King Sabata Dalindyebo Local Municipality (KSDLM)

PROPOSED REFURBISHMENT AND CONSTRUCTION OF COASTAL INFRASTRUCTURE WITHIN THE KING SABATA DALINDYEBO LOCAL MUNICIPALITY, COFFEE BAY AND HOLE IN THE WALL, EASTERN CAPE

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

Prepared for:

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March 2022

NAME AND EXPERTISE OF PERSONS WHO COMPILED THE ENVIRONMENTAL MANAGEMENT PROGRAMME

Name	Qualifications	Professional Affiliations	Years' Experience in Environmental Management
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COMPLIANCE WITH THE REQUIREMENTS OF REGULATION R982 – APPENDIX 4

1	An EMPr must comply with section 24N of the Act and include -	Noted
	(a) Details of - (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Page ii and Annexure 3
	(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description	Section 1.2 and 1.3
	(c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers	Figure 1 -Figure 4 and Appendix A of the Draft Basic Assessment Report
	(d) A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including - (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Sections 4 – 8
	(e) A description and impact management outcomes required for the aspects contemplated in (d)	Sections 4 – 8
	(f) A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to - (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Section 3 and Sections 4 – 8
	(g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f)	Sections 3; 7.12 and 8.9

	(h) The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f)	Section 3.3 and 7.12
	(i) An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 3
	(j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Sections 3.2, 3.3 and 7.12
	(k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 3
	(l) A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 3
	(m) An environmental awareness plan describing the manner in which - (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Sections 3.4 and 3.5
	(n) Any specific information that may be required by the competent authority.	Sections 2.3 and 3
2	Where a government notice by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	N/A

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ABBREVIATIONS AND ACRONYMS

BA	Basic Assessment
BA1	Basic Assessment No. 01 (The proposed refurbishment and construction of coastal infrastructure at Coffee Bay)
BA2	Basic Assessment No. 02 (The proposed refurbishment and construction of coastal infrastructure at Hole in the Wall)
CBA	Critical Biodiversity Area
CLO	Community Liaison Officer
DEDEAT	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism
DFFE	Department of Forestry, Fisheries and the Environment
DHSWS	Department of Human Settlements, Water and Sanitation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECBCP	Eastern Cape Biodiversity Conservation Plan
ECO	Environmental Compliance Officer
ECPHRA	Eastern Cape Provincial Heritage Resources Authority
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EO	Environmental Officer
ESA	Ecological Support Area
GNR	Government Notice Regulation
I&AP	Interested and Affected Party
IAIAsa	International Association of Impact Assessment (South African Chapter)
KSDLM	King Sabata Dalindyebo Local Municipality
NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended)
NPAES	National Protected Area Expansion Strategy
NWA	National Water Act, 1998 (Act No. 36 of 1998)
SABS	South African Bureau of Standards
SANBI	South African National Biodiversity Institute
SDP	Sustainable Development Projects CC
SIBIS	Integrated Biodiversity Information System

1 INTRODUCTION

1.1 Background

This Environmental Management Programme (EMPr) has been drafted in support of the Basic Assessment Reports (BA1 and BA2) for the proposed refurbishment and construction of coastal infrastructure at Coffee Bay and Hole in the Wall, Eastern Cape. It has been prepared for the King Sabata Dalindyebo Local Municipality (KSDLM) for implementation on a Department of Forestry, Fisheries and the Environment (DFFE) (Environmental Protection and Infrastructure Programmes (EPIP) – Working for the Coast (Eastern Cape)) funded project. This EMPr has been compiled in terms of the requirements of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended) (NEMA).

1.2 Project Description

1.2.1 Coffee Bay (BA 1)

The proposed development in Coffee Bay will involve the refurbishment and construction of coastal infrastructure along the Coffee Bay main beach as well as improvements to existing public facilities adjacent to the Nenga River. The positioning of these infrastructure components has been identified based on a combination of engineering, environmental and economic factors. The proposed development at Coffee Bay will include the following components:

- Provision of a dedicated parking area (approximately 1,300 m^2).
- The introduction of three viewing decks (each deck will have a footprint of approximately 12 m^2).
- Formalisation of the picnic and braai area adjacent to the Nenga River.
- A new playground area will be introduced adjacent to the Nenga River.
- The decommissioning and repositioning of the existing ablution facilities.
- The provision of formalised walkways to access the viewing decks, picnic & braai areas and ablution facilities (walkways will have a footprint of approximately 1,200 m^2).
- Stabilization of sensitive wetland habitat adjacent to the Nenga River Lodge.
- Replacement of the existing lifeguard tower on the Coffee Bay main beach.
- The introduction of streetlights within the Coffee Bay development node. .

1.2.2 Hole in the Wall (BA 2)

The proposed development near Hole in the Wall will involve the refurbishment and construction of coastal infrastructure adjacent to the Hole in the Wall Hotel and near the Hole in the Wall feature. The proposed refurbishments and construction will include the following infrastructure components:

- Provision of two dedicated parking areas (parking area no. 01 will have a footprint of approximately 1,300 m^2 and parking area no. 02 will have a footprint of approximately 1,600 m^2).
- Dedicated picnic and braai areas at various locations.
- A viewing deck along the access path up to the new road constructed on the hill overlooking the Hole in the Wall (the viewing deck will have a footprint of approximately 12 m^2)
- The use of existing tracks and footpaths near the Hole in the Wall and Boiling Pot.
- The refurbishment of an existing road adjacent to the Hole in the Wall Hotel (the road refurbishment will have a footprint of approximately 825 m^2).
- The formalisation of a boat launch site adjacent to the Hole in the Wall Hotel (the boat launch will have a footprint of approximately 120 m^2).
- The introduction of streetlights within the Hole in the Wall development node.
- Erection of new welcome boards/ signage at the entrance to the Hole in the Wall development node

Figure 1 Locality map showing the proposed development at Coffee Bay (BA 1)

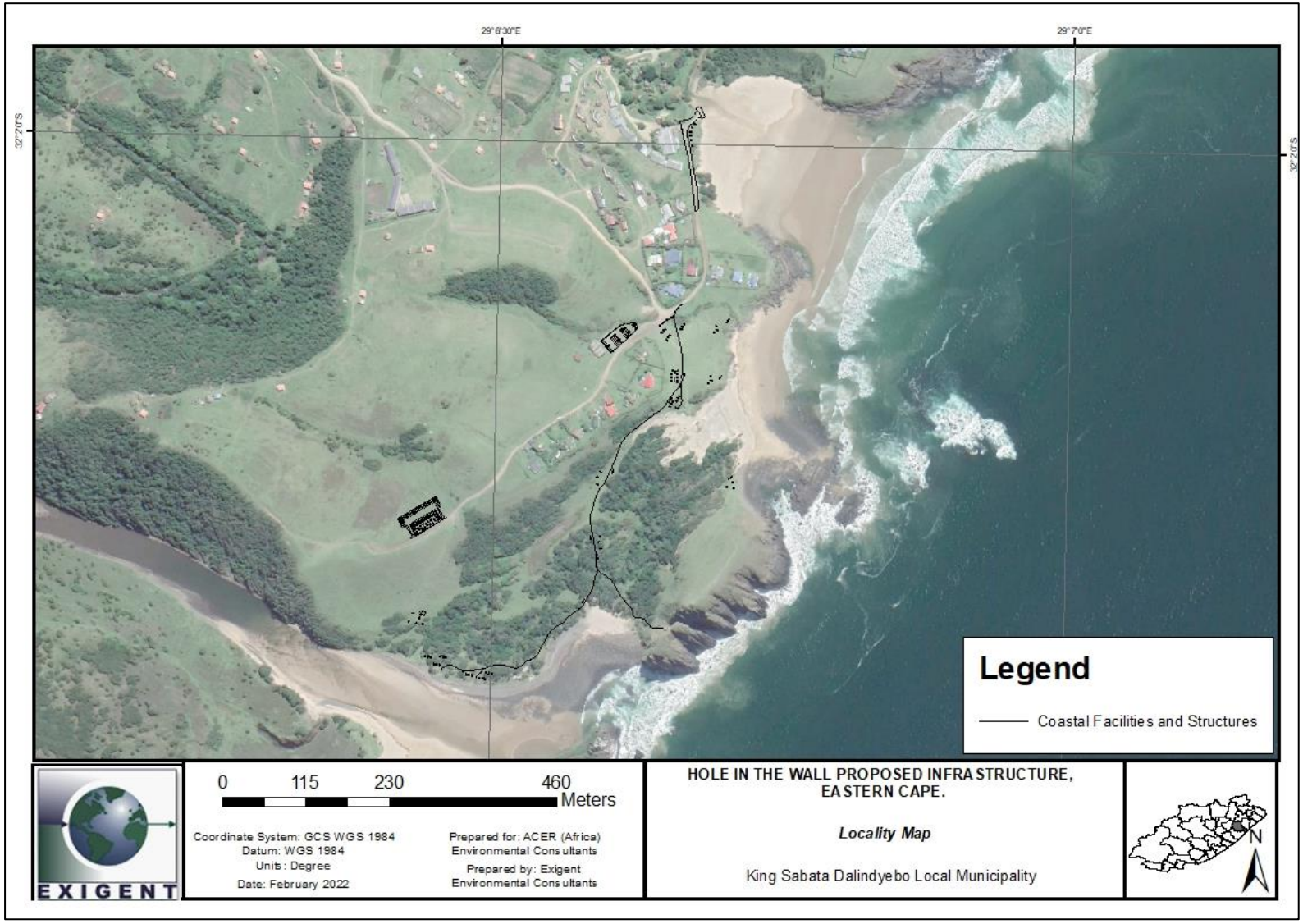

Figure 2 Locality map showing the proposed development at Hole in the Wall (BA 2)

1.3 Project Components

The proposed development at Coffee Bay and Hole in the Wall will comprise the components described hereunder. Refer to Figure 3 for the project components at Coffee Bay and Figure 4 for the project components at Hole in the Wall.

1.3.1 Coffee Bay

1.3.1.1 Provision of a dedicated parking area

The proposed parking area will be located where the existing ablution facilities are situated. The existing ablution facilities will be decommissioned and relocated just north of the current location. Additionally, the existing road verge (opposite the Nenga River Lodge, just north of the repositioned ablution facilities) will be widened to include individual parking bays. The proposed parking area will include:

- The introduction of a grass block parking area (approximately 1,300 m^2).
- The widening of the road verge to accommodate additional parking bays.
- A formalised walkway to access the picnic and braai area.
- The introduction of parking signage.
- Minor landscaping to compliment the receiving environment and address the flooding and stormwater concerns within the site.
- The introduction of bollards to restrict vehicular access onto the dune environment..

Detailed plans of the proposed infrastructure to be constructed at the dedicated parking area are provided in Appendix C of BA1.

1.3.1.2 Viewing decks

A viewing deck, observation deck or observation platform refers to an elevated sightseeing structure (our.wollongong.nsw.gov.au). The three viewing decks which will be provided at Coffee Bay will be strategically located on the costal dune cordon to allow pedestrians and beach goers scenic views of the beach and coastal dune vegetation. The placement of the viewing platforms will also take into consideration large trees on the coastal dune so as not to disturb them. Some pruning of trees may however be required to maximise views and to provide safe access to the viewing decks. The viewing platform will include:

- A formalized walkway to access the viewing decks (certain portions of the walkway will be fitted with balustrades/ handrails).
- The introduction of three viewing decks at strategic locations along the dune cordon along Coffee Bay Main Beach.
- Provision of waste receptacles.
- Provision of seating (benches) and picnic facilities (picnic sets).
- The introduction of new welcome signs along the walkways and to the entrance to each viewing deck.

Detailed plans of the proposed viewing decks are provided in Appendix C of BA1.

1.3.1.3 Picnic and Braai area

The picnic and braai area involves the refurbishment of the facilities at the existing picnic site. It also aims to provide beach goers a safe area near the Coffee Bay Main Beach and adjacent Nenga River mouth where visitors can relax and enjoy the surrounding estuary and beach. The picnic area refurbishment will include:

- The removal of damaged and broken braai facilities.
- The removal of damaged and broken seating.
- The formalisation and provision of new braai facilities and seating.
- The introduction of grass block platforms and landscaping for picnic facilities.
- Securing of the picnic area with ClearVu Fencing on three sides and post and rail fencing on the south side of the picnic area adjacent to the Nenga River.
- Formalised walkways from the parking area to the picnic and braai area.
- The introduction of a playground (jungle gym, slides, and swings).
- Landscaping for the playground and picnic area. This will also serve to address the flooding and stormwater concern which were raised by the locals in the area.
- Demarcation of the wetland area to the northwest of the picnic site using a post and rail fence.
- Provision of waste receptacles.

Detailed plans of the proposed infrastructure at the picnic and braai area are provided in Appendix C of BA1.

1.3.1.4 Decommissioning and repositioning of the existing ablution facilities

The existing ablution infrastructure adjacent to the Nenga River mouth is in a state of disrepair and currently unutilised by visitors. A flood line assessment was conducted to determine the position of the existing infrastructure in relation to the 1:50 and 1:100 flood line levels and the findings indicated that the existing infrastructure is within both these flood line levels. It was, therefore, recommended that the existing facilities be decommissioned and relocated further north (out of the 1:50 and 1:100 flood lines).

The ablution facilities were repositioned further north and the Draft Basic Assessment was circulated for public participation from 16 November 2021 – 07 January 2022. Following the 30-day comment period, numerous concerns from Interested and Affected Parties (I&APs) were raised relating to the infrastructure layout proposed for Coffee Bay. To address these concerns DFFE requested an additional site meeting with the project team (ACER, MBB, Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT), DFFE and the King Sabata Dalindyebo Local Municipality (KSDLM)) which was held on the 27 January 2022 to discuss and address all project concerns.

The appointed specialists were engaged to identify a suitable location for the new ablution facilities (bearing in mind the presence of the dune and the nearby artificial wetland) and it was thereafter agreed that the new facilities will be repositioned closer to the existing road and away from the dune and artificial wetland.

The two existing ablution facilities will be demolished and all construction rubble will be disposed at a municipal approved landfill site. The contents of the existing conservancy tanks will be removed with a honey sucker and disposed at an approved wastewater treatment plant. Thereafter, the conservancy tanks (including pipes etc.) will be excavated and disposed at a municipal approved waste facility and the existing site will be used as a parking area. To address the concern of waste and water reticulation, the new facilities will be fitted with two underground conservancy tanks (which will be emptied regularly by the KSDLM) and two above ground Jojo water storage tanks (which will be used to harvest rainwater for operational purposes).

The decommissioning and repositioning of the ablution facilities will include the following:

- The construction of two new ablution facilities (each facility will have a physical footprint of approximately 140 m^2).
- The installation of two new Jojo water storage tanks.
- The installation of two underground conservancy tanks (located at the northern most point of the facility).

- Provision of waste receptacles.

Detailed plans of the proposed infrastructure at the ablution facilities are provided in Appendix C of BA1.

1.3.1.5 Walkways

The proposed walkways will provide pedestrian access from the parking area to the Coffee Bay Main Beach, the picnic/ playground area, ablution facilities, and to the various viewing decks along the primary dune cordon.

Walkways to access the beach and proposed viewing decks will be positioned to minimise impacts on the coastal vegetation and will wind around large trees and areas of dense dune vegetation to minimise impacts on the receiving environment.

A judicious approach will be adopted in determining the placement and arrangement of the proposed walkways. The proposed walkways will include:

- A formalised walkway for pedestrians to access the Coffee Bay Main Beach, the picnic/playground area, the ablution facilities and various viewing platforms along the beach.
- Signage and resting areas (benches) for pedestrians.
- Provision of waste receptacles.
- The replacement of the existing beach access staircase with a poly-timber staircase.

Detailed plans of the proposed infrastructure for the walkways are provided in Appendix C of BA1.

1.3.1.6 Wetland stabilisation

As part of the proposed Coffee Bay development, the existing artificial wetland to the northwest of the picnic site will be stabilised by providing suitable drainage infrastructure under the existing access road and by providing a fence to prevent beach goers and visitors to the picnic site from disturbing the wetland vegetation. The wetland was identified as a source of water to the adjacent dune systems and will therefore be maintained and preserved. Activities to be undertaken for this component of the development include the following:

- The installation of a 600 Ø pipe culvert to facilitate water flow from the wetland system into the Nenga River estuary. This will prevent the ponding of water within the picnic site.
- The introduction of bollards to restrict vehicular access into the wetland system.
- Gabion structures to reinforce the banks along the road to protect the wetland system.

Detailed plans of the proposed infrastructure for the wetland stabilisation are provided in Appendix C of BA1.

1.3.1.7 Lifeguard tower

Lifeguard towers are provided at most beaches to watch and supervise swimmers so as to prevent injury and/or death of swimmers while in the ocean. The existing lifeguard tower located along the Coffee Bay main beach is damaged and needs replacement. Further to this, the existing lifeguard tower is situated along the seaward (stoss) face of the primary dune (SDP, 2021). The frontal dune form at the Coffee Bay Main Beach is in a state of erosion.

The frontal stoss slope is undergoing significant undercutting, slumping and transgression. This erosion has resulted in the existing lifeguard tower (constructed about 4 – 5 years ago) being at risk of collapse due to the erosion and transgression of the dune system. Due to the erosion and transgression of the

dune system, the new lifeguard tower is proposed to be positioned to the north of its current location and higher up on the dune cordon which is more stable and not susceptible to erosion.

The replacement of the existing lifeguard tower along the Coffee Bay Main beach will include the following:

- Poly-timber lifeguard tower with an anti-slip floor finish.
- A certificate of conformance on completion.

Detailed plans of the proposed lifeguard tower are provided in Appendix C of BA1.

1.3.1.8 Streetlights

Currently, there are no streetlights within the Coffee Bay development node. This creates unsafe driving conditions, endangering pedestrians, animals and drivers. The proposed development will install street lighting within the node, which will improve vision and overall safety.

