (DWA 2010). Subsistence and existence value made relatively small contributions to total estimated economic value (DWA 2010). Refer to Estuarine Specialist Study and Impact Assessment for the Proposed Expansion of KLIPHOEK RESORT, VELDDRIF (specialist study attached) for more detail[6].

(c) Social and Economic aspects:

What is the expected capital value of the project on completion?	Unknown	
What is the expected yearly income or contribution to the economy that will be generated by or as a result of the project?	Approximately R1.5m	
Will the project contribute to service infrastructure?	~~YES~~	NO
Is the project a public amenity?	YES	~~NO~~
How many new employment opportunities will be created during the development phase?	UNKNOWN	
What is the expected value of the employment opportunities during the development phase?	UNKNOWN	
What percentage of this will accrue to previously disadvantaged individuals?	UNKNOWN	
How will this be ensured and monitored (please explain):		
Contractor will be monitored by applicant to appoint as many as possible local labourers and personnel where possible.		
How many permanent new employment opportunities will be created during the operational phase of the project?	NA. Will be managed by the existing personnel.	
What is the expected current value of the employment opportunities during the first 10 years?	NA	
What percentage of this will accrue to previously disadvantaged individuals?	NA	
How will this be ensured and monitored (please explain):		

[6] Wright A.G. and Clark BM. 2017. Estuarine specialist study and impact assessment for the proposed expansion of Kliphoek Resort, Velddrif. Report prepared by Anchor Environmental Consultants (Pty) Ltd for Eco Impact Legal Consulting (Pty) Ltd. 43pp.

NA
Any other information related to the manner in which the socio-economic aspects will be impacted:
NA

(d) Heritage and Cultural aspects:

Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), is not applicable to the proposed development as the re-zoning of the site will not exceeds 10 000 m^2 in extent. No archaeologically significant resources were found during the foot survey. The site is ploughed and previously disturbed by mining activities. The development will not impact on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 or impact on any building or structure older than 60 years in any way. Notice of Intent to Develop has been submitted to Heritage Western Cape to determine potential impacts and specialist studies required in terms of cultural and historical aspects.

2. WASTE AND EMISSIONS

(a) Waste (including effluent) management

Will the development proposal produce waste (including rubble) during the development phase?	YES	~~NO~~
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type?		2 m^3
Construction and operational waste will be generated. Construction waste will consist of inert waste, possible contaminated soil as result of leaking or re-fuelling of construction vehicles and waste generated when the buildings are painted. Inert and access soil waste will be recycled where possible on site for the levelling of the building foundations. Contaminated soil and other construction waste will be disposed at a licensed waste disposal facility.		

Will the development proposal produce waste during its operational phase?	YES	~~NO~~
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type?		15 m^3
Operational Waste (Hazardous and general) will be transported and disposed of at a registered landfill and disposal/ recycling facility. Refer to the EMP operational section for list of possible operational wastes to be generated and the management and disposal thereof.		

Will the development proposal require waste to be treated / disposed of on site?	~~YES~~	NO
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?		m^3
NA		
If no, where and how will the waste be treated / disposed of? Please explain. Indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?		m^3
Effluent generated at the facility will be captured in closed tanks for collection and disposal to the Velddrif municipal WWTW.		
Has the municipality or relevant authority confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? If yes, provide written confirmation from the municipality or relevant authority.	~~YES~~	NO
Will the development proposal produce waste that will be treated and/or disposed of at another facility other than into a municipal waste stream?	~~YES~~	NO
If yes, has this facility confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? Provide written confirmation from the facility.	~~YES~~	NO
Does the facility have an operating license? (If yes, please attach a copy of the licence.)	~~YES~~	~~NO~~

Facility name:	
Contact person:	
Cell:	Postal address:
Telephone:	Postal code:

Fax:	E-mail:

Describe the measures that will be taken to reduce, reuse or recycle waste:
Inert and access soil waste will be recycled where possible on site for the levelling of the building foundations. Operational waste will be sorted and disposed at the Veldrif Landfill site where it will be further sorted and recycled.

(b) Emissions into the atmosphere

Will the development proposal produce emissions that will be released into the atmosphere?	~~YES~~	NO
If yes, does this require approval in terms of relevant legislation?	~~YES~~	~~NO~~
If yes, what is the approximate volume(s) of emissions released into the atmosphere?		m^3
Describe the emissions in terms of type and concentration and how these will be avoided/managed/treated/mitigated:		
NA		

3. WATER USE

(a) Indicate the source(s) of water for the development proposal by highlighting the appropriate box(es).

Municipal	~~Water board~~	~~Groundwater~~	~~River, Stream, Dam or Lake~~	~~Other~~	~~The project will not use water~~

Note: Provide proof of assurance of water supply (e.g. Letter of confirmation from the municipality / water user associations, yield of borehole)

(b) If water is to be extracted from a groundwater source, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:		m^3

(c) Does the development proposal require a water use permit / license from DWS?	YES	~~NO~~
If yes, please submit the necessary application to the DWS and attach proof thereof to this application as an Appendix.		

Water Use Authorization for the infrastructure within 500m from a wetland.

(d) Describe the measures that will be taken to reduce water demand, and measures to reuse or recycle water:
NA

4. POWER SUPPLY

(a) Describe the source of power *e.g.* municipality / Eskom / renewable energy source.

ESKOM from existing supply and network on the farm.

(b) If power supply is not available, where will power be sourced?

NA

5. ENERGY EFFICIENCY

(a) Describe the design measures, if any, that have been taken to ensure that the development proposal will be energy efficient:

Energy efficient lighting and geysers.

(b) Describe how alternative energy sources have been taken into account or been built into the design of the project, if any:

NA

6. TRANSPORT, TRAFFIC AND ACCESS

Describe the impacts in terms of transport, traffic and access.

The existing acess and road infrastructure will be used and no upgrades to the existing infrastructure is required. The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible. The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are

relatively low, this cumulative impact is not significant.

7. NUISANCE FACTOR (NOISE, ODOUR, etc.)

Describe the potential nuisance factor or impacts in terms of noise and odours.

Noise and vibration

During construction operations, noise may have an impact on aquatic organisms in the vicinity. Noise may be generated by construction activities (e.g. earthmoving vehicles, service vehicles, vessels, cranes, heavy machinery, generators, chopping, drilling, grinding etc.). Benthic invertebrates have been shown to be relatively insensitive to low frequency sound, whilst fish appear to be able to tolerate moderate sound levels (Keevin & Hempen 1997). Foraging birds are expected to avoid the sound source should it reach levels sufficient to cause discomfort. Due to the existence of similar habitats within the surrounding area, it is not expected that avifauna will be excluded from feeding on a particular food source. As a precautionary measure, mobile equipment, vehicles and power generation equipment should be subject to noise tests which are measured against manufacturer specifications to confirm compliance before deployment on site. Noise emissions from mobile and fixed equipment should be subject to periodic checks as part of regular maintenance programmes to allow for detection of any unacceptable increases in noise. After mitigation is considered, the impact of noise and vibration on the marine environment is considered to be 'insignificant'

An increase in the frequency of vessel traffic may result in a rise in the amount of noise and vibration, which can have an impact on estuarine biota and shore birds in the area. The Kliphoek site is considered a very important winter feeding ground for wading birds and waterfowl (Anchor 2010). Increased capacity of the Kliphoek resort may also negatively affect biota through an increase in foot traffic. Access to the jetties and other such infrastructure may result in trampling of riverine vegetation and other disturbance of biota. The owner, Mr Jurgen Kotze, has indicated that walkways will be constructed to the jetties to minimise trampling (J. Kotze, pers. com. 2017). As the maximum impact radius of vessel traffic noise, and the area that may be disturbed by trampling is very small compared to the population distribution ranges of the birds in question, it is therefore unlikely that there will be significant effects on biota and this impact is therefore rated 'insignificant'

Note: Include impacts that the surrounding environment will have on the proposed development.

8. OTHER

POTENTIAL VISUAL IMPACTS

Nature of impact: Visual impact of infrastructure and services establishment.	
Discussion: The construction activities for the proposed developments and decommissioning will have a temporary visual impact on the landscape.	
Cumulative impacts: Construction activities on construction site.	
Mitigation: Proposed construction activities must be limited to development footprint site. Construction camp must be neatly fenced and construction site must be neat and tidy.	

Criteria	Preferred Layout Alternative		Alternative Layout		No-Go Alternative	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	1	1	1	1	Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1	1	1		
Magnitude	2	2	2	2		
Probability	2	2	2	2		

Significance	8- Low	8- Low	8- Low	8- Low
Status	Not significant	Not significant	Not significant	Not significant
Reversibility	0% reversibility – once the visual features are destroyed, it cannot be recovered.			
Irreplaceable loss of resources	3- Yes, completely irreplaceable			
Can impacts be mitigated?	1-Yes			

SECTION G: IMPACT ASSESSMENT, IMPACT AVOIDANCE, MANAGEMENT, MITIGATION AND MONITORING MEASURES

1. METHODOLOGY USED IN DETERMINING AND RANKING ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES

(a) Describe the **methodology** used in determining and ranking the nature, significance consequences, extent, duration and probability of potential environmental impacts and risks associated with the proposed development and alternatives.

The assessment criteria were developed based on the Department of Environmental Affair's Integrated Environmental Management Series guideline documents.

Criteria	**Description**		
Nature	A description of what causes the effect, what will be affected, and how it will be affected.		
	Type	**Score**	**Description**
Extent (E)	None (No)	1	Footprint
	Site (S)	2	On site or within 100 m of the site
	Local (L)	3	Within a 20 km radius of the centre of the site
	Regional (R)	4	Beyond a 20 km radius of the site
	National (Na)	5	Crossing provincial boundaries or on a national / land wide scale
Duration (D)	Short term (S)	1	0 – 1 years
	Short to medium (S-M)	2	2 – 5 years
	Medium term (M)	3	5 – 15 years
	Long term (L)	4	> 15 years
	Permanent(P)	5	Will not cease
Magnitude (M)	Small (S)	0	will have no effect on the environment
	Minor (Mi)	2	will not result in an impact on processes
	Low (L)	4	will cause a slight impact on processes
	Moderate (Mo)	6	processes continuing but in a modified way
	High (H)	8	processes are altered to the extent that they temporarily cease
	Very high (VH)	10	Results in complete destruction of patterns and permanent cessation of processes.
Probability (P) The likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned	Very improbable (VP)	1	probably will not happen
	Improbable (I)	2	some possibility, but low likelihood
	Probable (P)	3	distinct possibility
	Highly probable (HP)	4	most likely
	Definite (D)	5	impact will occur regardless of any prevention measures

Significance (S)	Determined through a synthesis of the characteristics described above: **S = (E+D+M) x P** Significance can be assessed as low, medium or high		
Low: < 30 points:	The impact would not have a direct influence on the decision to develop in the area		
Medium: 30 – 60 points:	The impact could influence the decision to develop in the area unless it is effectively mitigated		
High: < 60 points:	The impact must have an influence on the decision process to develop in the area		
No significance	When no impact will occur or the impact will not affect the environment		
Status	Positive (+)		Negative (-)
The degree to which the impact can be reversed	Completely reversible (R)	90-100%	The impact can be mostly to completely reverse with the implementation of the correct mitigation and rehabilitation measures.
	Partly reversible (PR)	6-89%	The impact can be partly reversed providing that mitigation measures as stipulated in the EMP are implemented and rehabilitation measures are undertaken
	Irreversible (IR)	0-5%	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures taking place
The degree to which the impact may cause irreplaceable loss of resources	Resource will not be lost (R)	1	The resource will not be lost or destroyed provided that mitigation and rehabilitation measures as stipulated in the EMP are implemented
	Resource may be partly destroyed (PR)	2	Partial loss or destruction of the resources will occur even though all management and mitigation measures as stipulated in the EMP are implemented
	Resource cannot be replaced (IR)	3	The resource cannot be replaced no matter which management or mitigation measures are implemented.
The degree to which the impact can be mitigated	Completely mitigatable (CM)	1	The impact can be completely mitigated providing that all management and mitigation measures as stipulated in the EMP are implemented
	Partly mitigatable (PM)	2	The impact cannot be completely mitigated even though all management and mitigation measures as stipulated in the EMP are implemented. Implementation of these measures will provide a measure of mitigatibility
	Un-mitigatable (UM)	3	The impact cannot be mitigated no matter which management or mitigation measures are implemented.