1.3.1.9 Welcome signage

Welcome signage will be erected at the entrance to the Coffee Bay development node. The purpose of the signage is to welcome visitors and/or tourists and provide an overview of the area.

(1) DEDICATED PARKING AREA

- INTRODUCE GRASS BLOCK PARKING AREA
- ALLOW FOR WIDENING OF ROAD VERGE
- ALLOW FOR ACCESSIBLE PARKING BAY
- FORMALISE A PATHWAY TO PICNIC AREA
- PROVIDE FOR BINS.
- IDENTIFY PARKING AREA SIGNAGE.
- INTRODUCE MINOR LANDSCAPING
- INTRODUCE BOLLARDS TO RESTRICT VEHICULAR ACCESS.

GENERAL ITEMS:
CONCRETE GRASS BLOCK.
POLYTIMBER WASTE BINS.
POLYTIMBER WALKWAY.

(2) VIEWING DECK No.1

- FORMALIZE WALKWAYS TO ACCESS VIEWING DECK
- INTRODUCE A VIEWING DECK
- PROVIDE FOR BINS.
- PROVIDE FOR BENCH SEATING.

GENERAL ITEMS:
POLYTIMBER BENCHES
POLYTIMBER WASTE BINS
POLYTIMBER TIMBER WALKWAY

(3) VIEWING DECK No.2

- FORMALIZE WALKWAYS TO ACCESS VIEWING DECK
- INTRODUCE A VIEWING DECK
- PROVIDE FOR BINS.
- PROVIDE FOR BENCH SEATING.

GENERAL ITEMS:
POLYTIMBER BENCHES
POLYTIMBER WASTE BINS
POLYTIMBER WALKWAY

(4) VIEWING DECK No.3

- FORMALIZE WALKWAYS TO ACCESS VIEWING DECK
- INTRODUCE A VIEWING DECK
- PROVIDE FOR BINS.
- PROVIDE FOR BENCH SEATING.

GENERAL ITEMS:
POLYTIMBER BENCHES
POLYTIMBER WASTE BINS
POLYTIMBER WALKWAY

(5) PICNIC AND BRAAI AREA

- REMOVE DAMAGED AND BROKEN BRAAI FACILITIES.
- REMOVE DAMAGED AND BROKEN SEATING
- FORMALIZE AND PROVIDE FOR NEW BRAAI FACILITIES.
- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- INTRODUCE GRASS BLOCK PLATFORMS AND LANDSCAPING FOR PICNIC FACILITIES.
- SECURE PICNIC AREA ON 3 SIDES WITH CLEARVU FENCING.
- PICNIC AREA TO BE ACCESSED THROUGH GATES.
- INTRODUCE POST & RAIL FENCING ON THE SOUTH SIDE OF THE PICNIC AREA.
- FORMALIZE WALKWAY FROM PARKING AREA TO THE PICNIC AREA.
- PROVIDE FOR BINS.
- IDENTIFY PICNIC AREA WITH SIGNAGE.
- INTRODUCE JUNGLE GYM WITH SLIDES AND SWINGS.
- INTRODUCE PLATFORMS AND LANDSCAPING FOR PLAYGROUND
- PLAYGROUND TO BE ACCESSED THROUGH GATES.
- PLAYGROUND SECURE ON 4 SIDES WITH CLEARVU FENCING.
- PROVIDE FOR BINS IN PLAYGROUND AREA
- PROVIDE FOR BENCH SEATING IN PLAYGROUND AREA

GENERAL ITEMS:
BRICK AND CONCRETE BRAAI STANDS.
POLYTIMBER PICNIC BENCHES.
POLYTIMBER BENCHES.
POLYTIMBER WASTE BINS.
CLEAR-VU FENCING
POST AND RAIL FENCING
GATES
JUNGLE GYM
SWING SET

(6) ABLUTION BLOCK

- 2 X NEW ABLUTION BLOCKS TO BE BUILT.
- NEW JOJO TANK WATER STORAGE.
- PROVIDE FOR BINS.

GENERAL ITEMS:
JOJO TANK
POLYTIMBER WASTE BINS.

(7) WETLANDS

- STABILIZE WETLANDS WALL ON PARKING AREA EDGE
- INTRODUCE A 600Ø PIPE TO ALLOW WATER FLOW
- INTRODUCE BOLLARDS ALONG ROAD EDGE

GENERAL ITEMS:
JOJO TANK
POLYTIMBER WASTE BINS.

(8) LIFEGUARD TOWER

- REMOVE DAMAGED AND BROKEN LIFEGUARD TOWER
- INTRODUCE NEW LIFEGUARD TOWER

GENERAL ITEMS:
LIFEGUARD TOWER

(9) DEMOLISH EXISTING ABLUTION BLOCK

- EXISTING ABLUTIONS TO BE DEMOLISHED
- RUBBLE BE REMOVED AND NATURAL GROUND TO BE MADE GOOD AND SCARIFED.

GENERAL ITEMS:
DEMOLISH BUILDING
SCARIFY AND MAKE GOOD


TYPICAL 3 SEATER BENCH


TYPICAL GRASS BLOCK PARKING AREA


TYPICAL 6 SEATER PICNIC BENCH


TYPICAL PICNIC AREA


TYPICAL BOLLARD


TYPICAL BIN


TYPICAL BRAAI STAND (2 x BRAAI)


TYPICAL LIFEGUARD TOWER


TYPICAL VIEWING DECK


CLEAR-VU FENCING


TYPICAL WALKWAYS


TYPICAL POST AND RAIL POLY TIMBER FENCE


TYPICAL JUNGLE GYM

SYMBOLS

	WASTE BIN		VIEWING AREA
	FORMALIZED WALKWAY	P	PARKING AREA
	BENCH SEATING		BOLLARDS
	PICNIC AREA		LIFEGUARD TOWER
	BRAAI FACILITIES		WETLANDS
	PLAYGROUND		ABLUTIONS

LEGEND

- CONSERVANCY TANKS
- GRASS BLOCK PARKING AREA
- GRASS BLOCK PEDESTRIAN WALKWAY
- CLEAR-VU FENCING
- POST AND RAIL FENCE
- GATES
- 600mmØ PIPE TO ALLOW WATER FLOW
- FORMALIZED WALKWAYS
- BOLLARDS TO RESTRICT VEHICULAR ACCESS

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For MBB CONSULTING ENGINEERS
Pr Tech Eng
Date

DEPARTMENT OF ENVIRONMENT FORESTRY & FISHERIES

PROPOSED UPGRADE AND CONSTRUCTION OF COASTAL INFRASTRUCTURE WITHIN THE KING SABATA DALINDYEBO LOCAL MUNICIPALITY, COFFEE BAY & HOLE IN THE WALL, EASTERN CAPE

COFFEE BAY - PROPOSED UPGRADES ZONING PLAN

Rev.	Date	Description	By	Chkd
R4	FEB 2022	ABLUTION BLOCK RELOCATION & LAYOUT AMENDMENT	RRK	PKN
R3	SEP 2021	ABLUTION BLOCK RELOCATION & LAYOUT AMENDMENT	RRK	PKN
R2	AUG 2021	ABLUTION BLOCK RELOCATION	RRK	PKN
R1	APRIL 2021	AMENDED LAYOUT	RRK	PKN

Revisions

USE: FOR INFORMATION

Drawn	R.KRIGE	Surveyed	
Date	MAY-2021	Designed	L.MAFUMA
Scale	1:750	Checked	P.NOSIB

DRAWING NUMBER: PROJECT NUMBER G285 | DISC 7 | STAGE C | DRAWING CODE 020 | REVISION NUMBER R4

Figure 3 Coffee Bay – Proposed Infrastructure Layout Plan

1.3.2 Hole in the Wall

1.3.2.1 Provision of two dedicated parking areas

Currently, the Hole in the Wall development node does not have any dedicated parking areas. Therefore, tourists, hikers and beach goers are required to park their vehicles along the existing gravel access road which is unsafe in terms of passing vehicles and often results in theft and/or damage to vehicles.

The proposed development will include the establishment of two dedicated parking areas at Hole in the Wall. The first parking area will be located directly adjacent to the existing ablution facilities. This parking area will offer tourists and beach goers with a safe and convenient space to park their vehicles whilst they navigate through the hiking trail and existing footpaths through the forest habitat. The first parking area will include:

- The introduction of a grass block parking area (approximately 1,300 m^2).
- The allowance for accessible parking bays.

The provision of waste receptacles.

The second dedicated parking area will be located further up the access road (inland of the road), closer to the new turning circle on the hill overlooking Hole in the Wall. This parking area will offer tourists and beach goers with a view of the Hole in the Wall feature and will include:

- The introduction of a grass block parking area (approximately 1,600 m^2).
- The allowance for accessible parking bays.
- The identification of parking area signage.
- The formalization and provision of new braai facilities.
- Picnic benches to encourage picnic activity.
- The introduction of grass block platforms and landscaping for picnic facilities.
- The provision of waste receptacles.
- Bench seating to take full advantage of the view

Detailed plans of the proposed infrastructure to be constructed at the dedicated parking areas are provided in Appendix C of BA2.

1.3.2.2 Dedicated picnic and braai areas

This component will include the provision of picnic and braai areas at six dedicated areas, ranging from the entrance of the hiking trail to spots located adjacent to the Mpako River/ Estuary and along the coastline. The purpose of the dedicated picnic and braai areas are:

- To replace the existing, broken braai and picnic infrastructure.
- To formalize picnic and braai areas along the coastline. This intends to reduce the number of informal braai and picnic areas, informal fires and pollution within the forest habitat.
- To provide beach goers and tourists safe and clean eating areas at strategic locations along the existing footpaths and/or hiking trails

The proposed picnic and braai areas will include:

- The removal of damaged and broken facilities.
- The removal of damaged and broken seating.
- The formalization and provision of new braai facilities.
- Provision of picnic benches to encourage picnic activity.
- The introduction of grass block platforms and landscaping for the new picnic facilities.
- Provision of waste receptacles.
- Bench seating to take full advantage of the view.

Detailed plans of the proposed infrastructure at the picnic and braai areas are provided in Appendix C of BA2.

1.3.2.3 Viewing deck

A viewing deck, observation deck or observation platform refers to an elevated sightseeing structure (our.wollongong.nsw.gov.au). The viewing deck will be provided at Hole in the Wall on the pathway up to the new parking area and turning circle. The viewing deck will afford pedestrians and beach goers a place to rest and to take in scenic views of the Hole in the Wall and coastal forest. The viewing platform will include:

- A formalized walkway to access the viewing decks.
- The introduction of a new viewing deck (the viewing deck will have a footprint of approximately 12 m^2)
- Provision of waste receptacles.
- Provision of seating (benches) and picnic facilities (picnic sets).

Detailed plans of the proposed viewing deck is provided in Appendix C of BA2.

1.3.2.4 Existing tracks and footpaths

Existing tracks, footpaths and hiking trails will be used to access the Hole in the Wall and no formalised pathways will be constructed. A large portion of these existing tracks, footpaths and hiking trails occur within the Riverine vegetation community which includes low tree cover and a high density of shrubs. The use of existing tracks and footpaths will not only maintain the “sense of place”, but also minimise disturbance within the coastal forest.

To promote and maintain the “sense of place” of the area, the existing footpaths and hiking trails will be provided with the following (Plate 13):

- The introduction of benches and waste receptacles at strategic locations along the existing footpaths.
- The provision of bench seating for resting and enjoyment of the surrounding habitat.
- Demarcation along certain portions using rope and post barriers (or anything similar).

Detailed plans of the infrastructure to be included along the existing tracks and footpaths are provided in Appendix C of BA2.

1.3.2.5 Formalised access to the fishing spot

During the PPP announcement period, I&APs helped identify an existing fishing spot along Men’s Beach that is used by both local and recreational fishermen. Currently, there is no formal access across the rocks to this fishing spot which often results in injury to those wishing to access to the area. The formalised access will allow for the safe and equitable access to the coastline and identified fishing spots. The formalised fishing access will include:

- The introduction of steps to access the fishing spot.

Detailed plans of the infrastructure to be included at the fishing spot are provided in Appendix C of BA2.

1.3.2.6 Refurbishment of existing road adjacent to the Hole in the Wall Hotel

This component will involve the refurbishment of the existing access road directly adjacent to the Hole in the Wall Hotel. This existing road is used by tourists and other locals in the area to access the existing boat launch site. After rainfall events, the road is susceptible to high levels of erosion, making it inaccessible. This refurbishment of the existing road will include:

- The refurbishment (gravel resurfacing) of the existing access road (approximately 100 m in length).
- Minor landscaping to compliment the receiving environment

Detailed plans for the road refurbishment are provided in Appendix C of BA2.

1.3.2.7 Formalisation of existing access point at the boat launch site

The existing boat launch site is located adjacent to the Hole in the Wall and requires formalisation. After rainfall events, the site is susceptible to erosion which often results in vehicles getting stuck at the launch site. The formalisation of the boat launch will include:

- The introduction of a new stabilised grass block access ramp/ slipway.
- Introduction of gabion structures and/ or reno mattresses to reinforce and stabilise the access ramp.
- The refurbishment of the existing access road (from the Hole in the Wall Hotel to the launch site).
- Minor landscaping to compliment the receiving environment.
- Boat launch signage.
- Provision of picnic benches near the new launch site.

The introduction of grass block platforms and minor landscaping for picnic facilities

Detailed plans for the boat launch site are provided in Appendix C of BA2.

1.3.2.8 Streetlights

Currently, there are no streetlights at Hole in the Wall. This creates unsafe driving conditions, endangering pedestrians, animals and drivers. Streetlights will be erected around the development node to improve driving conditions and improve the overall safety for both pedestrians and drivers.

1.3.2.9 Welcome signage

Welcome signage will be erected at the entrance to the Hole in the Wall development node. The purpose of the signage is to welcome visitors and/or tourists and provide an overview of the area.

(1) DEDICATED PARKING AREA No.1

- INTRODUCE GRASS BLOCK PARKING AREA
- ALLOW FOR ACCESSIBLE PARKING BAY
- IDENTIFY PARKING AREA WITH SIGNAGE.
- PROVIDE FOR BINS.

GENERAL ITEMS:
CONCRETE GRASS BLOCK.
POLY-TIMBER WASTE BINS.

(2) ENTRANCE TO PICNIC AREA

- INTRODUCE BOLLARDS TO RESTRICT VEHICULAR ACCESS.
- IDENTIFY FOOTPATHS WITH SIGNAGE.
- PROVIDE FOR BINS.

GENERAL ITEMS:
CONCRETE BOLLARDS.
POLY-TIMBER WASTE BINS.

(3) DEDICATED PICNIC AREA No.1

- FORMALIZE AND PROVIDE FOR NEW BRAAI FACILITIES.
- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- INTRODUCE GRASS BOCK PLATFORMS AND LANDSCAPING FOR PICNIC FACILITIES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
BRICK AND CONCRETE BRAAI STANDS.
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(4) DEDICATED PICNIC AREA No.2

- REMOVE DAMAGED AND BROKEN BRAAI FACILITIES.
- REMOVE DAMAGED AND BROKEN SEATING.
- FORMALIZE AND PROVIDE FOR NEW BRAAI FACILITIES.
- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- INTRODUCE GRASS BLOCK PLATFORMS AND LANDSCAPING FOR PICNIC FACILITIES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
BRICK AND CONCRETE BRAAI STANDS.
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(5) DEDICATED PICNIC AREA No.3

- FORMALIZE AND PROVIDE FOR NEW BRAAI FACILITIES.
- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- INTRODUCE GRASS BLOCK PLATFORMS AND LANDSCAPING FOR PICNIC FACILITIES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
BRICK AND CONCRETE BRAAI STANDS.
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(6) BENCHES AND BINS

- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(7) FOOT PATH - PARKING AREA TO COASTLINE

- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(8) DEDICATED PICNIC AREA No.4

- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- INTRODUCE GRASS BLOCK PLATFORMS AND LANDSCAPING FOR PICNIC FACILITIES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(9) DEDICATED PICNIC AREA No.5

- FORMALIZE AND PROVIDE FOR NEW BRAAI FACILITIES.
- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- INTRODUCE GRASS BLOCK PLATFORMS AND LANDSCAPING FOR PICNIC FACILITIES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
BRICK AND CONCRETE BRAAI STANDS.
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(10) VIEWING DECK

- INTRODUCE A VIEWING DECK
- PROVIDE FOR BINS.
- PROVIDE FOR BENCH SEATING.
- PROVIDE FOR PICNIC BENCHES

GENERAL ITEMS:
POLY-TIMBER BENCHES
POLY-TIMBER WASTE BINS
POLY-TIMBER WALKWAY

(11) FOOTPATH TO THE BOILING POT

- EXISTING FOOTPATH TO THE BOILING POT WILL REMAIN UNTOUCHED AND UNCHANGED .

(12) DEDICATED PICNIC AREA No.6

- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(13) ACCESS O FISHING SPOT

- EXISTING FISHING SPOT
- INTRODUCED STEPS TO EXISTING ROCK FACE TO MAKE THE FISHING SPOT MORE ACCESSIBLE.

GENERAL ITEMS:
CONCRETE STEPS CAST AND ANCHORED TO THE ROCK FACE

(14) DEDICATED PARKING AREA No.2

- INTRODUCE GRASS BLOCK PARKING AREA
- ALLOW FOR ACCESSIBLE PARKING BAY
- IDENTIFY PARKING AREA SIGNAGE.
- FORMALIZE AND PROVIDE FOR NEW BRAAI FACILITIES.
- ENCOURAGE PICNIC ACTIVITY BY PROVIDING PICNIC BENCHES.
- INTRODUCE GRASS BLOCK PLATFORMS AND LANDSCAPING FOR PICNIC FACILITIES.
- PROVIDE FOR BINS.
- PLACE BENCH SEATING TO TAKE FULL ADVANTAGE OF VIEW

GENERAL ITEMS:
CONCRETE GRASS BLOCK
BRICK AND CONCRETE BRAAI STANDS.
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

(16) HOLE IN THE WALL HOTEL

- FORMALIZE EXISTING BOAT LAUNCH.
- UPGRADE EXISTING ACCESS ROAD.
- INTRODUCE MINOR LANDSCAPING.
- PROVIDE PICNIC BENCHES
- IDENTIFY BOAT LAUNCH WITH SIGNAGE.
- INTRODUCE RENO MATTRESS AT HIGH WATER MARK
- PROVIDE FOR BINS.
- UPGRADE EXISTING ROADWAY FROM BOOM TO BOAT LAUNCH

GENERAL ITEMS:
GRASS BLOCK ACCESS ROAD.
MATTRESS AT HIGH WATER MARK
POLY-TIMBER PICNIC BENCHES.
POLY-TIMBER BENCHES.
POLY-TIMBER WASTE BINS.

TYPICAL GRASS BLOCK PARKING AREA

TYPICAL PICNIC AREA

TYPICAL BOLLARD

TYPICAL BIN

TYPICAL 6 SEATER PICNIC BENCH

TYPICAL 3 SEATER BENCH

TYPICAL VIEWING DECK

TYPICAL BRAAI STAND (2 x BRAAI)

TYPICAL BRAAI STAND (4 x BRAAI)

LEGEND

- FOOTPATH - PICNIC AREA ENTRANCE TO COAST
- FOOTPATH - JOINING PICNIC AREA 3
- FOOTPATH - FOREST TO BOILING POT
- FOOTPATH - JOINING PICNIC AREA 4 & 5
- BOLLARDS TO RESTRICT VEHICULAR ACCESS

SYMBOLS

WASTE BIN		VIEWING AREA	
FORMALIZED WALKWAY		PARKING AREA	
BENCH SEATING		BOLLARDS	
PICNIC AREA		BOAT LAUNCH	
BRAAI FACILITIES		FISHING SPOT	

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For MBB CONSULTING ENGINEERS

Pr Tech Eng Date

DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

PROPOSED UPGRADE AND CONSTRUCTION OF COASTAL INFRASTRUCTURE WITHIN THE KING SABATA DALINDYEBO LOCAL MUNICIPALITY, COFFEE BAY & HOLE IN THE WALL, EASTERN CAPE

HOLE IN THE WALL - PROPOSED UPGRADES ZONING PLAN

Rev.	Date	Description	By	Chkd
R2	FEB 2022	AMENDED LAYOUT	RRK	PKN
R1	APRIL 2021	AMENDED LAYOUT	RRK	PKN

Revisions

USE: FOR INFORMATION

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Figure 4 Hole in the Wall – Proposed Infrastructure Layout Plan

1.4 The Receiving Environment

1.4.1 Overview

COFFEE BAY

Coffee Bay is a small coastal community located along the Wild Coast consisting of about 600 people. The Coffee Bay village has rustic lodges, wonderful swimming beaches, excellent fishing spots and hiking trails with breath-taking views. The surrounding area is rugged with high cliffs and contains numerous thatched, traditional huts (Exigent, 2021).

HOLE IN THE WALL

The Hole in the Wall is approximately 12 km from Coffee Bay and is famously known for its incredible, natural feature. The proposed development is located on the northern bank of the Mpako River, between the Hole in the Wall tourist destination and the Hole in the Wall Hotel. The area is recognised by a rural character of a small town, with one main road through the town and numerous backpacker establishments (Exigent, 2021).

1.4.2 Sensitive Environments

COFFEE BAY

At Coffee Bay, the sensitive environments are defined by the presence of the frontal dune cordon and dune vegetation, the wet dune slack, the nearby artificial wetland and the transgressive dune habitat.

HOLE IN THE WALL

At the Hole in the Wall, the sensitive environments are defined by the shifting sand bypass near the coastal dunes (resulting from the prevailing north easterly winds), the presence of a wetland feature leeward of the Mpako estuary (Dune wetland) and the Riverine Forest.

1.4.3 Objective and Scope of the Environmental Management Programme

This EMPr covers the principles, responsibilities, and requirements applicable to implement effective environmental management during the design, pre-construction, construction, and rehabilitation phases of the Hole in the wall beach.

In addition, the EMPr does the following:

- Assigns roles and responsibilities to the parties charged with implementation.
- Sets out environmental specifications that are applicable to the project and its associated activities and provides guidance to achieve these environmental specifications.
- Defines corrective actions, which must be taken in the event of non-compliance with the
- environmental specifications of this EMPr.
- Specifies requirements and procedures for monitoring, auditing and reporting.
- Specifies requirements and procedures for record keeping.
- Makes provision for the fulfilment of other relevant legal requirements pertaining to the environment.

2 ENVIRONMENTAL PRINCIPLES AND LEGAL REQUIREMENTS

2.1 Environmental Principles

The following principles should always be considered by all parties during all phases of the project:

- The environment is composed of both biophysical and social components.
- Construction is a disruptive activity, and all due consideration must be given to the environment, including the social environment, to minimise the impact during the execution of the project.
- Minimisation of areas disturbed by construction activities (i.e., the footprint of the construction area) should minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to international, national, provincial and local legislation, as applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid, and solid), waste disposal practices, noise regulations, road traffic ordinances, protected species, etc.
- Every effort should be made to minimise, reclaim and/or recycle “waste” material.
- Every effort should be made to apply the best practicable environmental option.

2.2 Environmental Standards

All applicable environmental standards contained within environmental legislation shall be adhered to. Without derogating from the generality of the above and without limitation, at the time of compiling this EMPr, the following environmental guidelines and standards are highlighted. The list is intended to serve as a guideline only and is not exhaustive.

2.1.1 Air Quality Guidelines

In terms of air quality, the contractor will be required to describe how effective dust control measures will be achieved during construction.

2.1.2 Noise Control Regulations

No provincial Noise Control Regulations have been promulgated in Eastern Cape. Therefore, the national Noise Control Regulations of the Environment Conservation Act, 1989 (Act No. 73 of 1989), Government Notice Number GN 154 of Government Gazette 13717 of 10 January 1992, apply.

2.1.3 Storage of Hazardous Substances

Hazardous substances must be stored and handled in accordance with the appropriate legislation and standards which may include the Hazardous Substances Act, 1973 (Act No. 15 Of 1973), the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), relevant associated regulations, and applicable South African Bureau of Standards (SABS) and international standards.

2.1.4 Health and Safety of Work Teams

Construction Regulations (2003) published under the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) apply to construction activities including “the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work”. A “health and safety plan” which addresses hazards identified, and includes safe work procedures to mitigate, reduce or control the hazards identified, is required under this Act. A risk assessment must be undertaken by an appropriately qualified person(s) and the contractor shall ensure that all employees under his or her control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences and, thereafter, at such times as may be determined necessary in the risk assessment.

2.3 Environmental Legal Requirements (Norms and Standards, Licences, Approvals and Permits)

Several laws and regulations apply to the protection and conservation of the environment. It is the responsibility of KSDLM to ensure that the necessary permits, approvals and licences are obtained prior to the commencement of construction.

2.3.1 Environmental Authorisation and the National Environmental Management Act

In terms of NEMA, anyone who causes or may cause significant pollution or degradation of the environment must take reasonable measures to prevent this and to minimise and rectify such pollution or degradation of the environment (NEMA Section 28 - Duty of Care and Remediation of Environmental Damage).

2.3.2 Heritage Resources Permits

In terms of Section 23 of the National Heritage Resources Act (No.25 of 1999), any person who intends to undertake a development that meets the criteria of one or more of the listed activities, must, at the very earliest stages of initiating such a development, notify Eastern Cape Provincial Heritage Resources Authority (ECPHRA) and provide details regarding the location, nature and extent of the development.

This includes the construction of a linear development exceeding 300 m in length, the construction of a bridge or similar structure exceeding 50 m in length, and a development, or other activity which will change the character of an area of land, or water exceeding 10,000 m^2 in extent. ECPHRA must notify the developer whether a Heritage Impact Assessment and Report are required prior to construction commencing.

If, during construction, archaeological or paleontological objects or material or a meteorite is discovered, the find must immediately be reported to ECPHRA. No person may, without a permit, destroy damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite. Refer to the “Chance Find Protocol” in Annexure 3.

2.3.3 National Water Act, 1998 (Act No. 36 of 1998)

Alteration of a stream or river (i.e., alteration of the course or riverbed) requires a licence from the Department of Human Settlements, Water and Sanitation (DHSWS) in terms of Sections 21, 36, 40 and 41 of the National Water Act (NWA). In certain cases, a general authorisation is given to impede or divert the flow of a watercourse. Pollution of river water (silt-laden run-off, oil from machines, etc) is a contravention of the Act and is not permitted. Wetlands are also protected under this Act. No land use shall disturb the vegetation in a vlei or flood area of a watercourse in a manner that may cause damage or the deterioration thereof unless under license from DHSWS.

If water is required during construction, a licence is required from DHSWS for the abstraction of water where the abstraction exceeds the levels prescribed by a general authorisation. From time to time, general authorisations have been published in terms of Section 39 of the Act.

2.3.4 Protected Trees and Forests (National Protection)

National Forests Act (Act No. 84 of 1998)

In terms of the National Forests Act, 1998 (Act No. 84 of 1998), trees in natural forests or protected tree species (as listed in Government Gazette Notice 1012 of 27 August 2004) may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold, except under licence granted by the DFFE. Thus, protected species, dune vegetation and natural forests should be avoided where possible. Where this is not possible, other mitigation measures should be implemented such as relocation or off-site rehabilitation. Furthermore, accurate and detailed records of plant specimens should be assembled and forwarded to the DFFE for record purposes.

National Protected Area Expansion Strategy (NPAES) (2008)

The NPAES presents a 20-year plan for the expansion of protected areas in South Africa. The aim of the NPAES is to achieve cost effective protected area expansion for an improved ecosystem representation, ecological sustainability and resilience to climate change.

Furthermore, the Integrated Biodiversity Information System (SIBIS) database from the South African National Biodiversity Institute (SANBI) contains information from SANBI databases. The following databases are relevant to the biodiversity in the study areas:

- National Spatial Biodiversity Assessment (2018).
- Terrestrial Ecosystem and Threat Status (National Environmental Management: Biodiversity Act (NEMBA) listed).
- Coastal Ecosystems and Threat Status (2018).
- Estuarine Ecosystems and Threat Status (2018).

2.3.5 Protected Plants (Provincial Protection)

The Eastern Cape Biodiversity Conservation Plan (ECBCP)

The ECBCP provides mapped areas of priority for conservation in the Eastern Cape. Priority areas are categorised into Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). At Coffee Bay, the area is located within the Estuary and Coast vegetation type, which is rated as of CBA 1 significance. At Hole in the Wall, the proposed area is located within the Estuary, Settlement and Old Field vegetation type which is classified as of CBA 1 and ESA 1 significance (Exigent, 2021).

2.3.6 Control of Invasive Plants and Declared Weeds

Declared weeds or invader plants are defined by the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) as follows:

- **Category 1** : Declared weeds. These species must be eradicated from all areas and are only permitted with written permission from the Executive Officer (as defined by the Act).
- **Category 2** : Invader plants. These species are only permitted in specially demarcated areas and should be eradicated in all areas, except where permission has been granted. These species are not permitted to grow within 50 m of the 1:50 flood line of a watercourse.
- **Category 3** : These plants shall not occur on any land or inland water surface other than in a biological control reserve. No land user shall allow Category 3 plants to occur within 30 metres of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland.

In terms of Government Notice Regulation (GNR) 1048, the following regulations are applicable with regards to the control of invasive plants and declared weeds:

- It is illegal to have declared weed species or invasive alien vegetation on one's property.
- The landowner must immediately take steps to eradicate them by using the methods prescribed in the regulations, viz:
  - Uprooting and burning.
  - The application of a suitable chemical weedkiller (herbicide).
  - Any other method of permanent eradication.
- One may not uproot or remove such plants and dump or discard them elsewhere to re-grow or allow their seeds to be spread or to be blown onto other properties.
- If the landowner does not comply with requirements above, a person may be found guilty of a criminal offence.

Alien invasive plants are to be removed and thereafter controlled in the cleared and/or disturbed areas within the development footprints at Coffee Bay and Hole in the Wal

2.3.7 Waste Disposal

The National Environmental Management: Waste Act (NEMWA), 2008 (Act No. 59 of 2008) aims to minimise the consumption of natural resources, avoid and minimise the generation of waste, reduce, re-use, recycle and recover waste whenever possible, treat and safely dispose of waste as a last resort, and prevent pollution and ecological degradation.

Waste produced by construction activities must be recycled where possible or must be disposed at a licensed waste management facility, thus, no permitting or licensing will be required.

During construction, all construction rubble and/or material must be disposed of at the Mqanduli Landfill Site. The Mqanduli Landfill site is located approximately 60 km from Coffee Bay and 63 km from Hole in the Wall.

During operation, all general waste (generated by tourists, beach goers and pedestrians) must be collected by the KSDLM and disposed of at the multipurpose buy back centre and waste transfer facility in Coffee Bay.

2.3.8 Public Health

The installation of the proposed conservancy tanks at Coffee Bay must be approved by the nearest local authority in terms of their by-laws and relevant provincial by-laws. During construction, portable, chemical ablutions will be provided by a service provider to the contractor. During operation, the conservancy tanks must be regularly serviced by a suitably qualified service provider. Sewage must be disposed at a licensed wastewater treatment works and under no circumstances may it be dumped in the bush or buried. Proof of disposal by the appointed service provider must be provided to the KSDLM.

2.3.9 Other Applicable Legislation

This list is intended to serve as a guideline only and is not exhaustive:

- The Constitution of the Republic of South Africa Act, 1996 (Act No. 108 of 1996).
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).
- Environment Conservation Act, 1989 (Act No. 73 of 1989).
- National Environmental Management Act, 1998 (Act No. 107 of 1998).
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
- National Environment Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Waste Act (Act No. 59 of 2008).
- National Water Act, 1998 (Act No. 36 of 1998).
- National Heritage Resources Act, 1999 (Act No. 25 of 1999).
- Hazardous Substances Act, 1973 (Act No. 15 of 1973).
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).
- Local Government Ordinances and Bylaws.

3 ADMINISTRATION AND REGULATION OF ENVIRONMENTAL OBLIGATIONS

3.1 Organisational Structure

An organisational structure for the construction phase of the project is illustrated in Figure 5[1]. Communication and reporting lines related to the EMPr (including instructions, directives and information) shall be channelled according to the organisational structure implemented by the project proponent.

3.2 Roles and Responsibilities

The roles and responsibilities that are assigned to the various parties described hereunder are for all phases of the project.

3.2.1 King Sabata Dalindyebo Local Municipality (KSDLM) (Employer)

The KSDLM is responsible for ensuring that the conditions within the EMPr are met. The Employer is responsible for the following:

- Implementation of the EMPr.
- Submission of any substantial changes, updates or amendments to the EMPr to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) for approval.
- Ensuring that the provisions of the EMPr are binding on all contractors operating on the site during the life of the project, including a performance-based requirement in all contract documents.
- Ensuring that monthly environmental site inspections and monthly audit reports are compiled during construction to establish how well the contractor is complying with the EMPr. The monthly environmental audit reports must be submitted to the Eastern Cape DEDEAT.
- Ensuring that compliance/non-compliance records are kept in good order and made available on request by the authorities.
- Complying with all applicable environmental legislation, regulations and guidelines, and ensuring that contractors undertake responsibility to do the same.
- Being committed to the principles contained within NEMA, including the prevention of pollution and sustainable development.

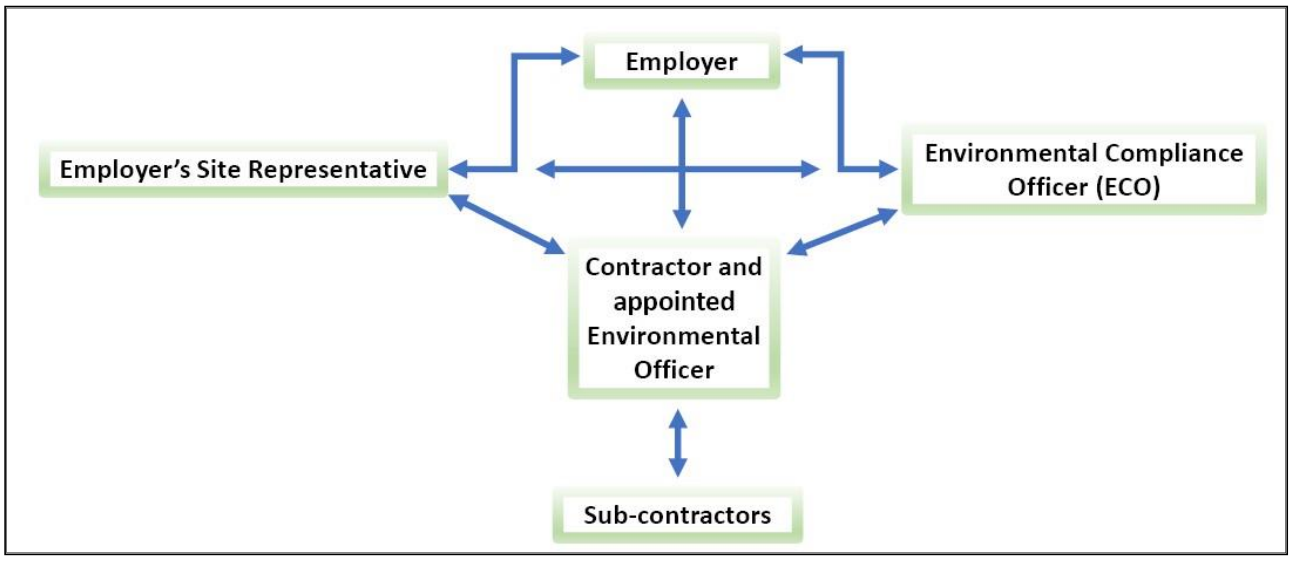

Figure 5 Organisational organogram for construction: communication/reporting relationship

[1] The organogram can be updated or simplified once all the required roles have been filled and companies appointed.