(b) Please describe any gaps in knowledge.

EAP is only knowledgeable with regards to the environmental impacts, biodiversity and ecosystems aspects.

(c) Please describe the underlying assumptions.

In undertaking the investigation and compiling this report, the following has been assumed:

- The information provided by the client is accurate and unbiased;
- The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the development; and
- Should the proposed project be authorised, the applicant will incorporate the recommendations and mitigation measures outlined in this BAR, the EMP and the EA into the detailed design and construction contract specifications and operational management system for the proposed project.

(d) Please describe the uncertainties.

None at this stage.

(e) Describe adequacy of the assessment methods used.

Based on the EAP's assessment information was provided to address the concerns and assess the impacts of the proposed development on the environment. Information as provided by the applicant and as collected by the EAP during site surveys etc. has been used to inform the current development proposals.

2. IDENTIFICATION, ASSESSMENT AND RANKING OF IMPACTS TO REACH THE PROPOSED ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE WITHIN THE SITE

Note: In this section the focus is on the identified issues, impacts and risks that influenced the identification of the alternatives. This includes how aspects of the receiving environment have influenced the selection.

(a) List the identified impacts and risks for each alternative.

Alternative 1: Preferred	Potential negative impacts that may arise from the proposed construction phase include ecological effects due to: • Disturbance to or alteration of soft sediment estuarine habitat; • temporary loss of artificial wood/concrete habitat; • mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary; • mobilisation of sediment in the water column; • loss of vegetation (including intact vegetation, ecologically important species and species of conservation concern); • loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern; • generation and disposal of waste; • increased noise and vibration; and • spillage of hazardous substances. Possible environmental impacts caused during the operational phase that are likely to impact on estuarine communities include the effects of: • altered quay design affecting hydrodynamics and sediment movement; • increased foot and vessel traffic affecting sensitive biota; • generation and disposal of waste; and, • noise and vibration. The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance. Cumulative estuarine environmental impacts associated with this project are primarily related to operational impacts resulting from increased vessel traffic and wastewater discharge, as well as increased risks from hazardous substances. It is envisioned that only minor routine maintenance will be required over the course of the design life of the proposed development. Impacts expected in the decommissioning phase have been dealt with in the construction phase. <u>Construction phase:</u> • Disturbance to or alteration of soft sediment estuarine habitat – Insignificant • Temporary loss of artificial wood/concrete habitat – Insignificant • Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary – Low but with mitigation insignificant. • Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure - Low but with

	mitigation insignificant. • Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern – Low but with mitigation very low. • Waste generation and disposal - medium but with mitigation low. • Noise and vibration – Very low but with mitigation insignificant. • Spillage of hazardous substances on estuarine biota - Low but with mitigation very low. • Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures); • Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures); • Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures); • Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures); • Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures); • Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures); • Increased jobs - (No impact before mitigation and positive impact with mitigation measures); • Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures); • The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures); • Noise due to construction machinery - (Low impact before mitigation and low impact with mitigation measures); • Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures); <u>Operational phase:</u> • Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures); • Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures); • Impact on Drainage Line / Groundwater resources - (medium impact before mitigation and low impact with mitigation measures); • Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures); • Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures); • Increased jobs - (No impact before mitigation and positive impact with mitigation measures); • Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures); • The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures); • Noise due to tourist activities - (Low impact before mitigation and low impact with mitigation measures); • Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures); • Altered quay design affecting hydrodynamics and sediment movement –

	Insignificant • Increased foot and vessel traffic affecting sensitive biota – Insignificant • Generation and disposal of waste - medium but with mitigation low. • Noise and vibration – Insignificant <u>Decommissioning phase:</u> • Similar to impacts associated with construction phase.
Alternative 2:	<u>Construction phase:</u> • Disturbance to subsurface geological layers (Low impact before mitigation and low impact with mitigation measures); • Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures); • Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures); • Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures); • Impact on surrounding and municipal planning policies and guidelines - (Low impact before mitigation and low impact with mitigation measures); • Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures); • Increased jobs - (No impact before mitigation and positive impact with mitigation measures); • Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures); • The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures); • Noise due to construction machinery - (Low impact before mitigation and low impact with mitigation measures); • Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures); <u>Operational phase:</u> • Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures); • Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures); • Impact on Drainage Line / Groundwater resources - (Medium impact before mitigation and low impact with mitigation measures); • Impact on surrounding land use and its potential effect on surrounding environment - (Low impact before mitigation and low impact with mitigation measures); • Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures); • Increased jobs - (No impact before mitigation and positive impact with mitigation measures); • Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures); • The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures); • Noise due to tourist activities - (Low impact before mitigation and low impact with mitigation measures); • Visual impact of infrastructure and services establishment - (Low impact before

	mitigation and low impact with mitigation measures); <u>Decommissioning phase:</u> • Similar to impacts associated with construction phase.
Alternative x:	NA
No-go Alternative:	The No-Go option will result in the site remaining as is presently.

(b) Describe the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed; may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.

The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. (The EAP has to select the relevant impacts identified in blue in the table below for each alternative and repeat the table for each impact and risk).

Alternative 1 : Preferred Layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Construction activities can affect the underlying geological layers on site to some extent.**
Nature of impact:	**Disturbance to subsurface geological layers**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 2 (two to five years)**
Consequence of impact or risk:	**Construction and excavation activities can affect the underlying geological layers on site to some extent.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surrounding subsurface geological layers**
Cumulative impact prior to mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Demarcation and work within demarcated areas only.**
Residual impacts:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Maintenance activities can affect the underlying geological layers on site to some extent.**
Nature of impact:	**Disturbance to subsurface geological layers**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 2 (two to five years)**
Consequence of impact or risk:	**Construction and excavation activities can affect the underlying geological layers on site to some extent.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surrounding subsurface geological layers**
Cumulative impact prior to mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**

Proposed mitigation:	**Demarcation and work within demarcated areas only.**
Residual impacts:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	
Nature of impact:	**Disturbance to subsurface geological layers**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 2 (two to five years)**
Consequence of impact or risk:	**Construction and excavation activities can affect the underlying geological layers on site to some extent.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surrounding subsurface geological layers**
Cumulative impact prior to mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Demarcation and work within demarcated areas only.**
Residual impacts:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 2 : Alternative layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Construction activities can affect the underlying geological layers on site to some extent.**
Nature of impact:	**Disturbance to subsurface geological layers**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 2 (two to five years)**
Consequence of impact or risk:	**Construction and excavation activities can affect the underlying geological layers on site to some extent.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surrounding subsurface geological layers**
Cumulative impact prior to mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Demarcation and work within demarcated areas only.**
Residual impacts:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Maintenance activities can affect the underlying geological layers on site to some extent.**
Nature of impact:	**Disturbance to subsurface geological layers**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 2 (two to five years)**
Consequence of impact or risk:	**Construction and excavation activities can affect the underlying geological layers on site to some extent.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surrounding subsurface geological layers**
Cumulative impact prior to mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Demarcation and work within demarcated areas only.**
Residual impacts:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Construction activities can affect the underlying geological layers on site to some extent.**
Nature of impact:	**Disturbance to subsurface geological layers**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 2 (two to five years)**
Consequence of impact or risk:	**Construction and excavation activities can affect the underlying geological layers on site to some extent.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surrounding subsurface geological layers**
Cumulative impact prior to mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Demarcation and work within demarcated areas only.**
Residual impacts:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high as the affected substrata is deep and the integrity of the underlying ground structures will not be sacrificed.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 1 : Preferred Layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Soil erosion and dust**

Nature of impact:	**Construction activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.** **Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.** **Soil erosion can occur due to wind (wind erosion causes dust pollution).**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 5 (permanent)**
Consequence of impact or risk:	**Construction and excavation activities can result in erosion and dust.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Control access to roads and other areas to avoid disturbance of areas outside the development footprint.** **Undertake dust suppression as needed.** **Personnel should be restricted to the camp site and immediate construction areas only.** **Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.** **Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**Operational activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.** **Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.** **Soil erosion can occur due to wind (wind erosion causes dust pollution).**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 5 (permanent)**
Consequence of impact or risk:	**Construction and excavation activities can result in erosion and dust.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Control access to roads and other areas to avoid disturbance of areas outside the development footprint.** **Undertake dust suppression as needed.** **Personnel should be restricted to the camp site and immediate areas only.** **Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.** **Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**Construction activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.** **Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.** **Soil erosion can occur due to wind (wind erosion causes dust pollution).**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 5 (permanent)**
Consequence of impact or risk:	**Construction and excavation activities can result in erosion and dust.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Control access to roads and other areas to avoid disturbance of areas outside the development footprint.** **Undertake dust suppression as needed.** **Personnel should be restricted to the camp site and immediate construction areas only.** **Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.** **Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 2 : Alternative layout	**Geographical and Physical Impacts**

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**Construction activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.** **Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.** **Soil erosion can occur due to wind (wind erosion causes dust pollution).**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 5 (permanent)**
Consequence of impact or risk:	**Construction and excavation activities can result in erosion and dust.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Control access to roads and other areas to avoid disturbance of areas outside the development footprint.** **Undertake dust suppression as needed.** **Personnel should be restricted to the camp site and immediate construction areas only.** **Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.** **Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**Operational activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.** **Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.** **Soil erosion can occur due to wind (wind erosion causes dust pollution).**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 5 (permanent)**
Consequence of impact or risk:	**Construction and excavation activities can result in erosion and dust.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**

Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Control access to roads and other areas to avoid disturbance of areas outside the development footprint.** **Undertake dust suppression as needed.** **Personnel should be restricted to the camp site and immediate areas only.** **Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.** **Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**Construction activities will cause a disturbance to the soil and the vegetation cover on the site. This disturbance, unless carefully managed, could spread as a result.** **Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site. Residual soils are also expected to have a very low permeability and due to low infiltration rates and the sloping terrain, water will tend to runoff from surface in a downslope direction.** **Soil erosion can occur due to wind (wind erosion causes dust pollution).**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 5 (permanent)**
Consequence of impact or risk:	**Construction and excavation activities can result in erosion and dust.**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Control access to roads and other areas to avoid disturbance of areas outside the development footprint.** **Undertake dust suppression as needed.** **Personnel should be restricted to the camp site and immediate construction areas only.** **Undertake storm water management measures as required, with special attention to storm water management that may be required upslope.** **Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation	**8 - Low**

(e.g. Low, Medium, Medium-High, High, or Very-High)	

Alternative 1 : Preferred Layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact of construction activities on surface and underground water pollution**
Nature of impact:	**Diesel and oil spills affecting ground and surface water.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**64 - High**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**28 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact of construction activities on surface and underground water pollution**
Nature of impact:	**Diesel and oil spills affecting ground and surface water.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**64 - High**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**28 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact of construction activities on surface and underground water pollution**
Nature of impact:	**Diesel and oil spills affecting ground and surface water.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**

Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**64 - High**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**28 - Low**

Alternative 2 : Alternative layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact of construction activities on surface and underground water pollution**
Nature of impact:	**Diesel and oil spills affecting ground and surface water.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**64 - High**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**28 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact of construction activities on surface and underground water pollution**
Nature of impact:	**Diesel and oil spills affecting ground and surface water.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**64 - High**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**28 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact of construction activities on surface and underground water pollution**
Nature of impact:	**Diesel and oil spills affecting ground and surface water.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 3 (5 – 15 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**64 - High**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**28 - Low**