3.2.2 Employer's Site Representative

The Employer's Site Representative represents the Employer and co-ordinates all aspects of the project, including project co-ordination, design and construction. The Employer's Site representative is ultimately responsible for ensuring, on behalf of the Employer, that the provisions of the EMPr are complied with. Responsibilities include:

- Ensuring that the provisions of the EMPr are binding on all contractors operating on the site during the construction of the project and that a performance-based requirement is included in all contracts.
- Including the approved EMPr as part of the contract documents.
- Ensuring that the contractor(s) and sub-contractor(s) are conversant with the requirements of the EMPr and that all members of staff on site have attended an environmental awareness-training course presented by the Environmental Compliance Officer (ECO).
- Compiling preliminary construction site layout plans prior to construction commencing.
- Approving final construction site layout plans in conjunction with the employer and ECO.
- Ensuring that the contractor(s) complies with the EMPr and, if not, ensuring that the contractor(s) bears the costs of damages/compensation resulting from non-compliance.
- If necessary, on the recommendation of the ECO, instruct the contractor(s) to suspend any or all works on site, if the contractor(s) or his/her sub-contractors/suppliers fail to comply with the EMPr.
- Ensuring that the contractor(s) conducts all activities in a manner that minimises disturbance to the project area and local communities and forwards complaints and queries by members of the public to the employer.
- Liaison with stakeholders including landowners and land users, utility providers[2], neighbours, and relevant authorities. This should be done in association with the contractor (and the ECO where necessary).
- Ensuring that a register of complaints and queries by members of the public is maintained at the site office and the actions taken in response to these complaints.
- Liaising directly with the employer and ECO in terms of environmental issues and maintaining close channels of communication with the ECO regarding foreseeable activities that may require environmental input.
- On behalf of the Employer, reviewing any substantial changes, updates or amendments to the EMPr prior to its submission to the Eastern Cape DEDEAT for approval.
- On behalf of the Employer, ensuring that the ECO keeps the compliance/non-compliance records in good order and makes them available on request to the authorities.
- Ensuring that all EMPr-related instructions to the contractor are recorded in the site diary.
- Having available on request, a copy of the EMPr at the construction site, at all times and ensuring that all staff, contractors and sub-contractors are familiar with or made aware of the contents of the EMPr.
- Complying with all applicable environmental legislation, regulations and guidelines, and ensuring that contractors undertake responsibility to do the same.
- Ensuring that an environmental performance certificate is obtained from the ECO prior to awarding the Certificate of Completion to the contractor(s).

3.2.3 Environmental Control Officer (ECO)

The ECO is responsible for managing and co-ordinating environmental obligations and shall advise the Employer's Site Representative and Contractors on all environmental management matters relating to the project. This includes providing input during all phases of construction (including design), monitoring environmental performance of contractors during construction and ensuring that all environmental specifications and EMPr requirements are met at all times.

[2] The Employer's Site Representative is to ensure liaison with utility operators regarding safety requirements for work within utility servitudes or crossing utilities.

The ECO is responsible for the following:

- Co-ordinating all matters relating to the environmental management of the project.
- Being fully conversant with the EMPr and all relevant environmental legislation, guidelines and standards.
- Assisting the Employer's Site Representative and the Contractor(s) with EMPr compliance and all environmental legislation related to the project.
- Liaising with the relevant authorities with respect to licences, approvals, authorisations, permits, agreements etc., in collaboration with the Employer's Site Representative and contractor(s) where required.
- Ensuring that the Employer has obtained all authorisations, licences and permits required in terms of the applicable legislation.
- Liaising closely with and reporting any breaches of EMPr implementation and the relevant legislation to the Employer's Site Representative.
- Attending project meetings and reporting and advising as necessary on environmental matters.
- Reviewing and updating the EMPr in relation to specific requests, non-compliances or changes in legislation and obtaining the necessary input from the Employer's Site Representative.
- Providing input into construction site layout plans.
- Obtaining environmental specialist input as required.
- On behalf of the Employer, informing the Eastern Cape DEDEAT of non-compliance of any of the conditions of the EMPr within a reasonable period.
- Providing the Employer's Site Representative with an environmental performance certificate at the end of the contract confirming that all environmental specifications applicable to the contractor have been met.
- Reviewing training programmes, construction site layout plans, method statements and specifications and advise as necessary.

In addition, the ECO will be responsible for the following:

- Assisting with enforcing environmental specifications on site via the Employer's Site Representative.
- Conducting monthly site visits to monitor and verify compliance with the EMPr.
- Keep records of compliance/non-compliance.
- Producing a monthly environmental audit report. These monthly environmental audit reports must be submitted to the Eastern Cape DEDEAT.
- Identifying and assessing previously unforeseen, actual or potential impacts of the project on the environment.
- Bringing any environmental concerns to the attention of the Employer's Site Representative.
- Recommending to the Employer's Site Representative that the contractor suspend any or all works on site if the third parties who carry out all or part of the contractor's obligations fail to comply with the environmental specifications.
- Advising on the rectification of any pollution, contamination or damage to the project site, rights of way and adjacent land.
- Reviewing and approving construction method statements with input from the Employer's Site Representative, where necessary, in order to ensure that the environmental specifications contained within this EMPr are adhered to.
- Attending site meetings (scheduled and ad hoc).
- Keeping accurate and detailed records of all EMPr-related activities on site.
- Recording complaints or queries from I&APs and actions taken to address complaints. Copies of all interactions and correspondence shall be kept as part of record keeping.
- Maintaining a photographic record of construction activities and construction progress.
- Checking that a copy of the EMPr is available on site.
- Ensuring that the Employer's Site Representative, contractor(s) are made aware of all applicable changes to the EMPr.

3.2.4 Contractor and Appointed Environmental Officer (EO)

The contractor is the successful tenderer, appointed by the Employer to undertake the project. It is the responsibility of the contractor to ensure that he/she or an appointed advisor, are well versed in environmental matters to efficiently carry out the requirements of the EMPr. The contractor and their appointed Environmental Officer (EO) are responsible for the following:

- The implementation of the applicable environmental specifications in accordance with the requirements of this EMPr.
- Obtain written permission from the land user for use of a suitable site for erection of the construction camp, storage areas, stores and/or stockpile areas.
- Appoint a Community Liaison Officer (CLO) to assist with procurement of labour and for general communication with the community.
- Ensuring that a register of complaints and queries by members of the public is maintained at the site office and the actions taken in response to these complaints.
- Ensure that all third parties who carry out all or part of the contractor's obligations comply with the requirements and provisions of this EMPr.
- Be responsible for the timeous procurement of all applicable approvals, authorisations, licences and permits required for a particular activity that is part of the contract and which are additional requirements to those already obtained by the Employer but as necessitated by the plans and/or actions of the contractor.
- Report any non-compliance to the Employer's Site Representative and ECO within 12 hours of the event occurring.
- Report any non-compliance event that constitutes an emergency immediately and in line with the protocol applicable to that particular emergency event.
- With the ECO, present an environmental awareness-training course to all sub-contractors and employees.
- Ensure that all sub-contractors and employees attend the environmental awareness-training course.
- Ensure that a copy of the EMPr is available at the construction site at all times.

3.3 Compliance Monitoring, Reporting and Record Keeping

3.3.1 Compliance Monitoring

During the various project phases (design, pre-construction, construction and rehabilitation), the ECO, will monitor the overall compliance of the conditions of authorisation and mitigation measures outlined in the EMPr by all parties concerned.

3.3.2 Design Phase

During the design phase, the ECO will meet with the Employer's Site Representative to highlight design needs as specified in the EMPr. On completion of the design, relevant information will be reviewed by the ECO to ensure that the design demonstrates compliance with environmental requirements. The Employer's Site Representative will also provide preliminary construction site layout plans to the contractor for review.

3.3.3 Construction Phase

3.3.3.1 Construction Site Layout Plan

Prior to construction, the Employer's Site Representative, with input from the contractor, must approve the construction site layout plan prepared by the contractor showing the positions and extent of all permanent and temporary site structures and infrastructure. The Employer's Site Representative is responsible for the co-ordination of construction site layout plans should there be overlap between multiple contractors on site.

The earlier this information is provided to the Employer's Site Representative and ECO, the less likelihood of delays to construction and of unforeseen environmental impacts occurring during construction.

3.3.3.2 Construction Method Statements

Prior to construction, the Employer's Site Representative and ECO will agree which activities require a written method statement. Where relevant, the contractor must submit a written method statement, which should, as a minimum include the following:

- The type of construction activity.
- Locality where the activity will take place.
- Identification of activities or aspects that may cause an impact.
- Methodology and/or specifications for impact prevention for each activity or aspect.
- Methodology and/specifications for conducting work in sensitive environments.
- Emergency/disaster incident and reaction procedures.

The appointed ECO must review the construction method statements to ensure that all environmental specifications contained within this EMPr are adhered to.

3.3.3.3 Site Handover

The contractor and the appointed ECO will attend the site handover meeting, where the EMPr will form part of the agenda. The construction site layout plans (for Coffee Bay and Hole in the Wall) are key components of site handover and must be finalised before site handover can be completed. The approved plan must be attached to the site handover meeting minutes. Amendments to this plan must be discussed and approved at subsequent site meetings.

3.3.3.4 Site Inspections and Meetings

The client's appointed ECO will conduct monthly site inspections and meetings to establish how well the contractor is complying with the EMPr. The ECO will compile a site inspection checklist, to be forwarded to the Employer's Site Representative and contractor for their attention and records. The checklists will also be included as an appendix to the monthly audit report to be submitted to the Eastern Cape DEDEAT.

Anything of an environmental nature that arises between the site audits must be recorded in written correspondence to the contractor and the Employer's Site Representative. If required, the ECO must conduct a site visit to address the matter and must report the matter in an addendum to the site inspection checklist.

3.3.3.5 Practical Completion

The ECO must attend the practical completion inspection. Outstanding environmental matters requiring attention must be provided to the Employer's Site Representative for inclusion in the snag list, which is to be attached to the practical completion certificate.

3.3.3.6 Final Completion and Environmental Performance Certificate

Once the environmental items on the snag list have been addressed to the satisfaction of the ECO, the ECO will provide an environmental audit report confirming that the environmental specifications applicable to the contractor(s) have been met. This report will be submitted to the Employer's Site Representative prior to the final Certificate of Completion being issued.

3.3.3.7 Independent Environmental Auditing

Periodic auditing of environmental compliance by an independent auditor may be required and is also advisable as best environmental practice. In this regard, the Eastern Cape DEDEAT may undertake periodic site audits to confirm the findings of the monthly audit reports submitted to them by the ECO.

3.3.3.8 Non-Compliance and Remedial Action

Matters of non-compliance by any parties must be reported to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) within a reasonable period. This should be discussed with the Eastern Cape DEDEAT.

The contractor(s) and their sub-contractors are deemed not to have complied with the EMPr if:

- There is evidence of contravention of the EMPr specifications within the boundaries of the construction site, site extensions and access roads.
- There is contravention of the EMPr specifications that relate to activities outside the boundaries of the construction site.
- Construction activities take place outside demarcated areas.
- Environmental damage ensues due to negligence or intent.
- Failure to comply with corrective or other instructions issued by the Employer's Site Representative within a specific time period.

Where the ECO identifies non-compliance by the contractors and sub-contractors, it will be discussed at the monthly site visits (when identified) and remedial actions and timeframes specified. The contractor must record these incidents of non-compliance, the remedial actions and timeframes in the site inspection checklist. The Employer's Site Representative must also record the relevant instructions for the contractor(s) in the site diary.

If the specified remedial action has not been carried out by the contractor(s) within the period stipulated, the non-compliance must be dealt with as follows:

- Where non-compliance has resulted in environmental damage to the site which cannot be rectified by the remedial action specified by the ECO, or the contractor(s) has failed to carry out the remedial work within the prescribed time limit (or permitted extension thereof), the ECO shall convene a meeting between the Employer's Site Representative and the contractor to discuss the appropriate fine. Appropriate remedial work shall also be discussed and agreed.
- In determining appropriate remedial action, the ECO and Employer's Site Representative shall consult with the Eastern Cape DEDEAT and, where necessary, obtain specialist input.
- The Employer's Site Representative shall issue an instruction to the contractor to procure execution of the remedial work as agreed between the parties, and the contractor shall be obliged to procure such remedial work within the prescribed period to the satisfaction of the Employer's Site Representative.
- Failure by the contractor to comply with an instruction from the Employer's Site Representative to procure the carrying out of the required remedial work shall constitute a material breach of the contract.
- Where the Employer's Site Representative has taken action to procure the remediation of such consequences, it shall be entitled to recover from the contractor the full cost of remediation.

Incidents of non-compliance, the remedial actions and timeframes must be recorded in the site inspection checklist and the site diary. Fines, applied at the discretion of the Employer's Site Representative (with input from the ECO) must be applied in addition to any remedial costs incurred as a result of non-compliance. The Employer's Site Representative will inform the contractor of the contravention and the amount of the fine and will deduct the amount from monies due to the contractor under the contract.

3.3.3.9 Penalty Clause

Any avoidable non-compliance with the EMPr, Environmental Authorisation or applicable regulations shall be considered sufficient grounds for imposing a penalty (fine). The penalty imposed shall be per incident. Upon receipt of a notice of non-compliance, the contractor shall correct whatever is the cause of the issuing of the notice.

The Rand values of the penalties to be imposed per incident or violation are provided in Annexure 1. They reflect first-time incidents of non-compliance only. Penalties of repeat offences are calculated at an incremental increase of 10% up to a maximum of R 100,000. Thus, the penalty for a first-time repeat incident would be 110% of the original penalty value, 120% for a second-time repeat incident, etc. Certain penalties may be waived or reduced at the discretion of the Employer's Site Representative (with the approval of the Employer's independent ECO).

The enforcement of penalties shall be through a separate agreement between the Employer's Site Representative and contractor.

Penalties for non-compliance are imposed over and above the costs required for remediation/rehabilitation, and/or penalties that may be imposed in terms of relevant legislation.

3.3.3.10 Regulatory Authorities' Site Inspections

The Eastern Cape DEDEAT, and other relevant authorities, e.g. DHSWS may conduct site inspections as desired.

3.3.3.11 Record Keeping

The contractor must ensure that all documentation related to the EMPr is filed and made available on request to the authorities. The following documents may be relevant:

- Environmental Authorisation.
- Environmental Management Programme.
- Monthly site inspection checklists.
- Monthly audit reports.
- Design documents and drawings.
- Construction site layout plans.
- Method statements.
- Communication and correspondence.
- Environmental awareness training programme and attendance records.
- Environmental incident and accident reports.
- Emergency preparedness and response plans.
- Complaints register.
- Site diary.

3.4 Environmental Awareness Training

A copy of the approved EMPr shall be available at the construction site at all times and all staff; contractors and sub-contractors shall be familiar with or be made aware of the contents of the EMPr and environmental authorisation.

- The contractor and staff are required to attend an environmental awareness training/induction course prior to construction commencing[3] and to keep attendance registers.
- Training programs must include (but not necessarily be restricted to) the following briefs:

[3] If new staff are taken on during the course of construction, they are to attend the course before or as close as possible to the time they start work.

- Basic awareness and understanding of the key environmental features of the work site and environs.
- Understanding the importance of, and the reasons why, the environment must be protected.
- Ways to minimise environmental impacts.
- Requirements of the EMPr.
- Risks and protection from dangerous wild animals.
- Prevention and handling of fire.
- Health risks pertinent to the site, including prevention of diseases and/or viruses such as COVID 19, malaria, cholera, heat stroke and tick bite fever.

The contractor must ensure that its sub-contractors and employees (and any other third parties) attend the course.

A record of the environmental awareness training programme and attendance lists must be kept by the contractor in the environmental file on site.

3.5 Emergency Preparedness and Reporting

- The contractor must compile and maintain environmental emergency procedures to ensure that there will be an appropriate response to unexpected or accidental actions or incidents that will cause environmental impacts. The Employer's Site Representative should be familiar with these procedures and be responsible for the co-ordination thereof should there be multiple contractors on site simultaneously.
- Emergencies are defined as serious cases of the following incidents, which cannot be dealt with according to the standard specifications contained in Sections 4 - 8, and include:
  - Accidental discharges to water and land.
  - Accidents involving members of the public.
  - Accidental spillage of hazardous substances.
  - Accidental exposure of employees to hazardous substances.
  - Accidental fires.
  - Injurious encounters with dangerous animals.
  - Natural disasters (e.g. flooding).

These plans should include:

- Emergency organisation (manpower) and responsibilities, accountability and liability.
- A list of key personnel.
- Details of emergency services applicable to the various areas at Coffee Bay and Hole in the Wall (e.g. the fire department, ambulance services, spill clean-up services, etc).
- Internal and external communication plans, including prescribed reporting procedures where required by legislation.
- Actions to be taken in the event of different types of emergencies.
- Incident recording, progress reporting and remediation measures required to be implemented.
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.
- Training plans, testing exercises and schedules for effectiveness.

In compiling the emergency plans, the contractor shall comply with the emergency preparedness and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), the National Environmental Management Act, 1998 (Act No. 107 of 1998), the NWA (Act No. 36 of 1998) and the National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) as amended and/or any other relevant legislation.

3.6 Liaison with Interested and Affected Parties (I&APs)

Liaison with I&APs is to be co-ordinated by the Employer's Site Representative and the contractor. This shall include liaison with land users, landowners, local businesses, utility and service providers[4], neighbours, and relevant authorities.

Complaints or queries received from I&APs and actions taken to address complaints shall be addressed in writing (with copies forwarded to the Employer's Site Representative and ECO). Copies of all interactions and correspondence shall be kept as part of record keeping by the contractor.

3.7 Review and Updating of the EMPr

The EMPr is a living document and should be reviewed and updated in response to new or changing technical information, environmental conditions, legislation and policy, and environmental best practice. Substantial changes must be approved by the Eastern Cape DEDEAT.

Sections 4 to 8 contain the environmental specifications required for each of the stages, viz. design, pre-construction, construction, rehabilitation and operation. These sections are deliberately repetitive, as in many cases, an environmental aspect requires attention at more than one stage of the project cycle.

[4] The Project Engineer is to ensure liaison with utility operators regarding safety requirements for work within or crossing utilities.

4 DESIGN PHASE

Various environmental management considerations must be dealt with prior to construction by the Employer's Site Representative, Environmental Control Officer and/or the contractor. Responsible parties are indicated in the sections below.

4.1 Technical Design

Environmental sensitivities identified during the Basic Assessment (BA) must be communicated to the Employer's Site Representative by the Environmental Assessment Practitioner (EAP) so that, where applicable, project specific mitigation measures may be incorporated into the technical designs.

4.2 Erosion Control and Drainage

- Technical design and planned construction methods must build in measures to prevent soil erosion associated with construction, with particular attention given to scour points, crossings of water bodies and drainage lines, storm water outlets, transgressive soils, sand sharing systems and other areas of high erosion potential, such as steep slopes (where these cannot be avoided).
- In determining the location of the construction camp and stockpile areas, areas of high erosion potential must be avoided.
- The design must allow for the ground conditions encountered, including adequate allowance for settlement of embankments and drainage layers.
- Technical design and planned construction methods must build in measures to avoid soil compaction associated with construction.
- Drainage systems must be kept as natural as possible. Natural drainage must be retained, and normal flow ensured at all times.
- Runoff must not be canalised or concentrated in areas where sheet flow may occur, or where highly erodible soils occur.
- Erosion or scouring of any watercourses resulting from construction must be prevented.
- Alteration of groundwater movement patterns must be prevented. To this end, design and planned construction techniques to provide for subsurface water movement are to be implemented.
- No excavation of alternative channels to re-route any river/stream may be done (to avoid unnecessary erosion).

Refer to Section 6.8 for further detail regarding erosion control and drainage considerations.

4.3 Protection of Sensitive Ecosystems and Habitats

- Prior to construction commencing, the project area must be inspected by the ECO to identify the following:
  - Protected trees (which should be avoided as far as possible).
  - Prior to the clearance of any vegetation the ECO and Contractor must check that no bird nests will be disturbed by the proposed vegetation clearing.
  - In the event that a protected tree species needs to be removed, the contractor must obtain the agreement of the ECO and the necessary licence from the DFFE for its removal.
  - Identify and mark large, established, indigenous trees that should not be removed.
  - Suitable sites for the relocation of sensitive plant material to be removed and trees to be transplanted (Annexure 2).
  - Areas outside the construction site for off-site mitigation (where relocation is not possible).
  - Where necessary, appoint a qualified botanist to aid with the above-mentioned tasks.
- The Employer's Site Representative, in consultation with the contractors EO, must prepare a programme to remove alien invasive plants on site during the construction period.
- In sensitive areas, such as the transgressive dune habitat and indigenous scarp forest, the construction footprint must be kept to a minimum.
- Watercourse and wetland protection measures must be put in place.

- At Coffee Bay, the position of the new ablution facilities must be located out of the 1:50 and 1:100 flood line levels and must be situated at least 3 m from the heel of the dune.
- At Hole in the Wall, the coastal forest must not include any formalised walkways.

Refer to Section 6.1.3 for further details regarding the protection of sensitive environments.

4.4 Stockpile Areas

- Where possible, stockpile areas must be identified and approved by the Employer's Site Representative and ECO during the design phase.
- Where possible, stockpile areas must be located within the construction site.
- Environmentally sensitive and no-go areas must be avoided.
- If the stockpile area is located closer than 50 m to a watercourse, erosion prevention measures must be designed and implemented.
- As far as possible, existing roads must be used to access stockpile areas.

Refer to Section 6.6 for further detail regarding stockpiling.

4.5 Spoil Areas

- The contractor must dispose of excess trench/road excavation material and construction rubble in approved spoil areas which must be located outside the Coffee Bay and Hole in the Wall development nodes.
- Where possible, spoil sites must be identified and approved during the design phase. In determining the appropriate location of spoil areas, cognisance must be taken of sensitive and no-go areas.
- Excess material may also be used to replace unsuitable local material (e.g. stabilisation for walkways or foundation for grass blocks).
- Spoil areas must not negatively affect surface drainage and must not alter the topography to the extent that they become visually intrusive.
- Spoil areas must be re-vegetated and rehabilitated after construction.

Refer to Section 6.6.2 for further detail regarding spoil.

4.6 Access Roads

- The design phase must make provision for the utilisation of existing roads in the area (as far as possible).
- The design phase must make provision for the establishment of required temporary access roads within the boundaries of the construction site. Where roads are required outside the construction site, sensitive and no-go areas must be avoided.
- The final design must detail all access roads outside the construction site.
- Any clearing for access roads, both within, and where necessary, outside the construction site may only be undertaken once the necessary landowner/land user permission has been obtained.

Refer to Section 6.2.6 for further detail regarding roads and access.

4.7 Disturbance to Land Users and Service Providers

- The minimum disruption to services must be maintained at all times.
- The design must address the disturbance of access to affected land users during the construction phase, and must make provision for maintaining access, adequate notice of access closures and alternative routing if required.
- The accommodation of services must be incorporated into the design with full liaison with the relevant utility companies regarding safety requirements for work within or crossing utility servitudes.

- Dust control management practices and procedures must be defined during the design phase to ensure the effective suppression of dust during construction.
- Design must include mitigation measures in order to ensure construction noise levels are within permitted levels.
- Sufficient notice to the local community, including affected land users and/or tenants, must be provided by the Employer's Site Representative before construction commences. Information regarding the expected types of construction activities must be supplied.

Refer to Section 6.10 for further detail regarding nuisance control.

4.8 Visual Impacts

The design of the proposed development must consider visual impacts at the Coffee Bay and Hole in the Wall development nodes. The location of coastal infrastructure components may not alter the local "sense of place" Visual impacts must be mitigated through the following:

- The design of the proposed coastal infrastructure must conform to the topography of the area.
- The layout of the proposed coastal infrastructure must make use of the natural vegetation as best possible to screen and conceal associated infrastructure.
- The viewing decks and/or walkways must be positioned within the dune vegetation at Coffee Bay. The placement of the viewing platforms and walkways must take into consideration large trees on the coastal dune so as not to disturb them. Some pruning of trees may however be required to maximise views and to provide safe access to the viewing decks.
- At the Hole in the Wall, the use of existing footpaths and tracks must be promoted.

4.9 Aesthetics

- During design, the overall aesthetics of the project must be considered, with a view to minimising any potential negative impacts and/or improving the visual aesthetics of the receiving environment.

5 PRE-CONSTRUCTION PHASE

The pre-construction phase refers to the period following final project planning and the tender period, leading up to, but not including the establishment of the appointed contractor on site. These items may be the responsibility of the Contractor or the Employer's Site Representative. Input and assistance may be obtained, where necessary, from the ECO.

5.1 Construction Site Layout Plan

A construction site layout plan must be compiled during the design phase by the Employer's Site Representative, with assistance from the ECO. The plan should show the positions and extent of the known permanent and temporary site structures and infrastructure as listed below (as applicable):

- Site access (including entry and exit points).
- Roads and access routes.
- Buildings and structures.
- Storage yards (Poly-timber material, concrete pipe culverts, bollards etc.).
- Site office.
- Security requirements (including temporary and permanent fencing)
- Gates and fences.
- Essential services (permanent and temporary water, electricity and sewage).
- Sanitation (including the treatment/removal of sewage).
- Construction materials storage areas including the storage of fuels.
- Vehicle and equipment storage areas.
- Storm water control measures.
- Excavations and trenches.
- Stockpile/lay-down areas.
- Spoil areas.
- Waste management including waste storage and disposal.
- Areas where vegetation will need to be cleared.
- Features and plants to be conserved.

5.2 Construction Preparation

- The contractor must ensure that any required written permission from the Eastern Cape DEDEAT has been obtained prior to construction commencing.
- The ECO must take detailed, colour photographs of the site before any clearing may commence.
- The contractor must ensure that he/she is familiar with the following prior to construction commencing:
  - Sensitive areas.
  - Mitigation measures.
  - Large, established, indigenous trees that should not be removed.
  - Wetlands and rivers/streams likely to be intersected by the project.
- Sanitation arrangements must be made to the satisfaction of the ECO and the Eastern Cape DEDEAT and be compliant with all applicable legal requirements.
- The contractor must ensure that the Eastern Cape DEDEAT are given timeous notice of the intention to commence construction.

5.3 Acquisition of Permits and Licences

Applicable permits and licences must be obtained prior to construction, as per section 2.3.

5.4 Procurement Process

- The contractor's procurement process is bound by the contract agreement with the Employer's Site Representative and must be in accordance with applicable procurement norms and standards.
- Local institutional structures, e.g. Traditional authorities, must be included in the procurement process.
- Where practical and applicable, training must be provided to local labourers in order to perform more specialised jobs.
- The contractor must trade locally for goods and services, where possible and practical.
- The contractor is encouraged to make use of emerging contractors from formerly disadvantaged communities, as sub-contractors or by the formation of joint ventures.

6 CONSTRUCTION PHASE

The construction phase refers to the period of the project during which construction activities are carried out. This section of the EMPr outlines those general environmental specifications that are required to be implemented by the Contractor and their appointed EO during construction. Where applicable, approval, assistance and/or guidance may be sought from the Employer's Site Representative and the ECO.

6.1 Site Establishment

When establishing the site, the environmental objective is to minimise the footprint of disturbance and to minimise the extent of soil erosion, loss of vegetation and the potential for pollution of soils and water resources.

The site must be established in accordance with the approved construction site layout plan, prior to the commencement of construction. Any relaxation or modification of the construction site layout plan must be approved by the Employer's Site Representative and ECO.

6.1.1 Demarcation of the Site

The extent of the construction site, including working areas, must be clearly demarcated and no movement or work outside these areas is permitted. The contractor must:

- Identify and demarcate the extent of the construction site as indicated on the approved construction site layout plan using barrier tape with steel droppers or another method as approved by the Employer's Site Representative.
- Minimise the extent of the construction site footprint as much as possible.
- Ensure that the site camp is completely fenced and has controlled security access.
- Identify and demarcate sensitive sites in collaboration with the ECO. This may require fencing or steel droppers with barrier tape.
- Maintain site demarcations in position until the cessation of construction works and ensure that no personnel or construction materials move outside the demarcated areas.
- Ensure that the site is not used for any other purpose other than for the carrying out of construction activities.
- Ensure that no natural features are painted or permanently marked. Marking for surveying and other purposes must be done using pegs, beacons or rope and droppers.

6.1.2 Site Clearance

<u>Specific conditions for Coffee Bay and Hole in the Wall:</u>

- Alien invasive grasses such as *Pennisetum clandestinum* (Kikuyu) must not be used.
- Registered herbicides must strictly be applied to alien invasive vegetation only.
- Management of construction related impacts such as eating areas, concrete mixing areas, storage yard should only be allowed in designated areas outside the ESA and CBA zones.
- Vegetation in parking areas should not be removed and replaced with permanent hard surfaces which could alter the surface water flow however grass blocks are acceptable. Formalisation of the parking area should be done with grass blocks to ensure continued water flow to the wetland

<u>General conditions:</u>

- Prepare a programme to remove alien invasive plants on site during the construction period.
- All alien invasive plants must be removed. The ECO must do regular follow-ups to ensure no alien invasive plants establish.
- Successful re-vegetation is crucial in disturbed areas outside the project footprint to stabilise soils and limit infestation by invasive alien plant species and dominance by ruderal species. Rehabilitation must be undertaken on a progressive basis in such areas.

- Topsoil stockpiles must be monitored regularly to identify any alien plants. If any occurs, they must be removed before they germinate to prevent contamination of the indigenous seed bank.
- Strict management during construction phase to limit the extent of the footprint of the impact.
- No areas outside the final footprint may be cleared.
- Detailed, colour photographs shall be taken of the proposed site before any clearing may commence. These records are to be kept by the ECO to aid in the rehabilitation of the site.
- Prior to site clearance, the ECO must be informed, with 14 days' notice, in order to identify and demarcate any indigenous trees or plants, nesting sites or heritage sites that require protection or translocation.
- Areas of the construction site requiring clearance shall only be cleared immediately prior to construction activities commencing, i.e., at the last practicable stage.
- Clearance of indigenous vegetation must be kept to an absolute minimum.
- No indigenous trees or shrubs may be felled, lopped, pruned or removed without the prior permission of the ECO. De-bushing and de-stumping are dealt with in Section 6.1.6 of this document.
- Cutting of trees should be undertaken in a way that no nest (birds or other) is in the cut portion, unless approval has been obtained from the ECO. The ECO should consider the conservation status of the animal species in question before making a decision.
- Wood obtained from clearing and grubbing operations remains the property of the Employer and must be stacked at sites designated by the ECO. The contractor shall be required to remove and dispose of any wood from site at a designated site for vegetation disposal, should this be required. Alternatively, the wood may be made available for use by local communities following consultation with the Employer.

6.1.3 Protection of Strategic Water Source Areas

Specific conditions for Coffee Bay:

- Where possible, the timing of trenching and pipe laying through the artificial system should be during the low flow season to minimise increased sedimentation and turbidity.
- No construction materials may be stockpiled in any wetland and riparian areas.
- Replanting of wetland and riparian vegetation must be undertaken immediately after surface reinstatement is complete.
- Where possible, plants must be replanted in wetland and river/stream areas from which they were removed.
- The pre-construction profile of the artificial wetland must be returned to one similar as before construction.
- The ECO and contractor must ensure that all wetlands and rivers (estuarine habitats) likely to be affected by the project have been identified, delineated, photographed and clearly marked by the ECO prior to any construction work occurring.
- Culvert protection measures should be used where the structural integrity of the culvert crossing may be compromised.
- The culvert crossings should be designed to ensure that flow patterns along the wetland is not altered or diverted potentially resulting in stream bed and bank erosion and instability.
- Engineering designs should cater for current wetland conditions to ensure limited impaction on the function of wetlands.

General conditions:

- Formalisation of the parking areas should be done with grass blocks to ensure continued water flow to the wetland.
- The contractor must not cause any physical damage to any aspect of a watercourse, other than that necessary to complete the works as specified and in accordance with the accepted method statement.
- The appointed ECO and contractor must ensure that all wetlands and rivers/streams likely to be affected by the project have been identified, delineated, photographed and clearly marked by the ECO prior to any construction work occurring.
- The contractor must avoid unnecessary compaction on sensitive wetland and riparian soils.

- The use and handling of all chemicals and potentially hazardous substances must take place on an impermeable surface and bunded areas to prevent chemicals and potentially hazardous substances from infiltrating the soil.
- Contingency plans must be compiled for possible spillages of dangerous goods and include details for decontamination and process to be followed.
- A spill kit must be available in the event of a hydrocarbon or chemical spill.
- Construction activities and lay down activities should be located outside the wetland buffer zones.
- No construction in wetlands may take place until such time as approval has been obtained from DHSWS.

6.1.4 Protection of Fauna

- Intentional killing of any faunal species should be avoided by means of awareness programs and toolbox talks presented to construction labourers.
- Any person found deliberately harassing any animal in any way must face disciplinary measures.
- If any faunal species is recovered during the construction phase, this species must be relocated to the nearest natural open space with suitable habitat for the particular species to survive;
- Wild animals must not be fed, handled, removed, hunted, snared, captured, injured or killed or otherwise interfered with. The penalty clause associated with the needless destruction of wildlife is a fine and/or imprisonment[5].
- The contractor must ensure that the construction area is kept clean, tidy and free of litter/rubbish that would attract animal pests.
- The contractor must not use any pesticides.
- Where open excavations or trenches pose a safety risk to animals, the contractor must ensure that they are adequately cordoned off.
- The Employer's Site Representative, in consultation with the contractor, must report problem or injured wild animals to the Eastern Cape DEDEAT.

6.1.5 Protection of Cultural Heritage Resources

- If a cultural heritage artefact is uncovered on site, work in the immediate vicinity must be stopped immediately. The contractor must take reasonable precautions to prevent any person from removing or damaging any such artefact and must immediately inform the Employer's Site Representative and ECO of such a discovery. Refer to Annexure 3 for the Chance Find Protocol.
- The ECPHRA must be contacted so that an archaeological/heritage resources consultant can be appointed to record the site and excavate if necessary.
- Work may only resume once clearance is given in writing by ECPHRA.

6.2 Site Infrastructure

6.2.1 Structures

- All structures, including offices, workshops, stores, etc. must be located as per the approved construction site layout plan.
- No personnel may be housed on the construction site. Accommodation for construction staff must be located in suitable venues off site.
- On site accommodation for security and emergency personnel must be securely fenced. These fences must remain in position for the duration of construction.
- Essential services must be provided and maintained in a functional state and not overloaded. Defects and inadequacies must be rectified immediately.

6.2.2 Services

6.2.2.1 Water

[5] In terms of the Animals Protection Act, 1962 (Act 71 of 1962) Section 2.

- Water for any construction activities must be obtained from a municipal supply point or must be purchased privately. No water from natural water bodies may be abstracted and used for construction purposes.
- Should the abstraction of water be required, permission from DHSWS must be obtained prior to abstracting water from any water resource where the volumes abstracted require registration or licensing in terms of the NWA (Act No. 36 of 1998) and any general authorisation in terms of Section 39(1) of the National Water Act.

6.2.2.2 Sanitation and Ablution Facilities

- The contractor's intended methods for waste management and waste minimisation must be implemented at the outset of the contract and approved by the Employer's Site Representative.
- Adequate sanitation facilities[6] must be provided and maintained for construction workers and security personnel on site.
- Sanitation facilities must be in the form of portable serviced toilets.
- Separate sanitation facilities must be provided for male and female workers.
- Outside toilets must be adequately secured to prevent them from blowing over and provided with doors and locks.
- The facilities must be placed outside areas susceptible to flooding.
- The conservancy tank at Coffee Bay must be designed to handle the expected volume of wastewater and sewage at a 100 % occupancy rate.