Alternative 1 : Preferred Layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact on drainage line / groundwater resources**
Nature of impact:	**Natural drainage on site is expected to follow the topography, draining downslope towards the north and Berg River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the Berg River groundwater regime.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (will not cease)**
Consequence of impact or risk:	**Possible contamination of groundwater resources.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Possible contamination of water resources.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures outlined in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Possible contamination of groundwater resources.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact on drainage line / groundwater resources**
Nature of impact:	**Natural drainage on site is expected to follow the topography, draining downslope towards the north and Berg River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to**

	contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the Berg River groundwater regime.
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 5 (will not cease)**
Consequence of impact or risk:	**Possible contamination of water resources.**
Probability of occurrence:	**4 (most likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Possible contamination of water resources.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**36 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Management and monitoring the sewerage collection tanks and empty regular to prevent overflow.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Possible contamination of water resources.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**18 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact on drainage line / groundwater resources**
Nature of impact:	**Natural drainage on site is expected to follow the topography, draining downslope towards the north and Berg River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the Berg River groundwater regime.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (will not cease)**
Consequence of impact or risk:	**Possible contamination of groundwater resources.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Possible contamination of water resources.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures outlined in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Possible contamination of groundwater resources.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 2 : Alternative layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact on drainage line / groundwater resources**
Nature of impact:	**Natural drainage on site is expected to follow the topography, draining downslope towards the north and Berg River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with**

	the Berg River groundwater regime.
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (will not cease)**
Consequence of impact or risk:	**Possible contamination of groundwater resources.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Possible contamination of water resources.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures outlined in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Possible contamination of groundwater resources.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact on drainage line / groundwater resources**
Nature of impact:	**Natural drainage on site is expected to follow the topography, draining downslope towards the north and Berg River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the Berg River groundwater regime.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 5 (will not cease)**
Consequence of impact or risk:	**Possible contamination of water resources.**
Probability of occurrence:	**4 (most likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Possible contamination of water resources.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**36 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Management and monitoring the sewerage collection tanks and empty regular to prevent overflow.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Possible contamination of water resources.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**18 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact on drainage line / groundwater resources**
Nature of impact:	**Natural drainage on site is expected to follow the topography, draining downslope towards the north and Berg River. The storm water flow of site will link to regional drainage pathways within the area and therefore regional groundwater as a whole is vulnerable to contamination. Contaminants and pollutants from both point and diffuse sources would quickly enter the regional groundwater system. Any aquifers in the area are likely to be in hydraulic continuity with the Berg River groundwater regime.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (will not cease)**
Consequence of impact or risk:	**Possible contamination of groundwater resources.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**

Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Pollution of water resources**
Cumulative impact prior to mitigation:	**Possible contamination of water resources.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Mitigation measures outlined in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Possible contamination of groundwater resources.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 1 : Preferred Layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact on surrounding and municipal planning policies and guidelines.**
Nature of impact:	**The site is already operated and developed as a resort.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact prior to mitigation:	**Impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.**
Residual impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact post mitigation:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact on surrounding and municipal planning policies and guidelines.**
Nature of impact:	**The site is already operated and developed as a resort.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact prior to mitigation:	**Impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**

Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.**
Residual impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact post mitigation:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact on surrounding and municipal planning policies and guidelines.**
Nature of impact:	**The site is already operated and developed as a resort.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact prior to mitigation:	**Impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.**
Residual impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact post mitigation:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 2 : Alternative layout	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact on surrounding and municipal planning policies and guidelines.**
Nature of impact:	**The site is already operated and developed as a resort.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact prior to mitigation:	**Impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.**
Residual impacts:	**Impact on surrounding and municipal planning policies and guidelines.**

Cumulative impact post mitigation:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact on surrounding and municipal planning policies and guidelines.**
Nature of impact:	**The site is already operated and developed as a resort.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact prior to mitigation:	**Impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.**
Residual impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact post mitigation:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact on surrounding and municipal planning policies and guidelines.**
Nature of impact:	**The site is already operated and developed as a resort.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact prior to mitigation:	**Impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Rezoning application in process to be approved and that the conditions associated with the approved rezoning are implemented and adhered to.**
Residual impacts:	**Impact on surrounding and municipal planning policies and guidelines.**
Cumulative impact post mitigation:	**Possible impact on surrounding and municipal planning policies and guidelines.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 1 : Preferred Layout	**Biological Aspect Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact on the indigenous terrestrial flora and habitat present in the**

	area. Impact on the naturally occurring fauna present in the area.
Nature of impact:	**All the facilities are situated on disturbed areas and not on any CBA area. Although in an Ecological Support Area (buffer of the Berg River), the proposed infrastructure will be constructed on disturbed areas and a buffer area to protect the ecological functioning of the Berg River will be maintained. Impact from jetties will be of insignificance.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**36 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Work within site boundaries with no construction activities outside the boundary of the proposed development.**
Residual impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact post mitigation:	**Possible impact on indigenous vegetation and habitats.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area.**
Nature of impact:	**All the facilities are situated on disturbed areas and not on any CBA area. Although in an Ecological Support Area (buffer of the Berg River), the proposed infrastructure will be constructed on disturbed areas and a buffer area to protect the ecological functioning of the Berg River will be maintained. Impact from jetties will be of insignificance.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**36 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Work within site boundaries with no construction activities outside the boundary of the proposed development.**
Residual impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact post mitigation:	**Possible impact on indigenous vegetation and habitats.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area.**
Nature of impact:	**All the facilities are situated on disturbed areas and not on any CBA area. Although in an Ecological Support Area (buffer of the Berg River), the proposed infrastructure will be constructed on disturbed**

	areas and a buffer area to protect the ecological functioning of the Berg River will be maintained.
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**36 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Work within site boundaries with no construction activities outside the boundary of the proposed development.**
Residual impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact post mitigation:	**Possible impact on indigenous vegetation and habitats.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 2 : Alternative layout	**Biological Aspect Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area.**
Nature of impact:	**All the facilities are situated on disturbed areas and not on any CBA area. Although in an Ecological Support Area (buffer of the Berg River), the proposed infrastructure will be constructed on disturbed areas and a buffer area to protect the ecological functioning of the Berg River will be maintained.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**36 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Work within site boundaries with no construction activities outside the boundary of the proposed development.**
Residual impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact post mitigation:	**Possible impact on indigenous vegetation and habitats.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area.**
Nature of impact:	**All the facilities are situated on disturbed areas and not on any CBA area. Although in an Ecological Support Area (buffer of the Berg River), the proposed infrastructure will be constructed on disturbed areas and a buffer area to protect the ecological functioning of the Berg River will be maintained.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**

Consequence of impact or risk:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**36 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Work within site boundaries with no construction activities outside the boundary of the proposed development.**
Residual impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact post mitigation:	**Possible impact on indigenous vegetation and habitats.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area.**
Nature of impact:	**All the facilities are situated on disturbed areas and not on any CBA area. Although in an Ecological Support Area (buffer of the Berg River), the proposed infrastructure will be constructed on disturbed areas and a buffer area to protect the ecological functioning of the Berg River will be maintained. Impact from jetties will be of insignificance.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**36 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Work within site boundaries with no construction activities outside the boundary of the proposed development.**
Residual impacts:	**Loss of significantly impacted upon indigenous vegetation and habitat.**
Cumulative impact post mitigation:	**Possible impact on indigenous vegetation and habitats.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**

Alternative 1 : Preferred Layout	**Socio-Economic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Increased jobs**
Nature of impact:	**Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and "others (work force and job seekers)" may be employed from outside the community.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Influx of contract workers due to lack of skills.** **Influx of job seekers due to jobs created.** **Littering.**
Probability of occurrence:	**4 (most likely)**

Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference.** **The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.**
Residual impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact post mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
OPERATIONAL PHASE	
Potential impact and risk:	**Increased jobs**
Nature of impact:	**Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and "others (work force and job seekers)" may be employed from outside the community.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Influx of contract workers due to lack of skills.** **Influx of job seekers due to jobs created.** **Littering.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference.** **The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.**
Residual impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact post mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Increased jobs**
Nature of impact:	**Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and "others (work force and job seekers)" may be employed from outside the community.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Influx of contract workers due to lack of skills.** **Influx of job seekers due to jobs created.** **Littering.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon job opportunities.**

Cumulative impact prior to mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference.** **The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.**
Residual impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact post mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**

Alternative 2 : Alternative layout	**Socio-Economic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Increased jobs**
Nature of impact:	**Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and "others (work force and job seekers)" may be employed from outside the community.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Influx of contract workers due to lack of skills.** **Influx of job seekers due to jobs created.** **Littering.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference.** **The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.**
Residual impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact post mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
OPERATIONAL PHASE	
Potential impact and risk:	**Increased jobs**
Nature of impact:	**Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and "others (work force and job seekers)" may be employed from outside the community.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Influx of contract workers due to lack of skills.** **Influx of job seekers due to jobs created.** **Littering.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon job opportunities.**

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference.** **The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.**
Residual impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact post mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Increased jobs**
Nature of impact:	**Temporary construction jobs will be created. The locals may not have sufficient skills to utilize the employment opportunities and "others (work force and job seekers)" may be employed from outside the community.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Consequence of impact or risk:	**Influx of contract workers due to lack of skills.** **Influx of job seekers due to jobs created.** **Littering.**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact prior to mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference.** **The municipality, local community and local community organizations should be informed of the project and potential job opportunities by the developer.**
Residual impacts:	**Loss of significantly impacted upon job opportunities.**
Cumulative impact post mitigation:	**Loss of significantly impacted upon job opportunities.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low (positive)**

Alternative 1 : Preferred Layout	**Socio-Economic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Traffic Impacts**
Nature of impact:	**The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 2 (2 – 5 years)**
Consequence of impact or risk:	**The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact prior to mitigation:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are**

	relatively low, this cumulative impact is not significant.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible**
Residual impacts:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact post mitigation:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Traffic Impacts**
Nature of impact:	**Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact prior to mitigation:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**None**
Residual impacts:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact post mitigation:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Traffic Impacts**
Nature of impact:	**The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 2 (2 – 5 years)**
Consequence of impact or risk:	**The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact prior to mitigation:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible**
Residual impacts:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact post mitigation:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**

Alternative 2 : Alternative layout	**Socio-Economic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Traffic Impacts**
Nature of impact:	**The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 2 (2 – 5 years)**
Consequence of impact or risk:	**The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact prior to mitigation:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible**
Residual impacts:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact post mitigation:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Traffic Impacts**
Nature of impact:	**Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact prior to mitigation:	**The increase in traffic volumes at certain times of day will add to the**

	existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**None**
Residual impacts:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact post mitigation:	**The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Traffic Impacts**
Nature of impact:	**The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 2 (2 – 5 years)**
Consequence of impact or risk:	**The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact prior to mitigation:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible**
Residual impacts:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Cumulative impact post mitigation:	**The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not significant.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**

Alternative 1 : Preferred Layout	**Cultural-Historical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related**

	activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will**

	have no impact on the cultural-historical aspects.
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**

Alternative 2 : Alternative layout	**Cultural-Historic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**

Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**

Alternative 1 : Preferred Layout	**Cultural-Historical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**

Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**

DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**

Alternative 2 : Alternative layout	**Cultural-Historic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**

Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains.**
Nature of impact:	**The potential impact of the proposed development on archaeological, paleontological and heritage remains**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 5 (Will not cease)**
Consequence of impact or risk:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Probability of occurrence:	**2 (some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**The proposed development, related facilities and infrastructure will have no impact on the cultural-historical aspects.**
Cumulative impact prior to mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be contacted.**
Residual impacts:	**Destruction of cultural-historical features at the site will contribute to**

	the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Cumulative impact post mitigation:	**Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 – Low**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Disturbance to or alteration of soft sediment estuarine habitat**
Nature of impact:	**Some planned development activities (i.e. the construction of new jetties) is likely to cause disturbance to shallow, subtidal sediment adjacent to the construction footprint. The impact of this is rated 'insignificant'as the size of the area likely to be impacted is very small.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (Will not cease)**
Consequence of impact or risk:	**Disturbance to or alteration of soft sediment estuarine habitat**
Probability of occurrence:	**1 (probably will not happen)**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Some planned development activities (i.e. the construction of new jetties) is likely to cause disturbance to shallow, subtidal sediment adjacent to the construction footprint. The impact of this is rated 'insignificant'as the size of the area likely to be impacted is very small.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Not considered necessary due to low significance.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Disturbance to or alteration of soft sediment estuarine habitat**
Nature of impact:	**Some planned development activities (i.e. the construction of new**

	jetties) is likely to cause disturbance to shallow, subtidal sediment adjacent to the construction footprint. The impact of this is rated 'insignificant'as the size of the area likely to be impacted is very small.
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (Will not cease)**
Consequence of impact or risk:	**Disturbance to or alteration of soft sediment estuarine habitat**
Probability of occurrence:	**1 (probably will not happen)**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Some planned development activities (i.e. the construction of new jetties) is likely to cause disturbance to shallow, subtidal sediment adjacent to the construction footprint. The impact of this is rated 'insignificant'as the size of the area likely to be impacted is very small.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Not considered necessary due to low significance.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 2 : Alternative Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Disturbance to or alteration of soft sediment estuarine habitat**
Nature of impact:	**Some planned development activities (i.e. the construction of new jetties) is likely to cause disturbance to shallow, subtidal sediment adjacent to the construction footprint. The impact of this is rated 'insignificant'as the size of the area likely to be impacted is very small.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (Will not cease)**
Consequence of impact or risk:	**Disturbance to or alteration of soft sediment estuarine habitat**
Probability of occurrence:	**1 (probably will not happen)**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Some planned development activities (i.e. the construction of new jetties) is likely to cause disturbance to shallow, subtidal sediment adjacent to the construction footprint. The impact of this is rated 'insignificant'as the size of the area likely to be impacted is very small.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Not considered necessary due to low significance.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause	

irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Disturbance to or alteration of soft sediment estuarine habitat**
Nature of impact:	**Some planned development activities (i.e. the construction of new jetties) is likely to cause disturbance to shallow, subtidal sediment adjacent to the construction footprint. The impact of this is rated 'insignificant'as the size of the area likely to be impacted is very small.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (Will not cease)**
Consequence of impact or risk:	**Disturbance to or alteration of soft sediment estuarine habitat**
Probability of occurrence:	**1 (probably will not happen)**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Some planned development activities (i.e. the construction of new jetties) is likely to cause disturbance to shallow, subtidal sediment adjacent to the construction footprint. The impact of this is rated 'insignificant'as the size of the area likely to be impacted is very small.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**Not considered necessary due to low significance.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Temporary loss of artificial wood/concrete habitat**
Nature of impact:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora. The impact of this is rated 'insignificant' as the size of the area likely to be impacted is negligible.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (Will not cease)**
Consequence of impact or risk:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora.**
Probability of occurrence:	**1 (probably will not happen)**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**Low**
Degree to which the impact can be managed:	**Low**
Degree to which the impact can be mitigated:	**NA**
Proposed mitigation:	**Not considered necessary due to low significance.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Temporary loss of artificial wood/concrete habitat**
Nature of impact:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora. The impact of this is rated 'insignificant' as the size of the area likely to be impacted is negligible.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (Will not cease)**
Consequence of impact or risk:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora.**
Probability of occurrence:	**1 (probably will not happen)**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**Low**
Degree to which the impact can be managed:	**Low**
Degree to which the impact can be mitigated:	**NA**
Proposed mitigation:	**Not considered necessary due to low significance.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	

Potential impact and risk:	**Temporary loss of artificial wood/concrete habitat**
Nature of impact:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora. The impact of this is rated 'insignificant' as the size of the area likely to be impacted is negligible.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (Will not cease)**
Consequence of impact or risk:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora.**
Probability of occurrence:	**1 (probably will not happen)**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**Low**
Degree to which the impact can be managed:	**Low**
Degree to which the impact can be mitigated:	**NA**
Proposed mitigation:	**Not considered necessary due to low significance.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Temporary loss of artificial wood/concrete habitat**
Nature of impact:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora. The impact of this is rated 'insignificant' as the size of the area likely to be impacted is negligible.**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 1 (Will not cease)**
Consequence of impact or risk:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora.**
Probability of occurrence:	**1 (probably will not happen)**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**Low**

Indirect impacts:	**Some planned development activities (i.e. the renovation of new jetties) may require the removal of existing infrastructure that has been colonised by invertebrate fauna and flora.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**Low**
Degree to which the impact can be managed:	**Low**
Degree to which the impact can be mitigated:	**NA**
Proposed mitigation:	**Not considered necessary due to low significance.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Nature of impact:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 2**
Consequence of impact or risk:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Use bunding where possible.** • **Collect and dispose of polluted soil at appropriate bio-remediation sites.** • **Minimise run-off as much as possible i.e. ensure that construction does not coincide with heavy rainfall, cover disturbed sediment etc.** • **Dust suppression techniques to be used on all dust generating surfaces. Screening measures to be placed adjacent to roads and residences. Handling of soils is not to be conducted during high winds (25km/h). Soil stockpiles to be covered with hessian or chip/mulch from cleared shrubs/trees to prevent dust generation. The speed of construction vehicles to be restricted within the construction area or near stockpiles. Trucks transporting any form of soil or waste should be covered with a tarpaulin.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	

Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Nature of impact:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 2**
Consequence of impact or risk:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Use bunding where possible.** • **Collect and dispose of polluted soil at appropriate bio-remediation sites.** • **Minimise run-off as much as possible i.e. ensure that construction does not coincide with heavy rainfall, cover disturbed sediment etc.** • **Dust suppression techniques to be used on all dust generating surfaces. Screening measures to be placed adjacent to roads and residences. Handling of soils is not to be conducted during high winds (25km/h). Soil stockpiles to be covered with hessian or chip/mulch from cleared shrubs/trees to prevent dust generation. The speed of construction vehicles to be restricted within the construction area or near stockpiles. Trucks transporting any form of soil or waste should be covered with a tarpaulin.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Nature of impact:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 2**
Consequence of impact or risk:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Probability of occurrence:	**5 (definite)**

Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Use bunding where possible.** • **Collect and dispose of polluted soil at appropriate bio-remediation sites.** • **Minimise run-off as much as possible i.e. ensure that construction does not coincide with heavy rainfall, cover disturbed sediment etc.** • **Dust suppression techniques to be used on all dust generating surfaces. Screening measures to be placed adjacent to roads and residences. Handling of soils is not to be conducted during high winds (25km/h). Soil stockpiles to be covered with hessian or chip/mulch from cleared shrubs/trees to prevent dust generation. The speed of construction vehicles to be restricted within the construction area or near stockpiles. Trucks transporting any form of soil or waste should be covered with a tarpaulin.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Nature of impact:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Extent and duration of impact:	**Extent 1 (Footprint) & Duration 2**
Consequence of impact or risk:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**

Indirect impacts:	**Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Use bunding where possible.** • **Collect and dispose of polluted soil at appropriate bio-remediation sites.** • **Minimise run-off as much as possible i.e. ensure that construction does not coincide with heavy rainfall, cover disturbed sediment etc.** • **Dust suppression techniques to be used on all dust generating surfaces. Screening measures to be placed adjacent to roads and residences. Handling of soils is not to be conducted during high winds (25km/h). Soil stockpiles to be covered with hessian or chip/mulch from cleared shrubs/trees to prevent dust generation. The speed of construction vehicles to be restricted within the construction area or near stockpiles. Trucks transporting any form of soil or waste should be covered with a tarpaulin.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Loss of vegetation**
Nature of impact:	**A few activities associated with this development will require the clearing of riparian vegetation. The majority of the area under assessment have already been modified in some way, with the northern sites characterised by open, planted "lawns" and bare ground, the eastern sites dominated by extensive beds of *Phragmites australis*. Therefore, this impact has been given a 'low' significance rating prior to recommended mitigation, and an 'insignificant' rating after mitigation**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure.**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation of the affected area (ensure to keep top soil separate).** • **Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and**

	• **Rubble and waste is not to be dumped in natural areas.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Loss of vegetation**
Nature of impact:	**A few activities associated with this development will require the clearing of riparian vegetation. The majority of the area under assessment have already been modified in some way, with the northern sites characterised by open, planted "lawns" and bare ground, the eastern sites dominated by extensive beds of *Phragmites australis*. Therefore, this impact has been given a 'low' significance rating prior to recommended mitigation, and an 'insignificant' rating after mitigation**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure.**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation of the affected area (ensure to keep top soil separate).** • **Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and** • **Rubble and waste is not to be dumped in natural areas.**

Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Loss of vegetation**
Nature of impact:	**A few activities associated with this development will require the clearing of riparian vegetation. The majority of the area under assessment have already been modified in some way, with the northern sites characterised by open, planted "lawns" and bare ground, the eastern sites dominated by extensive beds of *Phragmites australis*. Therefore, this impact has been given a 'low' significance rating prior to recommended mitigation, and an 'insignificant' rating after mitigation**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure.**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation of the affected area (ensure to keep top soil separate).** • **Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and** • **Rubble and waste is not to be dumped in natural areas.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	

Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Loss of vegetation**
Nature of impact:	**A few activities associated with this development will require the clearing of riparian vegetation. The majority of the area under assessment have already been modified in some way, with the northern sites characterised by open, planted "lawns" and bare ground, the eastern sites dominated by extensive beds of *Phragmites australis*. Therefore, this impact has been given a 'low' significance rating prior to recommended mitigation, and an 'insignificant' rating after mitigation**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure.**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation of the affected area (ensure to keep top soil separate).** • **Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and** • **Rubble and waste is not to be dumped in natural areas.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Loss of ecological processes associated with the loss of vegetation**
Nature of impact:	**Impacts on ecological processes occur when intact vegetation is locally lost, leading to fragmentation of the habitat, and when ecologically important species are lost. Therefore, if the topsoil and vegetation can be conserved processes will continue albeit in a modified way. However, the majority of the area under assessment is considered transformed, and as such, this impact was determined to have a 'very low' significance after mitigation**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of ecological processes associated with the loss of vegetation**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation of the affected area (ensure to keep top soil separate).** • **Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and** • **Rubble and waste is not to be dumped in natural areas.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Loss of ecological processes associated with the loss of vegetation**
Nature of impact:	**Impacts on ecological processes occur when intact vegetation is locally lost, leading to fragmentation of the habitat, and when ecologically important species are lost. Therefore, if the topsoil and vegetation can be conserved processes will continue albeit in a modified way. However, the majority of the area under assessment is considered transformed, and as such, this impact was determined to have a 'very low' significance after mitigation**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of ecological processes associated with the loss of vegetation**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Immediate rehabilitation of any areas disturbed as a result of**

	construction activities. Use species that are specific to the original vegetation of the affected area (ensure to keep top soil separate). • **Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and** • **Rubble and waste is not to be dumped in natural areas.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Loss of ecological processes associated with the loss of vegetation**
Nature of impact:	**Impacts on ecological processes occur when intact vegetation is locally lost, leading to fragmentation of the habitat, and when ecologically important species are lost. Therefore, if the topsoil and vegetation can be conserved processes will continue albeit in a modified way. However, the majority of the area under assessment is considered transformed, and as such, this impact was determined to have a 'very low' significance after mitigation**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of ecological processes associated with the loss of vegetation**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation of the affected area (ensure to keep top soil separate).** • **Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and** • **Rubble and waste is not to be dumped in natural areas.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**
OPERATIONAL PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	

Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Loss of ecological processes associated with the loss of vegetation**
Nature of impact:	**Impacts on ecological processes occur when intact vegetation is locally lost, leading to fragmentation of the habitat, and when ecologically important species are lost. Therefore, if the topsoil and vegetation can be conserved processes will continue albeit in a modified way. However, the majority of the area under assessment is considered transformed, and as such, this impact was determined to have a 'very low' significance after mitigation**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern**
Probability of occurrence:	**5 (definite)**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Loss of ecological processes associated with the loss of vegetation**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**Medium**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation of the affected area (ensure to keep top soil separate).** • **Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas; and** • **Rubble and waste is not to be dumped in natural areas.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Waste generation and disposal**
Nature of impact:	**South Africa has laws against littering, both on land and in the coastal zone, but unfortunately these laws are seldom rigorously enforced. Objects which are particularly detrimental to aquatic fauna include plastic bags and bottles, pieces of rope and small plastic particles. Large numbers of aquatic organisms are killed or injured daily by becoming entangled in debris or as a result of the ingestion of small plastic particles (Wallace 1985, Gregory 2009, Wright *et al*. 2013). If allowed to enter the ocean, solid waste may be transported by currents for long distances out to sea and around the coast. Thus, unlike fuel or sewage contamination, the extent of the damage caused by solid waste is potentially large. The impact of floating or submerged solid materials on aquatic life (especially birds and fish) can be lethal and can affect rare and endangered species.** **The problem of litter entering the aquatic environment has escalated dramatically in recent decades, with an ever-increasing proportion of litter consisting of non-biodegradable plastic materials. In order to reduce this, all domestic and general waste generated must be disposed of responsibly. All reasonable measures must be implemented to ensure there is no littering and that construction**

	waste is adequately managed. Staff must be regularly reminded about the detrimental impacts of pollution on aquatic species and suitable handling and disposal protocols must be clearly explained and sign boarded. The 'reduce, reuse, recycle' policy must be implemented. This impact is rated as 'moderate' without mitigation and is reduced to 'low' by implementing the actions outlined
Extent and duration of impact:	**Extent 3 & Duration 3**
Consequence of impact or risk:	**Waste generation and disposal during construction**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Waste generation and disposal during construction**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Inform all staff about sensitive marine species and the responsible disposal of construction waste.** • **Suitable handling and disposal protocols must be clearly explained and sign boarded.** • **Reduce, reuse, recycle.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Waste generation and disposal**
Nature of impact:	**All domestic and general waste generated during the operational phase must be disposed of responsibly. All reasonable measures must be implemented to ensure there is no littering and that waste is adequately managed. In order to prevent litter from entering the marine environment, staff must be regularly reminded about the detrimental impacts of pollution on marine species and suitable handling and disposal protocols must be clearly explained and sign boarded. The 'reduce, reuse, recycle' policy must be implemented in all areas of the Port.**
Extent and duration of impact:	**Extent 3 & Duration 3**
Consequence of impact or risk:	**Waste generation and disposal during construction**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Waste generation and disposal during construction**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Inform all staff about sensitive marine species and the responsible disposal of construction waste.** • **Suitable handling and disposal protocols must be clearly explained and sign boarded.** • **Reduce, reuse, recycle.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
DECOMMISSIONING AND CLOSURE PHASE	

Potential impact and risk:	**Waste generation and disposal**
Nature of impact:	**South Africa has laws against littering, both on land and in the coastal zone, but unfortunately these laws are seldom rigorously enforced. Objects which are particularly detrimental to aquatic fauna include plastic bags and bottles, pieces of rope and small plastic particles. Large numbers of aquatic organisms are killed or injured daily by becoming entangled in debris or as a result of the ingestion of small plastic particles (Wallace 1985, Gregory 2009, Wright *et al*. 2013). If allowed to enter the ocean, solid waste may be transported by currents for long distances out to sea and around the coast. Thus, unlike fuel or sewage contamination, the extent of the damage caused by solid waste is potentially large. The impact of floating or submerged solid materials on aquatic life (especially birds and fish) can be lethal and can affect rare and endangered species.** **The problem of litter entering the aquatic environment has escalated dramatically in recent decades, with an ever-increasing proportion of litter consisting of non-biodegradable plastic materials. In order to reduce this, all domestic and general waste generated must be disposed of responsibly. All reasonable measures must be implemented to ensure there is no littering and that construction waste is adequately managed. Staff must be regularly reminded about the detrimental impacts of pollution on aquatic species and suitable handling and disposal protocols must be clearly explained and sign boarded. The 'reduce, reuse, recycle' policy must be implemented. This impact is rated as 'moderate' without mitigation and is reduced to 'low' by implementing the actions outlined**
Extent and duration of impact:	**Extent 3 & Duration 3**
Consequence of impact or risk:	**Waste generation and disposal during construction**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Waste generation and disposal during construction**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Inform all staff about sensitive marine species and the responsible disposal of construction waste.** • **Suitable handling and disposal protocols must be clearly explained and sign boarded.** • **Reduce, reuse, recycle.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Waste generation and disposal**
Nature of impact:	**South Africa has laws against littering, both on land and in the coastal zone, but unfortunately these laws are seldom rigorously enforced. Objects which are particularly detrimental to aquatic fauna include plastic bags and bottles, pieces of rope and small plastic particles. Large numbers of aquatic organisms are killed or injured daily by becoming entangled in debris or as a result of the ingestion of small plastic particles (Wallace 1985, Gregory 2009, Wright *et al*. 2013). If allowed to enter the ocean, solid waste may be transported by currents for long distances out to sea and around the coast. Thus, unlike fuel or sewage contamination, the extent of the damage caused by solid waste is potentially large. The impact of floating or submerged solid materials on aquatic life (especially birds and fish) can be lethal and can affect rare and endangered species.** **The problem of litter entering the aquatic environment has escalated dramatically in recent decades, with an ever-increasing proportion of**

	litter consisting of non-biodegradable plastic materials. In order to reduce this, all domestic and general waste generated must be disposed of responsibly. All reasonable measures must be implemented to ensure there is no littering and that construction waste is adequately managed. Staff must be regularly reminded about the detrimental impacts of pollution on aquatic species and suitable handling and disposal protocols must be clearly explained and sign boarded. The 'reduce, reuse, recycle' policy must be implemented. This impact is rated as 'moderate' without mitigation and is reduced to 'low' by implementing the actions outlined
Extent and duration of impact:	**Extent 3 & Duration 3**
Consequence of impact or risk:	**Waste generation and disposal during construction**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Waste generation and disposal during construction**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Inform all staff about sensitive marine species and the responsible disposal of construction waste.** • **Suitable handling and disposal protocols must be clearly explained and sign boarded.** • **Reduce, reuse, recycle.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Waste generation and disposal**
Nature of impact:	**All domestic and general waste generated during the operational phase must be disposed of responsibly. All reasonable measures must be implemented to ensure there is no littering and that waste is adequately managed. In order to prevent litter from entering the marine environment, staff must be regularly reminded about the detrimental impacts of pollution on marine species and suitable handling and disposal protocols must be clearly explained and sign boarded. The 'reduce, reuse, recycle' policy must be implemented in all areas of the Port.**
Extent and duration of impact:	**Extent 3 & Duration 3**
Consequence of impact or risk:	**Waste generation and disposal during construction**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Waste generation and disposal during construction**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Inform all staff about sensitive marine species and the responsible disposal of construction waste.** • **Suitable handling and disposal protocols must be clearly explained and sign boarded.** • **Reduce, reuse, recycle.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Waste generation and disposal**
Nature of impact:	**South Africa has laws against littering, both on land and in the coastal zone, but unfortunately these laws are seldom rigorously enforced. Objects which are particularly detrimental to aquatic fauna include plastic bags and bottles, pieces of rope and small plastic particles. Large numbers of aquatic organisms are killed or injured daily by becoming entangled in debris or as a result of the ingestion of small plastic particles (Wallace 1985, Gregory 2009, Wright *et al*. 2013). If allowed to enter the ocean, solid waste may be transported by currents for long distances out to sea and around the coast. Thus, unlike fuel or sewage contamination, the extent of the damage caused by solid waste is potentially large. The impact of floating or submerged solid materials on aquatic life (especially birds and fish) can be lethal and can affect rare and endangered species.** **The problem of litter entering the aquatic environment has escalated dramatically in recent decades, with an ever-increasing proportion of litter consisting of non-biodegradable plastic materials. In order to reduce this, all domestic and general waste generated must be disposed of responsibly. All reasonable measures must be implemented to ensure there is no littering and that construction waste is adequately managed. Staff must be regularly reminded about the detrimental impacts of pollution on aquatic species and suitable handling and disposal protocols must be clearly explained and sign boarded. The 'reduce, reuse, recycle' policy must be implemented. This impact is rated as 'moderate' without mitigation and is reduced to 'low' by implementing the actions outlined**
Extent and duration of impact:	**Extent 3 & Duration 3**
Consequence of impact or risk:	**Waste generation and disposal during construction**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**High**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Waste generation and disposal during construction**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Inform all staff about sensitive marine species and the responsible disposal of construction waste.** • **Suitable handling and disposal protocols must be clearly explained and sign boarded.** • **Reduce, reuse, recycle.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Noise and vibration**
Nature of impact:	**During construction operations, noise may have an impact on aquatic organisms in the vicinity. Noise may be generated by construction activities (e.g. earthmoving vehicles, service vehicles, vessels, cranes, heavy machinery, generators, chopping, drilling, grinding etc.). Benthic invertebrates have been shown to be relatively insensitive to low frequency sound, whilst fish appear to be able to tolerate moderate sound levels (Keevin & Hempen 1997). Foraging birds are expected to avoid the sound source should it reach levels sufficient to cause discomfort. Due to the existence of similar habitats within the surrounding area, it is not expected that avifauna will be excluded from feeding on a particular food source. As a precautionary measure, mobile equipment, vehicles and power**

	generation equipment should be subject to noise tests which are measured against manufacturer specifications to confirm compliance before deployment on site. Noise emissions from mobile and fixed equipment should be subject to periodic checks as part of regular maintenance programmes to allow for detection of any unacceptable increases in noise. After mitigation is considered, the impact of noise and vibration on the marine environment is considered to be 'insignificant'
Extent and duration of impact:	**Extent 1 & Duration 1**
Consequence of impact or risk:	**The effect of increased noise and vibration from construction on estuarine biota.**
Probability of occurrence:	**5**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**The effect of increased noise and vibration from construction on estuarine biota.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Subject mobile equipment, vehicles and power generation equipment to noise tests at commencement and periodically throughout the construction phase.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**Noise and vibration**
Nature of impact:	**The operational impact of increased noise pollution relates to the utilisation of the new infrastructure (i.e. the entertainment hall, lapa and braai facilities etc.). The impact rating of these activities is rated lower than that of the construction phase increased noise and vibration. Operation noise impacts are rated as 'insignificant' prior to mitigation given their temporary nature and low intensity.**
Extent and duration of impact:	**Extent 1 & Duration 1**
Consequence of impact or risk:	**Increased noise and vibration**
Probability of occurrence:	**2**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**Increased noise and vibration**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	**NA**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Noise and vibration**
Nature of impact:	**During construction operations, noise may have an impact on aquatic organisms in the vicinity. Noise may be generated by construction activities (e.g. earthmoving vehicles, service vehicles, vessels, cranes, heavy machinery, generators, chopping, drilling, grinding etc.). Benthic invertebrates have been shown to be relatively insensitive to low frequency sound, whilst fish appear to be able to tolerate moderate sound levels (Keevin & Hempen 1997).**