6.2.2.3 Power Supply

- The power supply to be used is to be approved by the Employer's Site Representative and EO.
- If generators are to be used, establish generators, motors and stored fuel on a hardened, bunded surface (bund must have a capacity of 110% of the fuel stored) and ensure any associated pollution is controlled (Section 6.4.4).
- Noise from generators must be controlled (Section 6.4.6).

6.2.2.4 Mixing of Concrete

- Management of construction related impacts such as eating areas, concrete mixing areas, storage yard should only be allowed in designated areas –outside the ESA and CBA zones.
- Concrete may only be mixed in an area of low environmental sensitivity to be identified and approved by the ECO.
- Clear topsoil from the mixing site and stockpile for later rehabilitation purposes.
- Cement may not be mixed directly on the ground, but rather on a protective sheet or board.
- Protect the mixing site on the up-slope side with a sandbag system to deflect clean surface runoff away from the mixing site.
- Contain the mixing site on the down-slope side with a sandbag system to control contaminated runoff and construction water emanating from the mixing site.

6.2.2.5 Construction Camp and Lay-Down Areas

- The construction camp will house administrative offices, construction plant, material stockpiles, fuels, storage facilities and security guard accommodation.
- The construction camp must be located in a previously disturbed area. Landowner consent must be obtained prior to establishing a construction camp and lay down area on private property.
- All storage areas and material lay-down sites must be located within predetermined zones as per the approved construction site layout plan.
- Additional areas required by the contractor for lay-down and storage must be approved by the Employer's Site Representative with input from the ECO, in the form of an amended construction site layout plan indicating the extent and anticipated utilisation of the storage and lay-down areas.

[6] Chemical toilets and hand washing facilities.

- The construction camp and lay-down areas must be kept secure and neat at all times with appropriate access control measures employed during construction.
- Security lighting must be positioned so that it does not pose a nuisance to neighbouring properties.

6.2.2.6 Storm Water Control

- Appropriate drainage measures must be taken to ensure that excessive run-off, and as a result, soil erosion, does not occur from the construction site.
- Where directed by the ECO, embankments must be grassed to minimise erosion.
- Storm water diversions must be constructed above the works areas to direct run-off away from the site.

6.2.2.7 Roads and Access

- As far as possible, existing roads must be used for access purposes, as per the construction site layout plan.
- Adequate vehicle turning areas must be provided.
- Alternative temporary access routes must be provided where construction will obstruct existing access.
- Routes through drainage lines and riparian zones must be avoided wherever possible. When this is unavoidable, only one road is permitted, constructed perpendicular to the drainage line (use of existing crossing points is recommended).
- Speed limits appropriate to the type and condition of road must be enforced at all times.
- All access routes and roads must be adequately maintained in order to minimise erosion, undue surface damage and pollution.
- Topsoil (and other material) that has accumulated inside drains of roadways must be regularly removed to keep these open and functional.
- Gravel or cement spillage must be cleared immediately (both within and outside the construction site).
- Damage to public or private roads caused by the contractor during the construction phase must be repaired immediately to the same or a better state.
- No off-road driving is permitted outside of the demarcated construction area or in sensitive areas.
- Traffic disruptions along roads must be minimised and controlled.

6.3 Implements and Equipment

- Mobile plant and equipment which is appropriate to the task must be utilised in order to minimise the impact and extent of damage to the environment.
- Should the ECO at any time determine that the method, mobile plant or equipment utilised by the Contractor is unsuitable for the task at hand, or unnecessarily detrimental to the environment, then he/she must specify the use of a suitable alternative.

6.4 Site Management

6.4.1 Solid Waste

- Solid waste must be stored onsite in an appropriate manner until it can be disposed at the nearest identified, licensed waste fill site.
- The contractor must exercise strict care in the disposal of construction waste, with proof of disposal at an approved site provided after off-loading each waste load and this is to be logged/registered within the Environmental File that must be maintained at the contractor's camp for duration of construction.
- The Contractor's method statement for waste management and waste minimisation must be implemented at the outset of the contract and approved by the Project Engineer.

- The Contractor must ensure that personnel make use of the litter bins provided and that the construction site and the construction camp are always kept tidy and litter free.
- All domestic waste must be collected in litter bins.
- Litter bins must be equipped with a closing mechanism to prevent their contents from blowing out and scavengers from getting in.
- Litter bins must be emptied weekly (or as required before they reach capacity).
- Domestic waste must be taken to the multipurpose buy back centre and waste transfer facility in Coffee Bay. Waste must be transported responsibly, avoiding waste spills en-route.
- Where necessary, a storage area must be dedicated on site for the collection of construction waste.
- No solid waste may be burned or buried on site.

6.4.2 Liquid Waste

Specific conditions for Coffee Bay:

- Whilst decommissioning the existing ablution facility at Coffee Bay, the contents of the conservancy tanks must be removed with a honey sucker (or similar) and disposed at an approved wastewater treatment plant. Thereafter, the conservancy tanks (including pipes etc.) must be excavated and disposed at a municipal approved waste storage facility.
- The conservancy tanks must be designed to handle the expected volume of wastewater and sewage at a 100 % occupancy rate.
- Monitoring of the conservancy tank systems must occur during operations.
- Monitor for signs of a blocked or leaking conservancy tanks.
- Monitor sewage pipelines for leaks. Should leaks be noted, repairs must be undertaken immediately, and spillages must be cleaned up immediately.
- Closely monitor the conservancy tanks and evapotranspiration areas after heavy rain to ensure that malfunctions and leakages are not occurring.

General conditions:

- Suitable, sufficient and conveniently located sanitation facilities must be provided as per the approved construction site layout plan.
- During construction, portable toilets are to be provided and regularly serviced by a suitably qualified service provider. Sewage must be disposed at a licensed wastewater treatment works and under no circumstances may it be dumped in the bush or buried. Proof of disposal by the appointed service provider must be kept in the environmental file on site.
- The new conservancy tanks must only be installed by registered installers.

6.4.3 Hazardous Waste

- Compliance with all national, regional and local legislation must be ensured with regard to the storage, handling and disposal of hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials.
- Hazardous waste must be stored as indicated on the approved construction site layout plan.
- Drip trays must be used where dispensing mechanisms or stored receptacles may leak.
- No spillage of hazardous products must be allowed on site. Special care must be taken to avoid contamination of surface or groundwater.
- Under no circumstances shall the spoiling of hazardous products on site be allowed.
- Waste oils and batteries must be retained for recycling by the supplier, wherever possible.
- Used oil and lubricants must be collected in a holding tank and disposed at a licensed hazardous waste disposal site. Disposal certificates must be provided in the Environmental File on site.
- Hazardous waste not earmarked for reuse, recycling or resale must be disposed at a licensed hazardous waste disposal site. Disposal certificates must be provided in the Environmental File on site.
- The repair and/or maintenance of vehicles and equipment on site are not permitted, other than emergencies (excepting within the contractor's site camp).

6.4.4 Pollution Control

- The storage for any substance, which causes or is likely to cause pollution must not be located within the 1:100-year flood line, or within a horizontal distance of 100 m (whichever is greater) of a watercourse, drainage line or identified wetland.
- Waste or foreign material must not be dumped into any watercourses or wetland areas.
- Watercourses and wetland areas must not be used for swimming, bathing, or the cleaning of clothing, tools, equipment or vehicles.
- The discharge of water containing polluting matter or visible suspended materials, fines and sediments directly into drainage lines or wetlands is prohibited.
- Unpolluted water/runoff must be deflected away from any dirty area.
- No storm water must enter any drainage installation for the reception, conveyance, storage and/or treatment of sewage.
- Special care during rainy periods must be taken to prevent the contents of sumps and drip trays from overflowing.
- Before any water is permitted to enter natural drainage lines, the quality of the water must comply with the South African Water Quality Guidelines (Department of Water Affairs and Forestry, 1996) and the Standard Requirements for Effluent and Wastewater[7].
- The contractor must ensure that an emergency preparedness plan is in place for implementation in the case of a spill of substances that can be harmful to an individual or the receiving environment.
- Oil or fuel spills must not be hosed into a storm water drain or sewer, or into the surrounding natural environment.
- Small oil or fuel spills must be cleaned with an approved absorbent material, such as 'Drizit' or ‘Spill-sorb’.
- Oil or fuel spills must be contained in water using an approved oil absorbent fibre.
- Soil contaminated by oil or fuel must be treated using one of the following approved methods, as per instruction of the ECO:
  - The soil to the depth of the contamination must be removed and disposed at a licensed hazardous waste disposal site. Disposal certificates must be provided in the Environmental File on site.
  - The soil to the depth of the contamination must be removed and regenerated using approved bio-remediation methods.
- All on-site operations that involve the use of cement and concrete must be carefully controlled.
- Cement and concrete mixing must be limited to single sites, where possible.
- Plastic trays or liners must be used when mixing cement and concrete (cement and concrete must not be mixed directly on the ground).
- All visible remains of excess cement and concrete must be disposed after the completion of tasks. Solid waste concrete must be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste.
- Water and slurry from cement and concrete mixing operations must be contained and directed into a settlement pond or sludge dam for later disposal.
- Trucks delivering concrete may not be washed on site.

6.4.5 Air Quality

- There will be no emissions other than exhaust and dust emissions. Dust generated on site will however be limited given the sandy nature of the surrounding soils.
- Dust-suppression techniques (e.g. the use of water spray vehicles) must be employed on all exposed surfaces during periods of high wind. Additional dust suppressing activities include:
  - Remove only limited vegetation to accommodate construction activities.
  - Spray unpaved roads and construction areas, including stockpiles and spoil, with water routinely throughout construction to contain dust.

[7] As set out in Government Notice 399 (26 March 2004) – Revision of General Authorisations in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998) Sections 21(f), (h) and (g).

- Implement traffic control measures to limit vehicle entrained dust from unpaved roads (e.g. by limiting construction vehicle speeds and by restricting traffic volumes).
- Re-vegetate verges and cuttings once all construction is completed, and when the lay down area/construction camp is vacated.

- ❑ Vehicles emitting black smoke and fumes must be repaired and maintained.
- ❑ No burning of waste material shall be allowed anywhere on site.

6.4.6 Noise Control

- ❑ Compliance with the legislation with respect to noise is mandatory.
- ❑ All construction activities are confined to working hours Monday to Friday. There shall be no construction over weekends and on public holidays. Night work is specifically prohibited. Adjacent residents must be notified of any construction activity that is likely to cause a nuisance.
- ❑ Noise suppression measures must be applied to all construction equipment.
- ❑ Construction equipment must be kept in good working order and, where appropriate, fitted with silencers.
- ❑ Community complaints with regard to noise must be responded to, taking reasonable action to ameliorate the impact.

6.4.7 Fire Control

- ❑ Adequate precautions must be taken to ensure that fires are not started as a result of construction. The contractor will be held liable for any damage to property adjoining the site as a result of any fire caused by one of his employees.
- ❑ The contractor must compensate affected neighbours for any loss due to fire resulting from the contract.
- ❑ The construction site must be equipped with adequate firefighting equipment[8] (this includes at least rubber beaters when working in veld areas, and at least one fire extinguisher in each vehicle of the appropriate type, irrespective of the site).
- ❑ Immediate steps must be taken to extinguish any fire, which may break out on the construction site.
- ❑ No open fires are permitted anywhere on site.
- ❑ Fuel or chemicals must not be stored under trees.
- ❑ Gas and liquid fuel must not be stored in the same storage area.
- ❑ Smoking must not be permitted within 3 m of any fuel or chemical storage area, or refuelling area.

6.4.8 Health and Safety

- ❑ Adhere to the requirements of the Occupational Health and Safety Act, and associated Construction Regulations.
- ❑ Ensure that emergency numbers and First Aid supplies are always easily accessible.
- ❑ Obey speed limits and travel more slowly where conditions dictate.
- ❑ Ensure that operators and drivers limit their potential of endangering humans and animals at all times, by observing strict safety precautions.

6.4.9 Safety and Security

Where relevant, implement security measures to:

- ❑ Prevent access by people with criminal intent.
- ❑ Prevent dangerous animals entering the site.
- ❑ Comply with the relevant provisions under the Occupational Health and Safety Act, and associated Construction Regulations.

[8] In terms of SABS 1200.

- Inform staff of the risk of contraction, the symptoms thereof, and the steps for prevention and treatment of the following:
  - COVID 19.
  - HIV/AIDS.
  - Malaria.
  - Tick bite fever.
  - Heat stroke.
  - Cholera.

6.5 Earthworks

6.5.1 Excavations and Trenches

Specific conditions for Coffee Bay:

- Excavation and/or trenches may be required for the construction of the pipe culvert at Coffee Bay, the clearing and/or levelling for the dedicated parking areas and for minor landscaping.
- For the replacement and/or installation of pipe culverts, excavations must be undertaken carefully, incorporating appropriate drainage.

General conditions:

- Excavate and backfill trenches on a progressive basis.
- The contractor must not have more than 150 m of trench open at any one time and all trenches must be backfilled on the same day (open lay and backfill each day).
- Excavations must not stand open for longer than two days, where possible (maximum of four days). Excavations should preferably be opened and closed on the same day.
- Where trenches pose a risk to human or animal safety, they must be adequately cordoned off to prevent accidents.
- For significant trees identified by the ECO, trenching must be outside the drip line of the tree as specified by the ECO.
- If de-watering is required where the water table is high, the trench should be open only for one day.
- Wild animals that are found trapped in excavations must be assisted provided there is no risk to workers' safety. Should there be a danger to workers, or the animal is injured, the matter should be reported to DEDEAT as soon as possible.
- Excavations within the development footprint must be programmed to take place once the required materials are on site. This facilitates the immediate laying of services and/or construction of subsurface infrastructure and minimises open excavations time.
- Where trenching through wetlands and drainage lines is required (as per the approved site layout plan), the contractor must return the profile of the wetland/drainage line to one similar to the pre-construction profile. No ridge or channel feature may remain.

6.5.2 Shaping and Trimming

- The contractor must execute bulk (shaping) and fine (trimming) earthworks according to the design (aimed at the prevention of soil erosion, efficient storm water control, the eventual reestablishment of vegetation and of ultimately achieving aesthetically acceptable landscapes).
- The shaping and trimming operations must be planned to allow for topsoil application: final trimmed levels must make provision for the specified depth of reapplied topsoil.
- Trimmed surfaces must be left slightly rough to facilitate topsoil binding for the natural establishment of vegetation.
- Where machine operations are not practicable, trimming must be carried out using hand tools.

6.5.3 Borrow Pits and Rock Quarries

- Where it is required to import material, this shall be from legal[9] commercial sources or legal borrow areas. Sources of material are to be approved by the ECO, to ensure that no importation of alien invasive plant seeds or other potentially hazardous substances occurs.

6.6 Stockpiles, Storage and Handling

6.6.1 Topsoil

- If temporary stockpiling is required, stockpiles must be positioned as indicated on the approved construction site layout plan.
- Any additional topsoil stockpile areas required by the contractor must be approved by the ECO, in the form of an amended construction site layout plan indicating the position and extent thereof.
- Topsoil is to be kept separate from subsoil and handled twice only – once to strip and stockpile, and once to replace and level.
- Topsoil stockpiles must be positioned on the higher side of a disturbed area, and above the 1:50 year flood line wherever possible.
- The stockpile height must not exceed 2 m.
- All topsoil must be stored in such a way and in such a place that it will not cause the damming up of water, erosion gullies, or wash away itself.
- Near watercourses or wetland areas, topsoil must be stockpiled above the riverine zone.
- Topsoil must not be stockpiled in drainage lines.
- Topsoil must not be stockpiled in sensitive areas.
- Topsoil must be stockpiled in a suitable form in order to minimise visual impact.
- Topsoil stockpiles must be protected from erosion by wind and water.
- Topsoil must not be compacted in any way during storage.
- Exotic/invasive plants and broad leaf weeds that emerge on topsoil stockpiles must be removed.
- If topsoil is to be stockpiled for extended periods, especially during the wet season, the ECO must recommend one of the following measures:
  - The stockpiles must be re-vegetated with indigenous grasses as indicated by the ECO.
  - The stockpiles must be covered with protective material, such as hessian mats.
- Topsoil must not be buried, mixed with spoil (excavated subsoil), rubble or building material, or subjected to compaction or contamination by vehicles or machinery. This will render the topsoil unsuitable for use during rehabilitation.
- The contractor will be held liable for the replacement of any topsoil rendered unsuitable for use during rehabilitation, for reasons due to his negligence or mismanagement on site.

6.6.2 Spoil

- No spoil sites are permitted within the Coffee Bay and Hole in the Wall development nodes.
- A photographic record (before construction and after rehabilitation) must be kept of all spoil sites for monitoring purposes.
- The reinstated construction site, used as a spoil area for excess trench excavation material, must only have a net increase in ground level of less than 200 mm. The reinstated site must be lightly compacted and made free draining.
- All construction rubble (including old braai and picnic material) must be removed from Coffee Bay and Hole in the Wall and disposed of at an approved waste disposal facility.
- Dumping of material over embankments is not permitted.
- The use of spoil sites for the disposal of hazardous or toxic wastes is not permitted.
- No spoil site may be located within 100 m of any watercourse or in sensitive areas.
- Spoil must be positioned on the higher side of a disturbed area, and above the 1:20 year flood line wherever possible.

[9] In terms of the requirements of the National Mineral and Petroleum Resources Development Act, 2002.

- Spoil must be stored in such a way and in such a place that it will not cause the damming up of water, erosion gullies, or wash away itself.
- If required, additional spoil storage areas required by the contractor must be approved by the ECO, in the form of an amended construction site layout plan. The following information is required for approval:
  - The location, description and access to proposed sites.
  - The quantity of material to be spoiled.
  - The type of material to be spoiled.
  - The proposed method of spoiling.
  - A proposal for the reinstatement and rehabilitation plan, including the final profile.
  - Written approval from the land user/relevant authority that material may be spoiled on the land in question, subject to conditions.
- Spoil areas must be re-vegetated and rehabilitated after the construction phase.

6.6.3 Vehicles and Equipment

- Vehicles used during construction must have the minimum impact on the environment and other road users.
- Vehicles, machinery and equipment must be checked regularly to ensure that none have leaks or cause spills of oil, diesel, grease or hydraulic fluid. Problematic vehicles, machinery or equipment must be removed form site immediately and sent for repair.
- Drip trays must be provided for any machinery that will be in position for longer than one day. Drip trays are to be watertight and must be emptied regularly and before rain events. The contents of drip trays are to be treated as hazardous waste.
- All the necessary handling and safety equipment for vehicles, machinery and equipment must be provided by the contractor and used or worn by staff.

6.6.4 Fuel

- Fuel stores must be positioned as indicated on the approved construction site layout plan.
- Fuel stores may not be located within the 1:100-year flood line, or within a horizontal distance of 100 m (whichever is greater) of a watercourse, drainage line or identified wetland.
- In the event the contractor has a diesel tank on site at the construction camp, the diesel tank must be on a stand, within a bunded area, with a metal drip tray under the dispensing hose. The dispensing hose must have a control pump with a valve, tap, hose and funnel.
- An impervious layer (paving or PVC sheeting with a layer of sand) must be provided adjacent to the diesel tank upon which vehicles must park during refuelling. This will help to accommodate fuel spills during refuelling.
- All spills (within the bund and dispensing area) must be directed to a collection sump.
- Spills and the contents of the sump must be treated as hazardous waste.

6.6.5 Hazardous Substances

- Compliance with all national, regional and local legislation must be ensured with regard to the storage, transport and use of harmful and hazardous substances and materials.
- The contractor must provide a register of hazardous substances to be used on site and must provide proof to the Employer's Site Representative that relevant authorisation to store such substances has been obtained from the relevant authority. In addition, hazard signs indicating the nature of the stored materials must be clearly displayed on the storage facility or containment structure.
- The contractor must provide the Employer's Site Representative with details of the preventative measures that are proposed to be installed in order to mitigate against pollution of the surrounding environment from leaks or spillages. This must include the emergency procedures to be implemented in the event of misuse or spillage of substances that will negatively impact on an individual or the environment.

- Hazardous substance stores must be positioned as indicated on the approved construction site layout plan, in areas not threatening human life or the environment.
- Hazardous substances may only be stored under controlled conditions (in a secured, appointed area that is fenced, has restricted entry, has weatherproof facilities, and is underlain by a bunded concrete slab to protect against soil and water pollution).
- Personnel handling hazardous substances must be trained in terms of the correct handling, use and disposal thereof.
- Empty containers in which hazardous substances were kept must be treated as hazardous waste.
- The responsibility for spill treatment lies with the contractor. The individual responsible for, or who discovers a hazardous waste spill must report the incident to the Employer's Site Representative.

6.7 Water Use

- Water must not be wasted (e.g. leaks must be repaired).
- Water must not be abstracted from any water resource without prior approval from the DHSWS.

6.8 Erosion Control

6.8.1 Drainage Systems

Specific conditions for Coffee Bay and Hole in the Wall:

- Silt traps must be installed on the development site boundary during construction.
- Erosion control structures must be put in place where soil may be prone to erosion.
- Multiple discharge points that are reasonably spread out across the working areas adjoining the wetland habitat to allow a diffuse spread of surface runoff, maximising the amount of infiltration.
- Bare areas where vegetation has been removed pose a risk of becoming a sediment load into the adjacent watercourses during heavy rainfall, this must be managed by placing it on the upslope side of the development site;
- Engineering structures (such as gabions or reno mattresses) for large discharge point must be used to dissipate and control energy of stormwater runoff before entering the watercourses.
- Bare areas where vegetation has been removed pose a risk of becoming a sediment load into the adjacent watercourses during heavy rainfall, this must be managed by placing it on the upslope side of the development site.

General conditions:

- Drainage must be controlled to ensure that runoff from the site will not culminate in off-site pollution or cause water damage to the environment or properties downstream of the site.
- Surface water or storm water must not be concentrated or permitted to flow along the walkway routes without erosion protection measures being in place.
- Wetlands, drainage lines and riverbanks must not be drained, filled or altered in any way, unless this forms part of construction or upon specific instruction by the ECO[10].
- The extent of hardened or paved areas must be kept to a minimum.
- The proposed grass block parking areas must adequately account for storm water runoff into the receiving environment.
- Temporary stormwater management structures must be used during construction. Any areas damaged as a result of stormwater runoff from the construction site must be rehabilitated immediately; and
- During rehabilitation, prompt and progressive reinstatement of bare areas is required. During reinstatement, the topsoil layer is to be replaced last, to simulate the pre-construction soil conditions.

[10] Relevant permits from DHSWS and DEDEAT are to be in place before such instruction may be given.

6.8.2 Erosion Protection

Specific conditions for Coffee Bay and Hole in the Wall:

- The control of soil erosion and siltation associated with construction and operation is important at all locations on site, and particularly adjacent to the Estuary and Coastal Forest. Both temporary and permanent soil erosion control measures must be used during the construction and operation phases.
- Any earth-worked areas, which may lay bare for extended periods, should be temporarily grassed by indigenous species.
- Incorporate adequate erosion management measures to limit erosion and associated sedimentation of the water resource. Management measures must include:
  - Berms.
  - Silt fences.
  - Hessian curtains and storm water diversion away from areas susceptible to erosion.
  - Care must however be taken to avoid additional disturbance during the implementation of these measures.

General conditions:

- Both temporary and permanent soil erosion control measures must be used during the construction and operation phases.
- Checks must be carried out at regular intervals to identify areas where erosion is occurring and remedial action must be taken.
- Structurally sound surface for a permanent road must be maintained, by providing adequate drainage so that erosion, excessive dust and undue surface damage are avoided.
- The careful position of runoff control, and planting of some vegetative cover after completion (indigenous groundcover, grasses etc.) must limit the extent of erosion occurring on the site
- All areas susceptible to erosion must be protected to ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and construction areas.
- Natural trees, shrubbery and grass species must be retained, wherever possible.
- Vehicular or pedestrian access must not be permitted into areas beyond the demarcated boundary of the construction area.
- Erosion problems must be repaired on a progressive basis throughout the contract.
- Slope's steeper than 1(V):3(H) or slopes where the soils are by nature dispersive or sandy must be stabilised (in consultation with the ECO). One or more of the following methods may be required:
  - Topsoil covered with a geotextile11, plus a specified grass seed mixture12.
  - A 50:50 by volume rock: topsoil mix 200 mm thick, plus specified grass seed mixture14.
  - Logging or stepping (logs placed in continuous lines following the contours).
  - Earth or rock-pack cut-off berms13.
  - Benches (sandbags).
  - Packed branches.
  - Ripping and/or scarifying along the contours.
  - Storm water berms.
- During construction, the ECO may identify additional slopes in need of stabilisation and will specify actions in terms of the most appropriate approved method and technology.
- Soils must be monitored for signs of erosion at regular intervals. Upon identification of a potential erosion problem, measures are to be put in place to prevent further soil loss.
- All disturbed areas, specifically the braai and picnic areas and dedicated parking areas must be landscaped to near-nature profile and revegetated after construction.
- All stormwater channels and cut-off drains must have a slope of <1% to reduce the surface water flow velocity downslope and to encourage infiltration.

11 Preferably made of sisal, with openings of at least be 225 mm^2 and guaranteed to last at least 24 months.
12 The subsoil must be broken up/roughened to properly bind with the topsoil.
13 Angled across the contour at approximately 30 degrees form the bisector of the contour.

6.9 Weed and Invader Plant Control

- The contractor is responsible for the control of weeds and invader plants within the construction area for the duration of construction.
- This control involves killing the plants present, killing the seedlings, which emerge, and establishing and managing an alternative plant cover to limit re-growth and re-invasion. Weeds and invader plants will be controlled in the manner prescribed for that category by the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (as amended) or in terms of Working for Water guidelines.
- The ECO must identify alien plants (terrestrial and aquatic species) that should be removed by the contractor.
- The ECO must monitor all sites disturbed by construction activities for colonisation by weeds, exotics or invasive plants, to be controlled by the contractor as they emerge.
- The use of herbicides is not permitted within sensitive areas.
- The removal of weeds and invader plants must be undertaken by hand.
- Affected areas must be reinstated and rehabilitated as soon as practically possible.

6.10 Nuisance Control

- Disruptions to tourism activities must be minimised and managed.
- Contractors must abide by Construction Regulations and Health and Safety Regulations.
- The contractor and staff are required to attend an environmental awareness training/ induction course prior to construction commencing and keep attendance registers.
- Cordon off construction sites and maintain boundary walls/fences/ boards in proximity to residential homes, lodges etc.
- Provide safe areas for pedestrian access.
- Surrounding communities must be informed about the project and asked to brief their children about the dangers of entering construction sites.
- Private property, access roads and other existing services on and in the vicinity of the construction site must be treated with respect and protected against damage. The contractor must bear the cost to repair damages as a result of the contractor's operations on site.
- Inform staff of the risk of contraction, the symptoms thereof, and the steps for prevention and treatment of the following:
  - HIV/AIDS.
  - Tick bite fever.
  - Heat stroke.
  - COVID-19.
- Dust control management practices and procedures must be defined during the design phase to ensure the effective suppression of dust during construction. The construction of viewing decks and walkways within the dune habitat is not expected to generate noise and dust, however, the contractor must compile method statements for conducting work within these environments.
- Dust-suppression techniques (e.g. the use of water spray vehicles) must be employed on all exposed surfaces during periods of high wind. Additional dust suppressing activities include:
  - Remove only limited vegetation to accommodate construction activities.
  - Spray unpaved roads and construction areas, including stockpiles and spoil, with water routinely throughout construction to contain dust.
  - No construction activities should be undertaken outside of standard business hours (06h00 – 17h00 Monday to Friday and 07h00 – 13h00 on Saturdays). There should be no construction activities on Sundays and public holidays.

7 REHABILITATION PHASE

The concept of progressive rehabilitation is to be implemented throughout the life of the project. As soon as work in one area is complete, rehabilitation of that site is to commence. This will involve returning the condition of the disturbed areas to a state that they were in before the project began, or better. The

Employer's Site Representative with assistance from the ECO will be responsible for the monitoring of rehabilitation.

Unless specified otherwise, the contractor shall be held responsible for the re-establishment of vegetation within the construction site boundaries for all areas disturbed during construction.

7.1 General Specifications

- The principle of progressive reinstatement must be followed wherever possible. This includes the reinstatement of disturbed areas on an ongoing basis, immediately after the specified construction activities for that area are concluded.
- As soon as a section of the development is finished and a construction site or works area vacated, the disturbed areas must be rehabilitated by levelling, alien plant eradication, topsoil dressing, vegetation establishment and landscaping.
- Erosion control measures must be implemented, and the effectiveness thereof must be monitored and corrected where necessary.

7.2 Removal of Structures and Infrastructure

- All construction plant, equipment, signage, storage containers, temporary fencing and gates, temporary services, fixtures, foundations and any other temporary construction infrastructure must be cleared from the construction site.

7.3 Stockpiles, Inert Waste and Rubble

- All stockpiles and surplus material must be transported to an approved location off site.
- After the stockpiled material has been removed, the site must be re-instated and rehabilitated.
- The site must be cleared of all inert waste and rubble, including surplus rock and foundations.
- Excess spoil and inert rubble must be transported to waste sites as approved by the Employer's Site Representative.
- All domestic waste must be removed and dropped off at a designated area for recycling and disposal.

7.4 Hazardous Waste and Pollution Control

- All fuel stores, hazardous substance stores, hazardous waste stores and pollution control sumps must be removed from site.
- Pollution containment structures must be removed from site.
- All sanitation infrastructure and wastewater disposal systems must be removed from site.

7.5 Final Shaping

- All disturbed areas must be shaped to blend in with the surrounding landscape.
- No excavated material or stockpiles must be left on site and all material remaining after backfilling must be smoothed over to blend with the surrounding landscape.
- The site must be monitored for signs of erosion and remedial action taken where there are problems.

7.6 Topsoil Replacement and Soil Amelioration

- Topsoil must be replaced prior to the rainy season or any expected wet weather conditions.
- Stockpiled topsoil must be replaced and redistributed, together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes and roads.
- Topsoil must be replaced to the original depth (i.e., as much as was removed prior to construction).

- Topsoil suspected to be contaminated with the seed of alien vegetation must not be used.
- Topsoil not utilised must be shaped in an acceptable manner to blend in with the local surrounding area.

7.7 Reinstatement of Wetland Areas and Water Courses

Where water courses or wetlands have been affected by construction activities:

- Ensure that watercourse banks are returned to their original profile.
- The surface reinstatement of wetland areas is to ensure that no depressions remain that could act as channels for preferential water flow (thereby affecting the hydrological regime of the wetland).
- The contractor shall preserve all riparian and wetland vegetation for use in rehabilitation of those environments. This vegetation is to be kept moist at all times. It is to be placed in the shade and covered with moistened hessian cloth until replanting, which is to be undertaken immediately after surface reinstatement is complete.
- Plants are to be, as nearly as possible, replanted in areas from which they were removed.

7.8 Planting

- All planting work must be undertaken by a suitably qualified sub-contractor.
- The sourcing of seed or other plant material used for vegetation establishment must be from within 50 km radius of the site and within the bio-climatic region.
- The reinstatement of disturbed areas with locally indigenous herbaceous vegetation must be conducted progressively.
- In moist areas, re-vegetation must include hygrophilous grassland or reed bed, and in dry areas indigenous runner grasses must be used.
- The use of fertilisers must be carefully controlled by the ECO. No fertiliser must be used in the re-vegetation process near or in watercourses and wetlands areas.
- If possible, reseeding and replanting must occur just prior to or during the wet season. If planting and reseeding occurs in a dry period, it may be necessary to irrigate plants to ensure their successful establishment.

7.9 Grassing

- Grassing must be undertaken by a suitably qualified sub-contractor.
- Sodding may be done at any time of the year but seeding must be done during summer when the germination rate is better.
- Hydro-seeding with a winter mix will only be specified where re-grassing is urgent and cannot wait for the summer.
- In wet areas, hygrophilous grassland or reed bed must be encouraged as the final vegetation cover depending on the degree of local wetness (temporary/seasonal/permanent wetland).

7.10 Weed and Invader Plant Control

- The contractor is responsible for the control of weeds and invader plants within the construction site for the duration of the rehabilitation phase.
- The control involves killing the plants present, killing the seedlings, which emerge, and establishing and managing an alternative plant cover to limit re-growth and re-invasion. Weeds and invader plants will be controlled in the manner prescribed for that category by the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (as amended) or in terms of Working for Water guidelines.
- The use of herbicides is not permitted within identified sensitive areas.
- The removal of weeds and invader plants must be undertaken by hand.
- Affected areas must be reinstated and rehabilitated as soon as practically possible.

7.11 Monitoring of Rehabilitated Areas

- Upon completion of all work, the ECO and Employer's Site Representative must survey all rehabilitated areas to ensure compliance with specifications.
- A photographic record must be maintained.
- Monitoring should be done quarterly each year, for the minimum of one year, or until the rehabilitated areas are well established.
- Alien weed control and soil erosion will be the main items that require monitoring.

8 OPERATIONS PHASE

The operations phase refers to the period of the project during which the project will be in operation. This section of the EMPr outlines general environmental specifications that are required to be implemented by the Employer.

Specific conditions for Coffee Bay:

- For the new ablution facilities at Coffee Bay, an operation and maintenance (O & M) plan must be developed and implemented. As a minimum, the O & M plan should specify:
  - cleaning procedures and frequency.
  - responsible personnel.
  - maintenance and repairs schedule.
  - emergency contact numbers etc.
- Operational management impacts of the ablution facilities should be managed very strictly, in order to monitor potential pollution impacts from the ablution facilities into the wetland and groundwater.
- Humans and animals should have no contact with the effluent. It is important however, that the soak pit is located at a safe distance from a drinking water source (ideally at least 30 m).
- During operation, the conservancy tanks must be regularly serviced by a suitably qualified service provider. Sewage must be disposed at a licensed wastewater treatment works and under no circumstances may it be dumped in the bush or buried. Proof of disposal by the appointed service provider must be provided to the KSDM.

General conditions:

- A regular monitoring and maintenance program must be developed by the local municipality.
- The Employer is responsible for the control of weeds and invader plants. The Employer must monitor all sites disturbed by operational activities for colonisation by weeds, exotics or invasive plants, and these are to be controlled as they emerge.
- Soils must be monitored for signs of erosion at regular intervals. Upon identification of a potential erosion problem, measures are to be put in place to prevent further soil loss and to remediate the cause.
- Particular attention must be paid to areas where the viewing decks and poly-timber walkways have been established.
- The lifeguard tower must be monitored for signs of erosion. The local municipality is responsible for the maintenance of all infrastructure and structures.
- During operations, all general waste must be disposed of at the multipurpose buy back centre and waste transfer facility in Coffee Bay.

ANNEXURE 1: PENALTIES

The following penalties for incidents of non-compliance shall apply:

Failure to demarcate working servitudes	R 1,000
Working outside of the demarcated servitude	R 2,500
Failure to strip topsoil with intact vegetation	R 2,500
Failure to stockpile topsoil correctly	R 2,500
Failure to stockpile or spoil materials in designated areas	R 2,000
Pollution of water bodies (including increased suspended solid loads)	R 5,000
Failure to control storm water runoff	R 5,000
Failure to prevent siltation of natural habitat outside of working servitudes	R 5,000
Failure to provide adequate sanitation	R 5,000
Unauthorised removal of indigenous woody vegetation	R 5,000 basic fine plus R 1,000 per shrub/tree
Failure to erect temporary fences	R 1,000
Failure to provide adequate waste disposal facilities and services	R 5,000
Failure to reinstate disturbed areas within the specified time frame	R 5,000
Failure to rehabilitate disturbed areas within the specified time frame	R 6,000
Failure to obey site protection measures	R 8,000
Failure to maintain demarcation tape	R 1,000
Fire – costs of runaway fires will be borne by the Contractor, should he/she be proven responsible for such fires	Costs to be borne by Contractor
Animal poaching	R 6,000
Medicinal plant and other plant removal	R 1,500
Any other contravention of the environmental specifications	R 5,000

In addition to a fine, the Contractor may be required to undertake the necessary rehabilitation/mitigation measures resulting from non-compliance. These will be as instructed by the Project Engineer, on the advice of the Environmental Manager.