	Foraging birds are expected to avoid the sound source should it reach levels sufficient to cause discomfort. Due to the existence of similar habitats within the surrounding area, it is not expected that avifauna will be excluded from feeding on a particular food source. As a precautionary measure, mobile equipment, vehicles and power generation equipment should be subject to noise tests which are measured against manufacturer specifications to confirm compliance before deployment on site. Noise emissions from mobile and fixed equipment should be subject to periodic checks as part of regular maintenance programmes to allow for detection of any unacceptable increases in noise. After mitigation is considered, the impact of noise and vibration on the marine environment is considered to be 'insignificant'
Extent and duration of impact:	**Extent 1 & Duration 1**
Consequence of impact or risk:	**The effect of increased noise and vibration from construction on estuarine biota.**
Probability of occurrence:	**5**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**The effect of increased noise and vibration from construction on estuarine biota.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Subject mobile equipment, vehicles and power generation equipment to noise tests at commencement and periodically throughout the construction phase.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Noise and vibration**
Nature of impact:	**During construction operations, noise may have an impact on aquatic organisms in the vicinity. Noise may be generated by construction activities (e.g. earthmoving vehicles, service vehicles, vessels, cranes, heavy machinery, generators, chopping, drilling, grinding etc.). Benthic invertebrates have been shown to be relatively insensitive to low frequency sound, whilst fish appear to be able to tolerate moderate sound levels (Keevin & Hempen 1997). Foraging birds are expected to avoid the sound source should it reach levels sufficient to cause discomfort. Due to the existence of similar habitats within the surrounding area, it is not expected that avifauna will be excluded from feeding on a particular food source. As a precautionary measure, mobile equipment, vehicles and power generation equipment should be subject to noise tests which are measured against manufacturer specifications to confirm compliance before deployment on site. Noise emissions from mobile and fixed equipment should be subject to periodic checks as part of regular maintenance programmes to allow for detection of any unacceptable increases in noise. After mitigation is considered, the impact of noise and vibration on the marine environment is considered to be 'insignificant'**
Extent and duration of impact:	**Extent 1 & Duration 1**
Consequence of impact or risk:	**The effect of increased noise and vibration from construction on estuarine biota.**
Probability of occurrence:	**5**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**The effect of increased noise and vibration from construction on**

	estuarine biota.
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Subject mobile equipment, vehicles and power generation equipment to noise tests at commencement and periodically throughout the construction phase.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
OPERATIONAL PHASE	
Potential impact and risk:	**Noise and vibration**
Nature of impact:	**The operational impact of increased noise pollution relates to the utilisation of the new infrastructure (i.e. the entertainment hall, lapa and braai facilities etc.). The impact rating of these activities is rated lower than that of the construction phase increased noise and vibration. Operation noise impacts are rated as 'insignificant' prior to mitigation given their temporary nature and low intensity.**
Extent and duration of impact:	**Extent 1 & Duration 1**
Consequence of impact or risk:	**Increased noise and vibration**
Probability of occurrence:	**2**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**Increased noise and vibration**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	**NA**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Noise and vibration**
Nature of impact:	**During construction operations, noise may have an impact on aquatic organisms in the vicinity. Noise may be generated by construction activities (e.g. earthmoving vehicles, service vehicles, vessels, cranes, heavy machinery, generators, chopping, drilling, grinding etc.). Benthic invertebrates have been shown to be relatively insensitive to low frequency sound, whilst fish appear to be able to tolerate moderate sound levels (Keevin & Hempen 1997). Foraging birds are expected to avoid the sound source should it reach levels sufficient to cause discomfort. Due to the existence of similar habitats within the surrounding area, it is not expected that avifauna will be excluded from feeding on a particular food source. As a precautionary measure, mobile equipment, vehicles and power generation equipment should be subject to noise tests which are measured against manufacturer specifications to confirm compliance before deployment on site. Noise emissions from mobile and fixed equipment should be subject to periodic checks as part of regular maintenance programmes to allow for detection of any unacceptable increases in noise. After mitigation is considered, the impact of noise and vibration on the marine environment is considered to be 'insignificant'**
Extent and duration of impact:	**Extent 1 & Duration 1**
Consequence of impact or risk:	**The effect of increased noise and vibration from construction on estuarine biota.**

Probability of occurrence:	**5**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**The effect of increased noise and vibration from construction on estuarine biota.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Subject mobile equipment, vehicles and power generation equipment to noise tests at commencement and periodically throughout the construction phase.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Hazardous substances**
Nature of impact:	**The spillage of a variety of hazardous substances can occur during the use of heavy machinery, construction vehicles and construction vessels. For example, spillage may occur as a result of fuel leaks, refuelling, or collision.** **Hydrocarbons are toxic to aquatic organisms and precautions must be taken to prevent them from contaminating the environment. This impact can be mitigated successfully if authorities implement a rigorous environmental management and control plan to limit ecological risks from accidents.** **All fuel and oil must be stored with adequate spill protection and no leaking vehicles should be permitted on site. Intentional disposal of any substance into the aquatic environment should be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately. After mitigation, the impact of accidental spillage is considered to be 'very low'**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**The effect of the spillage of hazardous substances on estuarine biota.**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**The effect of the spillage of hazardous substances on estuarine biota.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Intentional disposal of any substance into the environment must be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately.** • **Implementation of a rigorous environmental management and control plan (including procedures for remediation).** • **All fuel and oil is to be stored with adequate spill protection.** • **No leaking vehicles are permitted on site.** • **All hazardous substances must be accompanied by a permit, a hazard report sheet, and a first aid treatment protocol and may only be handled by suitably trained operators.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Spillage of hydrocarbons and Hazardous substances associated with increased vessel traffic**
Nature of impact:	**There is a risk of accidental spillage of hydrocarbons associated with the use of equipment, vehicles and vessels during the operational phase. Hydrocarbons are toxic to aquatic organisms and precautions must be taken to prevent them from contaminating the marine environment. This impact can be mitigated successfully if a rigorous environmental management and control plan designed to limit ecological risks from accidents and day to day operations is implemented. All fuel and oil must be stored with adequate spill protection and no leaking vehicles should be permitted on site.**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Spillage of hydrocarbons and Hazardous substances associated with increased vessel traffic**
Probability of occurrence:	**2**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**Spillage of hydrocarbons and Hazardous substances associated with increased vessel traffic**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Inform all staff about the sensitivity of the marine environment and the suitable disposal of waste.** • **Suitable handling and disposal protocols must be clearly explained and sign boarded.** • **All fuel and oil is to be stored with adequate spill protection.** • **No leaking vehicles are permitted on site.** • **Intentional disposal of any substance into the marine environment is strictly prohibited, while accidental spillage must be prevented, contained and reported immediately.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Hazardous substances**
Nature of impact:	**The spillage of a variety of hazardous substances can occur during the use of heavy machinery, construction vehicles and construction vessels. For example, spillage may occur as a result of fuel leaks, refuelling, or collision.** **Hydrocarbons are toxic to aquatic organisms and precautions must be taken to prevent them from contaminating the environment. This impact can be mitigated successfully if authorities implement a rigorous environmental management and control plan to limit ecological risks from accidents.** **All fuel and oil must be stored with adequate spill protection and no leaking vehicles should be permitted on site. Intentional disposal of any substance into the aquatic environment should be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately. After mitigation, the impact of accidental spillage is considered to be 'very low'**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**The effect of the spillage of hazardous substances on estuarine biota.**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**The effect of the spillage of hazardous substances on estuarine biota.**

Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Intentional disposal of any substance into the environment must be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately.** • **Implementation of a rigorous environmental management and control plan (including procedures for remediation).** • **All fuel and oil is to be stored with adequate spill protection.** • **No leaking vehicles are permitted on site.** • **All hazardous substances must be accompanied by a permit, a hazard report sheet, and a first aid treatment protocol and may only be handled by suitably trained operators.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Hazardous substances**
Nature of impact:	**The spillage of a variety of hazardous substances can occur during the use of heavy machinery, construction vehicles and construction vessels. For example, spillage may occur as a result of fuel leaks, refuelling, or collision.** **Hydrocarbons are toxic to aquatic organisms and precautions must be taken to prevent them from contaminating the environment. This impact can be mitigated successfully if authorities implement a rigorous environmental management and control plan to limit ecological risks from accidents.** **All fuel and oil must be stored with adequate spill protection and no leaking vehicles should be permitted on site. Intentional disposal of any substance into the aquatic environment should be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately. After mitigation, the impact of accidental spillage is considered to be 'very low'**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**The effect of the spillage of hazardous substances on estuarine biota.**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**The effect of the spillage of hazardous substances on estuarine biota.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Intentional disposal of any substance into the environment must be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately.** • **Implementation of a rigorous environmental management and control plan (including procedures for remediation).** • **All fuel and oil is to be stored with adequate spill protection.** • **No leaking vehicles are permitted on site.** • **All hazardous substances must be accompanied by a permit, a hazard report sheet, and a first aid treatment protocol and may only be handled by suitably trained operators.**
Residual impacts:	**Impact on the estuarine ecology.**

Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Spillage of hydrocarbons and Hazardous substances associated with increased vessel traffic**
Nature of impact:	**There is a risk of accidental spillage of hydrocarbons associated with the use of equipment, vehicles and vessels during the operational phase. Hydrocarbons are toxic to aquatic organisms and precautions must be taken to prevent them from contaminating the marine environment. This impact can be mitigated successfully if a rigorous environmental management and control plan designed to limit ecological risks from accidents and day to day operations is implemented. All fuel and oil must be stored with adequate spill protection and no leaking vehicles should be permitted on site.**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Spillage of hydrocarbons and Hazardous substances associated with increased vessel traffic**
Probability of occurrence:	**2**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**Spillage of hydrocarbons and Hazardous substances associated with increased vessel traffic**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Inform all staff about the sensitivity of the marine environment and the suitable disposal of waste.** • **Suitable handling and disposal protocols must be clearly explained and sign boarded.** • **All fuel and oil is to be stored with adequate spill protection.** • **No leaking vehicles are permitted on site.** • **Intentional disposal of any substance into the marine environment is strictly prohibited, while accidental spillage must be prevented, contained and reported immediately.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Hazardous substances**
Nature of impact:	**The spillage of a variety of hazardous substances can occur during the use of heavy machinery, construction vehicles and construction vessels. For example, spillage may occur as a result of fuel leaks, refuelling, or collision.** **Hydrocarbons are toxic to aquatic organisms and precautions must be taken to prevent them from contaminating the environment. This impact can be mitigated successfully if authorities implement a rigorous environmental management and control plan to limit ecological risks from accidents.** **All fuel and oil must be stored with adequate spill protection and no leaking vehicles should be permitted on site. Intentional disposal of any substance into the aquatic environment should be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately. After mitigation, the impact of accidental spillage is considered to be 'very low'**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**The effect of the spillage of hazardous substances on estuarine biota.**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium**
Degree to which the impact can be reversed:	**Low**

Indirect impacts:	**The effect of the spillage of hazardous substances on estuarine biota.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Intentional disposal of any substance into the environment must be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately.** • **Implementation of a rigorous environmental management and control plan (including procedures for remediation).** • **All fuel and oil is to be stored with adequate spill protection.** • **No leaking vehicles are permitted on site.** • **All hazardous substances must be accompanied by a permit, a hazard report sheet, and a first aid treatment protocol and may only be handled by suitably trained operators.**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very Low**

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Hydrodynamic impacts**
Nature of impact:	**NA**
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
OPERATIONAL PHASE	
Potential impact and risk:	**There are little envisioned hydrodynamic impacts given that most of the proposed jetty development will be located on existing infrastructure i.e. existing jetties will be upgraded and refurbished. The new jetties that are proposed are also located amongst existing jetty infrastructure. Given the small area of impact, there should be little to no impact on sediment processes as a result. Consequently, the assessment of the severity of these impacts resulted in the overall significance being 'insignificant'**
Nature of impact:	**Effect on hydrology and sediment movement of the new infrastructure.**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Effect on hydrology and sediment movement of the new infrastructure.**
Probability of occurrence:	**1**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**Medium**

Indirect impacts:	**Effect on hydrology and sediment movement of the new infrastructure.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**NA**
Proposed mitigation:	**NA**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
OPERATIONAL PHASE	
Potential impact and risk:	**There are little envisioned hydrodynamic impacts given that most of the proposed jetty development will be located on existing infrastructure i.e. existing jetties will be upgraded and refurbished. The new jetties that are proposed are also located amongst existing**

	jetty infrastructure. Given the small area of impact, there should be little to no impact on sediment processes as a result. Consequently, the assessment of the severity of these impacts resulted in the overall significance being 'insignificant'
Nature of impact:	**Effect on hydrology and sediment movement of the new infrastructure.**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Effect on hydrology and sediment movement of the new infrastructure.**
Probability of occurrence:	**1**
Degree to which the impact may cause irreplaceable loss of resources:	**Very Low**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**Effect on hydrology and sediment movement of the new infrastructure.**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**NA**
Proposed mitigation:	**NA**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	

Alternative 1 : Preferred Layout	**Estaurine Ecology Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Increased foot and vessel traffic**
Nature of impact:	**NA**
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	

Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
OPERATIONAL PHASE	
Potential impact and risk:	**Increased foot and vessel traffic**
Nature of impact:	**An increase in the frequency of vessel traffic may result in a rise in the amount of noise and vibration, which can have an impact on estuarine biota and shore birds in the area. The Kliphoek site is considered a very important winter feeding ground for wading birds and waterfowl (Anchor 2010).** **Increased capacity of the Kliphoek resort may also negatively affect biota through an increase in foot traffic. Access to the jetties and other such infrastructure may result in trampling of riverine vegetation and other disturbance of biota. The owner, Mr Jurgen Kotze, has indicated that walkways will be constructed to the jetties to minimise trampling (J. Kotze, pers. com. 2017).** **As the maximum impact radius of vessel traffic noise, and the area that may be disturbed by trampling is very small compared to the population distribution ranges of the birds in question, it is therefore unlikely that there will be significant effects on biota and this impact is therefore rated 'insignificant'**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Increased foot and vessel traffic on biological organisms**
Probability of occurrence:	**1**
Degree to which the impact may cause irreplaceable loss of resources:	**Insignificant**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**Effect of Increased foot and vessel traffic on biological organisms**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**NA**
Proposed mitigation:	**NA**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	

Alternative 2 : Alternative Layout	**Estaurine Impact**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**NA**
Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
OPERATIONAL PHASE	
Potential impact and risk:	**Increased foot and vessel traffic**
Nature of impact:	**An increase in the frequency of vessel traffic may result in a rise in the amount of noise and vibration, which can have an impact on estuarine biota and shore birds in the area. The Kliphoek site is considered a very important winter feeding ground for wading birds and waterfowl (Anchor 2010).** **Increased capacity of the Kliphoek resort may also negatively affect biota through an increase in foot traffic. Access to the jetties and other such infrastructure may result in trampling of riverine vegetation and other disturbance of biota. The owner, Mr Jurgen Kotze, has indicated that walkways will be constructed to the jetties to minimise trampling (J. Kotze, pers. com. 2017).** **As the maximum impact radius of vessel traffic noise, and the area that may be disturbed by trampling is very small compared to the population distribution ranges of the birds in question, it is therefore unlikely that there will be significant effects on biota and this impact is therefore rated 'insignificant'**
Extent and duration of impact:	**Extent 1 & Duration 2**
Consequence of impact or risk:	**Increased foot and vessel traffic on biological organisms**
Probability of occurrence:	**1**
Degree to which the impact may cause irreplaceable loss of resources:	**Insignificant**
Degree to which the impact can be reversed:	**Medium**
Indirect impacts:	**Effect of Increased foot and vessel traffic on biological organisms**
Cumulative impact prior to mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**NA**
Proposed mitigation:	**NA**
Residual impacts:	**Impact on the estuarine ecology.**
Cumulative impact post mitigation:	**Impact on the estuarine ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Insignificant**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**NA**

Nature of impact:	
Extent and duration of impact:	
Consequence of impact or risk:	
Probability of occurrence:	
Degree to which the impact may cause irreplaceable loss of resources:	
Degree to which the impact can be reversed:	
Indirect impacts:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Residual impacts:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	

(c) Provide a summary of the site selection matrix.

The property was the only alternative considered. Existing access, infrastructure, resort infrastructure and old disturbed and impacted areas were all considered when the location of the expansion facilities was taken into consideration on the property. No other activity alternatives were assessed as no feasible or reasonable alternative exists. The only activity alternative considered is the expansion of resort facilities to expand the resort activities and infrastructure. Two layout and design alternatives were considered. These layouts are however all situated in the same area but the location of some facilities is placed in other areas. The proposed BMX track was reduced in size from 2.4ha in the alternative layout to 1.1ha in the preferred alternative. The BMX track was moved out of the sensitive area close to the Berg River further back next to the camp site on ploughed agricultural lands and outside sensitive areas. The camp site was reduced in size from 1.6ha in the alternative layout to 1.1 ha in the preferred alternative, an the additional camp site area on the eastern edge of the chalets was removed from the layout due to the sensitivity close to the Berg River. The location of the 5 new chalet units on the bigger area was shifted more to the east in the preferred layout. Duel flush toilet systems and energy efficient lighting and geysers are considered. No operational alternatives are considered. The proposed development is an expansion of an existing resort and the operation of the resort will continue as is. The No-Go option will result in the site remaining as is presently and the existing resort will continue as is without the expanded infrastructure.

(d) Outcome of the site selection matrix.

The expansion of the existing resort will entail:

- the construction of 9 new jetties one with a deck and the extension of an existing jetty;
- The upgrade and restoration of 3 historical jetties on the same footprint
- the construction of 5 new units (cottages);
- the construction of a new boat storage unit (0.2ha);
- the construction of a new entertainment hall and ablution facilities on existing infrastructure;
- the construction of a new lapa and braai facilities on the foundation of the existing structure;
- the construction of new ablution facilities on existing infrastructure;
- the construction of new camping grounds with 16 stands (1.1ha);
- the conversion of the existing old quarry to a dam;
- the development of a BMX bicycle track (1.1ha);
- the development of a bird hide on the existing access trail to the island;

The proposed development is situated approximately 5.5km south of Velddrif on the southern bank of the Berg River.

Location alternatives – The property was the only alternative considered. Existing access, infrastructure, resort infrastructure and old disturbed and impacted areas were all considered when

the location of the expansion facilities was taken into consideration on the property.

Activity alternatives - No other activity alternatives were assessed as no feasible or reasonable alternative exists. The only activity alternative considered is the expansion of resort facilities to expand the resort activities and infrastructure.

Layout alternatives – Two layout and design alternatives were considered. These layouts are however all situated in the same area but the location of some facilities is placed in other areas. The proposed BMX track was reduced in size from 2.4ha in the alternative layout to 1.1ha in the preferred alternative. The BMX track was moved out of the sensitive area close to the Berg River further back next to the camp site on ploughed agricultural lands and outside sensitive areas. The camp site was reduced in size from 1.6ha in the alternative layout to 1.1 ha in the preferred alternative, an the additional camp site area on the eastern edge of the chalets was removed from the layout due to the sensitivity close to the Berg River. The location of the 5 new chalet units on the bigger area was shifted more to the east in the preferred layout.

Technology alternatives - No technological alternatives other than duel flush toilet systems, low flow shower installations and energy efficient lighting and geysers are considered. Alternative measures to reduce water demand (reusing or recycling of grey water) must include utilisation of grey water from showers for reuse in toilets as well as rainwater harvesting. The use of alternative/renewable energy sources (solar panels for lighting and geysers, etc) must be investigated.

Operational alternatives – No operational alternatives are considered. The proposed development is an expansion of an existing resort and the operation of the resort will continue as is.

The No-Go Option - The No-Go option will result in the site remaining as is presently and the existing resort will continue as is without the expanded infrastructure.

Impact Summary
Potential negative impacts that may arise from the proposed construction phase include ecological effects due to:

- Disturbance to or alteration of soft sediment estuarine habitat;
- temporary loss of artificial wood/concrete habitat;
- mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary;
- mobilisation of sediment in the water column;
- loss of vegetation (including intact vegetation, ecologically important species and species of conservation concern);
- loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern;
- generation and disposal of waste;
- increased noise and vibration; and
- spillage of hazardous substances.

Possible environmental impacts caused during the operational phase that are likely to impact on estuarine communities include the effects of:

- altered quay design affecting hydrodynamics and sediment movement;
- increased foot and vessel traffic affecting sensitive biota;
- generation and disposal of waste; and,
- noise and vibration.

The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance. Cumulative estuarine environmental impacts associated with this project are primarily related to operational impacts resulting from increased vessel traffic and wastewater discharge, as well as increased risks from hazardous substances. It is envisioned that only minor routine maintenance will be required over the course of the design life of the proposed development. Impacts expected in

the decommissioning phase have been dealt with in the construction phase.

Construction phase:

- Disturbance to or alteration of soft sediment estuarine habitat – Insignificant
- Temporary loss of artificial wood/concrete habitat – Insignificant
- Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary – Low but with mitigation insignificant.
- Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure - Low but with mitigation insignificant.
- Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern – Low but with mitigation very low.
- Waste generation and disposal - medium but with mitigation low.
- Noise and vibration – Very low but with mitigation insignificant.
- Spillage of hazardous substances on estuarine biota - Low but with mitigation very low.
- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures);
- Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise due to construction machinery - (Low impact before mitigation and low impact with mitigation measures);
- Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures);

Operational phase:

- Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures);
- Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (medium impact before mitigation and low impact with mitigation measures);
- Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise due to tourist activities - (Low impact before mitigation and low impact with mitigation measures);
- Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures);
- Altered quay design affecting hydrodynamics and sediment movement – Insignificant
- Increased foot and vessel traffic affecting sensitive biota – Insignificant

- Generation and disposal of waste - medium but with mitigation low.
- Noise and vibration – Insignificant

Decommissioning phase:

Similar to impacts associated with construction phase.

No Go or No Development option:

- The No-Go option will result in the site remaining as is presently.

3. SPECIALIST INPUTS/STUDIES, FINDINGS AND RECOMMENDATIONS

Note: Specialist inputs/studies must be attached to this report as **Appendix G** and must comply with the content requirements set out in Appendix 6 of the EIA Regulations, 2014 (as amended). Also take into account the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "*One Environmental Management System*" and the EIA Regulations, 2014, any subsequent Circulars, and guidelines available on the Department's website (**http://www.westerncape.gov.za/eadp**).

Provide a summary of the findings and impact management measures identified in any specialist report and an indication of how these findings and recommendations have been included in the BAR.

The Berg River Estuary is a large, permanently open estuary on the West Coast, with the extensive floodplains and dry pans, tidal flats and marsh areas as well as the estuary's shallow gradient (rising 1 m in the first 50 km) making it atypical compared to most other South African estuaries. The estuary is considered one of the most important estuaries in South Africa in terms of conservation value - the system has been identified as an important bird area, and is also considered of high national conservation importance for estuarine fish, invertebrates and vegetation. Anthropogenic threats to the system include water abstraction and dams (there are four major dams within the Berg River Estuary catchment), agricultural and urban encroachment as the predominant treats to the ecological functioning of the estuary, specifically in terms of changes in hydrodynamics and water quality, frequency and intensity of the flooding of the floodplain and reduction of natural vegetation on the floodplain. Twelve potential environmental impacts were assessed for this report, ranging from habitat loss to operational effects. Of these, five were of 'insignificant' significance and do not require mitigation. One impact (the generation and disposal of waste) was rated as of 'medium' significance, but the significance rating was reduced to 'very low' after mitigation. No impact was rated as 'high'. Implementation of mitigation measures is expected to reduce these ratings to 'very low' or 'insignificant'. Mitigation measures, both best practise and essential, include informing all staff about the suitable disposal of waste; reduce, reuse, recycle; the intentional disposal of any substance into the estuarine environment must be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately; an environmental management and control plan (including procedures for remediation) should be implemented; all fuel and oil must be stored with adequate spill protection, and no leaking vehicles are to be permitted on site; to use bunding where possible, minimise top-soil run-off as much as possible and collect and dispose of polluted soil at appropriate bio-remediation sites; to use dust suppression techniques all dust generating surfaces and to enforce strict construction and private vehicle speed limits; and the immediate rehabilitation of any areas disturbed as a result of construction activities. Based on the impacts assessed in this report, it is recommended that the proposed development proceed with the implementation of strict environmentally responsible practices as outlined in the recommended mitigation measures.

4. ENVIRONMENTAL IMPACT STATEMENT

Provide an environmental impact statement of the following:

(i) A summary of the key findings of the EIA.

The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance. Cumulative estuarine environmental impacts associated with this project are primarily related to operational impacts resulting from increased vessel traffic and wastewater discharge, as well as

increased risks from hazardous substances. It is envisioned that only minor routine maintenance will be required over the course of the design life of the proposed development. Impacts expected in the decommissioning phase have been dealt with in the construction phase.

(ii) Has a map of appropriate scale been provided, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers?	YES	~~NO~~

(iii) A summary of the positive and negative impacts that the proposed development and alternatives will cause in the environment and community.

The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance. Cumulative estuarine environmental impacts associated with this project are primarily related to operational impacts resulting from increased vessel traffic and wastewater discharge, as well as increased risks from hazardous substances. It is envisioned that only minor routine maintenance will be required over the course of the design life of the proposed development. Impacts expected in the decommissioning phase have been dealt with in the construction phase.

Construction phase:

- Disturbance to or alteration of soft sediment estuarine habitat – Insignificant
- Temporary loss of artificial wood/concrete habitat – Insignificant
- Mobilisation of contaminants in terrestrial sediments through construction activities and subsequent run-off into the estuary – Low but with mitigation insignificant.
- Loss of vegetation, including intact vegetation, ecologically important species and species of conservation concern as a result of the construction, and the removal of natural areas for the development of infrastructure - Low but with mitigation insignificant.
- Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern – Low but with mitigation very low.
- Waste generation and disposal - medium but with mitigation low.
- Noise and vibration – Very low but with mitigation insignificant.
- Spillage of hazardous substances on estuarine biota - Low but with mitigation very low.
- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures);
- Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise due to construction machinery - (Low impact before mitigation and low impact with mitigation measures);
- Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures);

Operational phase:

- Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures);
- Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (medium impact before mitigation and low impact with mitigation measures);
- Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the

naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise due to tourist activities - (Low impact before mitigation and low impact with mitigation measures);
- Visual impact of infrastructure and services establishment - (Low impact before mitigation and low impact with mitigation measures);
- Altered quay design affecting hydrodynamics and sediment movement – Insignificant
- Increased foot and vessel traffic affecting sensitive biota – Insignificant
- Generation and disposal of waste - medium but with mitigation low.
- Noise and vibration – Insignificant

Decommissioning phase:
Similar to impacts associated with construction phase.

5. IMPACT MANAGEMENT, MITIGATION AND MONITORING MEASURES

(a) Based on the assessment, describe the impact management, mitigation and monitoring measures as well as the impact management objectives and impact management outcomes included in the EMPr. The EMPr must be attached to this report as Appendix H.

The key mitigation measure is impact avoidance. Where adverse impacts cannot reasonably be prevented, construction should be managed through the effective implementation of the Construction EMP with a strong emphasis on post-construction rehabilitation. Please refer to the CEMP for more details on the mitigation and management measures.

(b) Describe any provisions for the adherence to requirements that are prescribed in a Specific Environmental Management Act relevant to the listed activity or specified activity in question.

The following activities trigger water uses in terms of the National Water Act, 1998 (Act 36 of 1998):
A water use license application must be submitted to the department

(c) Describe the ability of the applicant to implement the management, mitigation and monitoring measures.

The applicant is ultimately responsible for the implementation of the Construction EMP and the financial cost of all environmental control measures. In accordance with the requirements of the EMP, the applicant must ensure that any person acting on their behalf complies with the conditions / specifications contained in this Construction EMP. In addition, a Environmental Control Officer would be appointed as the on-site implementing agent and would have the responsibility to ensure that their responsibilities are executed in compliance with the Construction EMP. Thus, the applicant has the ability to implement the recommended management, mitigation, and monitoring measures, as appropriate.

(d) Provide the details of any financial provisions for the management of negative environmental impacts, rehabilitation and closure of the proposed development.

NA

(e) Provide the details of any financial provisions for the management of negative environmental impacts, rehabilitation and closure of the proposed development.

NA

(f) Describe any assumptions, uncertainties, and gaps in knowledge which relate to the impact management, mitigation and monitoring measures proposed.

EAP is only knowledgeable with regards to the environmental impacts, biodiversity and ecosystems

aspects.

In undertaking the investigation and compiling this report, the following has been assumed:

- The information provided by the client is accurate and unbiased;
- The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the development; and
- Should the proposed project be authorised, the applicant will incorporate the recommendations and mitigation measures outlined in this BAR, the EMP and the EA into the detailed design and construction contract specifications and operational management system for the proposed project.

SECTION H: RECOMMENDATIONS OF THE EAP AND SPECIALISTS

(a) In my view as the appointed EAP, the information contained in this BAR and the documentation attached hereto is sufficient to make a decision in respect of the listed activity(ies) applied for.	YES	~~NO~~

(b) If the documentation attached hereto is sufficient to make a decision, please indicate below whether, in your opinion, the listed activity(ies) should or should not be authorised:		
Listed activity(ies) should be authorised:	YES	~~NO~~

Provide reasons for your opinion

Twelve potential environmental impacts were assessed for this report, ranging from habitat loss to operational effects. Of these, five were of 'insignificant' significance and do not require mitigation. One impact (the generation and disposal of waste) was rated as of 'medium' significance, but the significance rating was reduced to 'very low' after mitigation. No impact was rated as 'high'. Implementation of mitigation measures is expected to reduce these ratings to 'very low' or 'insignificant'. Mitigation measures, both best practise and essential, include informing all staff about the suitable disposal of waste; reduce, reuse, recycle; the intentional disposal of any substance into the estuarine environment must be strictly prohibited, while accidental spillage must be prevented, contained and reported immediately; an environmental management and control plan (including procedures for remediation) should be implemented; all fuel and oil must be stored with adequate spill protection, and no leaking vehicles are to be permitted on site; to use bunding where possible, minimise top-soil run-off as much as possible and collect and dispose of polluted soil at appropriate bio-remediation sites; to use dust suppression techniques all dust generating surfaces and to enforce strict construction and private vehicle speed limits; and the immediate rehabilitation of any areas disturbed as a result of construction activities. Based on the impacts assessed in this report, it is recommended that the proposed development proceed with the implementation of strict environmentally responsible practices as outlined in the recommended mitigation measures.

(c) Provide a description of any aspects that were conditional to the findings of the assessment by the EAP and Specialists which are to be included as conditions of authorisation.

The monitoring and management requirements that will be captured in the Water Use Authorization issued by the Department of Water and Sanitation to protect the Berg River and surrounding area as well as the consent use conditions issued by Berg River Municipality in terms of the land use change application must be adhered to.

(d) If you are of the opinion that the activity should be authorised, please provide any conditions, including mitigation measures that should in your view be considered for inclusion in an environmental authorisation.

Recommended that the EA prescribe that:

- Should any heritage artefacts be exposed during construction that all activities be stopped, and Heritage Western Cape contacted pre any further action being permitted.
- The project implementation process should be subject to standard Environmental Management Programme prescripts and conditions under supervision of a competent and diligent ECO, during its construction and decommissioning phases. That the facility be audited on yearly bases by an external environmental auditor during operations.
- Bird Life South Africa must be consulted and engage when the bird hide is constructed.

(e) Please indicate the recommended periods in terms of the following periods that should be specified in the environmental authorisation:

i.	the period within which commencement must occur;	2 Years
ii.	the period for which the environmental authorisation is granted and the date on which the development proposal will have been concluded, where the environmental authorisation does not include operational aspects;	10 Years
iii.	the period for which the portion of the environmental authorisation that deals with non-operational aspects is granted; and	10 Years
iv.	The period for which the portion of the environmental authorisation that deals with operational aspects is granted.	NA

SECTION I: APPENDICES

The following appendices must be attached to this report:

APPENDIX			Confirm that Appendix is attached
Appendix A:	**Locality map**		√
Appendix B:	**Site development plan(s)**		√
	A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;		√
Appendix C:	**Photographs**		√
Appendix D:	**Biodiversity overlay map**		√
Appendix E:	**Permit(s) / license(s) from any other Organ of State, including service letters from the municipality.** **WUA application**		√
	Appendix E1:	**Copy of comment from HWC.**	√
Appendix F:	**Public participation information: including a copy of the register of I&APs, the comments and responses report, proof of notices, advertisements and any other public participation information as is required in Section C above.**		√
Appendix G:	**Specialist Report(s)**		√
Appendix H :	**EMPr**		√
Appendix I:	**Additional information related to listed waste management activities (if applicable)**		NA
Appendix J:	**If applicable, description of the impact assessment process followed to reach the proposed preferred alternative within the site.**		NA
Appendix K:	**Any Other (if applicable).**		NA

SECTION J: DECLARATIONS

THE APPLICANT

Note: Duplicate this section where there is more than one applicant.

I ……..……., in my personal capacity or duly authorised thereto, hereby declare/affirm all the information submitted as part of this Report is true and correct, and that I –

- am aware of and understand the content of this report;
- am fully aware of my responsibilities in terms of the NEMA, the EIA Regulations in terms of the NEMA (Government Notice No. R. 982, refers) (as amended) and any relevant specific environmental management Act and that failure to fulfil these requirements may constitute an offence in terms of relevant environmental legislation;
- have provided the EAP and Specialist, Review EAP (if applicable), and Review Specialist (if applicable), and the Competent Authority with access to all information at my disposal that is relevant to the application;
- will be responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority;
- will be responsible for the costs incurred in complying with the conditions that may be attached to any decision(s) issued by the Competent Authority;

Note: If acting in a representative capacity, a certified copy of the resolution or power of attorney must be attached.

Signature of the Applicant: _____

Name of Organisation: _____

Date: _____

THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I ……., as the appointed EAP hereby declare/affirm:

- the correctness of the information provided as part of this Report;
- that all the comments and inputs from stakeholders and I&APs have been included in this Report;
- that all the inputs and recommendations from the specialist reports, if specialist reports were produced, have been included in this Report;
- any information provided by me to I&APs and any responses by me to the comments or inputs made by I&APs;
- that I have maintained my independence throughout this EIA process, or if not independent, that the review EAP has reviewed my work (Note: a declaration by the review EAP must be submitted);
- that I have throughout this EIA process met all of the general requirements of EAPs as set out in Regulation 13;
- I have throughout this EIA process disclosed to the applicant, the specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application;
- have ensured that information containing all relevant facts in respect of the application was distributed or was made available to I&APs and that participation by I&APs was facilitated in such a manner that all I&APs were provided with a reasonable opportunity to participate and to provide comments;
- have ensured that the comments of all I&APs were considered, recorded and submitted to the Department in respect of the application;
- have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, if specialist inputs and recommendations were produced;
- have kept a register of all I&APs that participated during the PPP; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the EAP: _____

Name of Company: _____

Date: _____

THE REVIEW ENVIRONMENTAL ASSESSMENT PRACTITIONER

I ……., as the appointed Review EAP hereby declare/affirm:

- that I have reviewed all the work produced by the EAP;
- the correctness of the information provided as part of this Report;
- that I have, throughout this EIA process met all of the general requirements of EAPs as set out in Regulation 13;
- I have, throughout this EIA process disclosed to the applicant, the EAP, the specialist (if any), the review specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Review EAP: _____

Name of Company: _____

Date: _____

THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I ……, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I :

- in terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
  - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Specialist: _____

Name of Company: _____

Date: _____

THE REVIEW SPECIALIST

I ……., as the appointed Review Specialist hereby declare/affirm:

- that I have reviewed all the work produced by the Specialist(s);
- the correctness of the specialist information provided as part of this Report;
- that I have, throughout this EIA process met all of the general requirements of specialists as set out in Regulation 13;
- I have, throughout this EIA process disclosed to the applicant, the EAP, the review EAP (if applicable), the Specialist(s), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of Review Specialist: _____

Name of Company: _____

Date: _____