ANNEXURE 2: PLANTING AND GRASSING

PLANTING

Transplanted Plants

Transplanting entails the removal of plant material and replanting the same plants in another designated position. The following are guidelines, which should be applied:

- All planting work is to be undertaken by a suitably qualified Sub-contractor, making use of the appropriate equipment.
- Where possible, transplant trees and shrubs during the winter (between April and September). Transplant deciduous trees before new growth appears.
- Prune back the plants to limit transpiration and spray foliage with an evapo-transpiration retardant liquid if they are evergreen.
- Aloes and bulbous plants may be transplanted at any time of the year.
- Trees to be transplanted must be carefully removed from the soil so as to retain as large a root ball as practically possible. Use the tree's droplines as an indicator: the larger the tree the larger the root ball (and subsequently the planting hole).
- Minimise disturbance of the soil and the remaining roots in the root ball during the lifting, moving and or transportation of all species.
- Wrap the root ball in hessian or in plastic sheeting to retain the soil and to keep the root ball moist.
- Unless otherwise specified by the ECO, excavate square holes of 800 mm x 800 mm x 800 mm on average for trees and 500 mm x 500 mm x 500 mm on average for shrubs.
- If impenetrable shale, rock, clay or a high-water table are encountered, making the above hole sizes impossible, then seek advice from the ECO.
- Where local soil has poor drainage, broken rock (approximately 75 mm in diameter) must be placed to a depth of 150 mm at the bottom of the planting hole prior to planting and backfilling with a plant medium mixture approved by the ECO.
- Backfill planting holes with excavated material/topsoil, thoroughly mixed with weed free manure or compost (per volume about one quarter of the plant hole). Approval from the Environmental Manager should be obtained for the application of fertiliser (e.g. 2:3:2 fertiliser) and/or pesticides (e.g. ant and termite poison) where required.
- Plant trees and shrubs so that their stems or trunks are at the same depth as in their original position.
- Orientate trees and shrubs in the same direction as in their original position.
- Plant aloes and bulbs in similar soil conditions and to the same depth as in their original position.
- Stake all trees using three weather resistant wooden or steel stakes anchored firmly into the ground. Two of the three stakes are to be located on the windward side of the plant. Galvanised wire binding, 3 mm thick, covered with a 20 mm diameter plastic hosepipe must be tied tightly to the stakes, half to two thirds the height of the tree above the ground and looped around the trunk of the tree.
- Place stakes at least 500 mm apart and away from the stem and roots of the tree, so as not to damage the tree or its roots. This distance will depend upon the size of the tree planted and must be approved by the ECO before staking.
- Where necessary, protect newly planted trees against wind, and wild animals by means of fencing or sacking, as specified by the ECO.
- Water transplanted trees and shrubs as required until the plants are able to survive independently (i.e. depending on the rainfall).
- A raised circular 200 mm high subsoil berm placed 500 mm (shrubs) to 750 mm (trees) from the plant's stem must be provided for watering. Do not simply leave the excavated plant hole partially backfilled for this purpose – the berm must be raised above the natural soil level.
- Add mulch to the surface area of the berm basin.
- Water aloes and bulbs once directly after transplanting to settle the soil.
- Remove stakes and wire binds over time as plants become established.

GRASSING
Sods

Sodding is defined as the laying of grass sods.

- All planting work is to be undertaken by a suitably qualified Sub-contractor, making use of the appropriate equipment.
- The soil should be uniformly wet to a depth of at least 150 mm before planting of grass sods.
- Protect sods against drying out: Keep these moist from the time of harvesting until final placement.
- Rake or spike the area to give a loose surface to a depth of 100 mm.
- Lay the first row of sods in a straight line, starting at the bottom of a slope, where possible.
- Place the next row of sods in the same way, tightly against the bottom row with the joints staggered, until the full area is covered with sods.
- Tightly butt sods together, taking care not to stretch or overlap sods.
- Where a good fit cannot be obtained, the intervening spaces may be filled with parts of sods or topsoil.
- On steep slopes the sods must be secured using timber stakes of at least 300 mm in length.
- After planting, water sods to prevent drying out.
- Irrigate as required until the grass can survive independently (i.e., depending on the rainfall).

Runners

- All planting work is to be undertaken by a suitably qualified Sub-contractor, making use of the appropriate equipment.
- Plant grass runners evenly by hand or by mechanical means at a rate of at least 400 runners per hectare
- Use only fresh runners, avoiding grass runners that have been allowed to dry out.
- Rake or spike the area to give a loose surface to a depth of 100 mm.
- The soil should be uniformly wet to a depth of at least 150 mm before planting of grass runners.
- After planting, runners must be given copious amounts of water and then allowed to dry. When dry they must be rolled with a light agricultural roller and then re-watered.
- Irrigate as required until the grass can survive independently (i.e., depending on the rainfall).

Hand Seeding

- All planting work is to be undertaken by a suitably qualified Sub-contractor, making use of the appropriate equipment.
- All seed supplied should be labelled in accordance with the Government Seed Act, 1961 (Act No. 20 of 1961).
- The soil should be loose and uniformly wet to a depth specified by the ECO, before any seeding commences.
- Halve the seed and fertiliser mixture as specified and apply evenly in two immediate successive applications perpendicular to each other.
- The seeded area must be raked over after seed application and well-watered.
- Irrigate as required until the grass is able to survive independently (i.e., depending on the rainfall).

Hydroseeding

- All planting work is to be undertaken by a suitably qualified Sub-contractor, making use of the appropriate equipment.
- Hydroseeding entails adding a specified seed mix to slurry containing water and other approved materials to enhance plant growth potential. This mixture is applied by means of a spraying device onto the prepared areas to be seeded.
- All seed supplied should be labelled in accordance with the Government Seed Act, 1961 (Act No. 20 of 1961).
- The soil should be loose and uniformly wet to a depth specified by the ECO, before any hydroseeding commences.

- Add the specified seed mix and necessary fertiliser to the required amount of water and apply using an approved hydroseeding machine.
- Unless otherwise specified, the rate of application of the slurry will not be less than 30 cubic metres per hectare and will be applied in such a manner as to ensure even distribution of seed and fertiliser throughout.
- Additional ingredients to be added to the slurry may be specified.
- In certain cases, the specification may require that mulch be applied by hand to the area to be hydroseeded, prior to hydroseeding.
- If possible, keep the seedbed moist after hydroseeding, to ensure good germination.
- Irrigate as required until the grass can survive independently (i.e., depending on the rainfall).

ANNEXURE 3: CHANCE FIND PROTOCOL

It is possible that sub-surface heritage resources could be encountered during the construction phase of this project. The ECO and all other persons responsible for site management and excavation should be aware that indicators of sub-surface sites could include:

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate).
- Shell middens.
- Bone concentrations, either animal or human,
- Ceramic fragments, including potsherds,
- Stone concentrations that appear to be formally arranged (may indicate the presence of an underlying burial, or represent building/structural remains); and
- Fossilized remains of fauna and flora, including trees.

In the event that such indicator(s) of heritage resources are identified, the following actions should be taken immediately:

- All construction within a radius of at least 20 m of the indicator should cease. This distance should be increased at the discretion of supervisory staff if heavy machinery or explosives could cause further disturbance to the suspected heritage resource.
- This area must be marked using clearly visible means, such as barrier tape, and all personnel should be informed that it is a no-go area.
- A guard should be appointed to enforce this no-go area if there is any possibility that it could be violated, whether intentionally or inadvertently, by construction staff or members of the public.
- No measures should be taken to cover up the suspected heritage resource with soil, or to collect any remains such as bone or stone.
- If a heritage practitioner has been appointed to monitor the project, s/he should be contacted, and a site inspection arranged as soon as possible.
- If no heritage practitioner has been appointed to monitor the project, the relevant PHRA[14] must be contacted.
- The South African Police Services should be notified by an Amafa staff member or an independent heritage practitioner if human remains are identified. No SAPS official may disturb or exhume such remains, whether of recent origin or not.
- All parties concerned should respect the potentially sensitive and confidential nature of the heritage resources, particularly human remains, and refrain from making public statements until a mutually agreed time.
- Any extension of the project beyond its current footprint involving vegetation and/or earth clearance should be subject to prior assessment by a qualified heritage practitioner, considering all information gathered during the initial assessment.

[14] Provincial Heritage Resources Agency. Contact list is available at https://sahris.org.za

ANNEXURE 4: CV OF EAP

CURRICULUM VITAE — CAMERON EMILE SINGH

Current Position:	**Environmental Consultant**
Name of Firm:	**ACER (Africa) Environmental Consultants**
Name of Staff:	**Cameron Emile Singh**
Profession:	**Environmental Consultant**
Date of Birth:	**28 February 1995**
Years with Firm:	**1**
Nationality:	**South African**

PROFESSIONAL REGISTRATIONS AND MEMBERSHIP

IAIAsa member: Membership number 6565
EAPASA Registered Environmental Assessment Practitioner: Number 2019/1239

KEY QUALIFICATIONS AND RELEVANT PROJECT EXPERIENCE

Key competencies

- Environmental Impact Assessment.
- Basic Assessment.
- Public Participation Processes
- Environmental Management Programmes
- Environmental Compliance Monitoring
- Environmental Auditing
- Water Use License Applications
- Project Management
- Safety, Health & Environment Representative

Project Experience:

EIA/ BASIC ASSESSMENT

2020 - ongoing **Department of Environment, Forestry and Fisheries (Eastern Cape).** The proposed upgrade and construction of tourist facilities at Coffee Bay and Hole in the Wall, Eastern Cape. Basic Assessment (Basic Assessment Report), including compilation of Public Participation Documents and Specialist Terms of Reference.

2020 - ongoing **Newcastle Local Municipality.** Environmental services for the new regional landfill site. Environmental Impact Assessment (Full Scoping & EIA), including compilation of Screening Reports.

2020 - ongoing **Liquid Telecom.** Landing of the proposed 2AFRICA/ GERA (East) telecommunications cable system at Amanzimtoti – Amanzimtoti to Mauritius. Compilation of EIA Application and Public Participation documents.

2020 - ongoing **Alcatel Submarine Networks.** Landing of the proposed 2AFRICA/ GERA (East) telecommunications cable system at Amanzimtoti. Environmental Impact Assessment (Full Scoping & EIA), including compilation of EIA Application and Public Participation documents.

2020 - ongoing **Alcatel Submarine Networks.** Landing of the proposed 2AFRICA/ GERA (East) telecommunications cable system at Duynefontein. Environmental Impact Assessment (Full Scoping & EIA)including compilation of EIA Application, relevant permit requirements and Public Participation documents.

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2020 - ongoing	**Alcatel Submarine Networks.** Landing of the proposed 2AFRICA/ GERA (East) telecommunications cable system at Port Elizabeth. Environmental Impact Assessment (Full Scoping & EIA), including compilation of EIA Application and Public Participation documents.
2020 - ongoing	**Alcatel Submarine Networks.** Landing of the proposed 2AFRIC (Wes) telecommunications cable system at Yzerfontein. Environmental Impact Assessment (Full Scoping & EIA), including compilation of EIA Application, relevant permit requirements and Public Participation documents.
2020/2021	**SANRAL SOC (Ltd).** National Route 3 (N3) proposed new KwaXimba Interchange near Cato Ridge, Kwazulu-Natal. Environmental Impact Assessment (Full Scoping & EIA), including compilation of Draft Scoping Report, EIA Application and Public Participation documents.
2020	**uThukela District Municipality.** The 24G Application for the Construction and Operation of the proposed Ekuvukeni Water Supply Project, near Ladysmith within the uThukela District Municipality.
2019/2020	**HZ Investments.** Environmental Authorisation for the construction of a Fuel and Service Station (FSS) within the Hayfields area (Pietermaritzburg). Environmental Impact Assessment (Basic Assessment) including Pubic Participation, commissioning of specialists, drafting of Terms of Reference and correspondence with authorities
2019/2020	**eThekwini Municipality.** Environmental Authorisation for the development of a Business Hive Centre within the Mpumalanga Region (Hammarsdale). Environmental Impact Assessment (Basic Assessment) including Pubic Participation, commissioning of specialists, drafting of Terms of Reference and correspondence with authorities.
2019/2020	**Department of Transport (Hluhluwe).** Rehabilitation Programme for the Pre-compliance notice issued by the Department of Economic Development, Tourism and Environmental Affairs (EDTEA) for the Entweni Causeway, located within the Mtubatuba area. Review of the existing EMPr/ EA, site inspection and compilation of a site-specific Rehabilitation & Mitigation Programme.
2019/2020	**Department of Transport (Hluhluwe).** Rehabilitation Programme for the Pre-compliance notice issued by the Department of Economic Development, Tourism and Environmental Affairs (EDTEA) for the Shunqa Causeway, located within the Mtubatuba area. Review of the existing EMPr/ EA, site inspection and compilation of a site-specific Rehabilitation & Mitigation Programme.
2019/2020	**Umkhanyakude District Municipality.** EIA Exemption for the upgrade to the Jozini Waste-Water Treatment Works. Compilation of a Technical document + supporting evidence illustrating exemption.
2019/2020	**KZN Department of Transport (Ladysmith).** Environmental Authorisation for the construction of Local Road L3491 (Sahlumbe Road), within the Alfred Duma Local Municipality. Environmental Impact Assessment (Basic Assessment) including Pubic Participation, commissioning of specialists, drafting of Terms of Reference and correspondence with authorities
2019/2020	**KZN Department of Transport (Ladysmith).** Environmental Authorisation for the construction of Local Road L3415 within the Alfred Duma Local Municipality. Environmental Impact Assessment (Basic Assessment) including Pubic Participation, commissioning of specialists, drafting of Terms of Reference and correspondence with authorities
2019/2020	**KZN Department of Transport (Estcourt).** Combined Environmental Authorisation for the construction of storm water infrastructure along Local Road L311 and Provincial Road P176, within the Inkosi Langalibalele Local Municipality. Environmental Impact Assessment (Basic Assessment) including Pubic Participation, commissioning of specialists, drafting of Terms of Reference and correspondence with authorities
2019/2020	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of storm water infrastructure along Provincial Road P280, within the Inkosi Langalibalele Local Municipality. Environmental Impact Assessment (Basic Assessment) including Pubic Participation, commissioning of specialists, drafting of Terms of Reference and correspondence with authorities

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2019/2020	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of District Road D1240 within the Inkosi Langalibalele Local Municipality. Environmental Impact Assessment (Basic Assessment) including Pubic Participation, commissioning of specialists, drafting of Terms of Reference and correspondence with authorities
2019/2020	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Madondo Bridge along Local Road L3113, within the Inkosi Langalibalele Local Municipality. Environmental Impact Assessment (Basic Assessment) including Pubic Participation, commissioning of specialists, drafting of Terms of Reference and correspondence with authorities
2019	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Local Road L3296 within the Inkosi Langalibalele Local Municipality.
2019	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Local Road L3392 within the Inkosi Langalibalele Local Municipality.
2019	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Local Road L3494 within the Inkosi Langalibalele Local Municipality.
2019	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Local Road L3478 within the Inkosi Langalibalele Local Municipality.
2019	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Local Road L446 within the Inkosi Langalibalele Local Municipality.
2019	**KZN Department of Transport (Estcourt).** Enquiry for the proposed re-gravelling of 10 local roads within the Inkosi Langalibalele Local Municipality.
2019	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of District Road D1269, within the Inkosi Langalibalele Local Municipality.
2019	**Okhahlamba Local Municipality**. Environmental Authorisation for the construction of Mpameni Road, located within the Municipality.
2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Mhlabathini Road within the Inkosi Langalibalele Local Municipality.
2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Malandeni Road within the Inkosi Langalibalele Local Municipality.
2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Local Road L1347 within the Inkosi Langalibalele Local Municipality.
2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Madlala Road within the Inkosi Langalibalele Local Municipality.
2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Mhlabathini Road within the Inkosi Langalibalele Local Municipality.
2017/ 2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the upgrade and extension of Local Road L1859 within the Inkosi Langalibalele Local Municipality.
2017/ 2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the upgrade and extension of Local Road L20 within the Inkosi Langalibalele Local Municipality.

2017/ 2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the upgrade and extension of Local Road L3047 within the Inkosi Langalibalele Local Municipality.
2017/ 2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Odadeni Road, within the Alfred Duma Local Municipality.
2017/ 2018	**KZN Department of Transport (Estcourt).** Environmental Authorisation for the construction of Squbudu Road, within the Alfred Duma Local Municipality.

WATER USE LICENSE APPLICATIONS

2020/2021	**Department of Environment, Forestry and Fisheries (Eastern Cape).** The proposed upgrade and construction of tourist facilities at Coffee Bay and Hole in the Wall, Eastern Cape. Review of the IWWMP Technical Document, compilation of the Environmental Management Programme and conducting Public Participation.
2020	**Umkhanyakude District Municipality.** General Authorisation (GA) for the upgrade of the existing Jozini Waste Water Treatment Works (WWTW). Review of the IWWMP Technical Document, compilation of the Environmental Management Programme and conducting Public Participation.
2019/2020	**KZN Department of Transport (Ladysmith).** General Authorisation (GA) for the construction of Local Road L3491 (Sahlumbe Road), within the Alfred Duma Local Municipality. Compilation of IWWMP Technical Document, Environmental Management Programme and conducting Public Participation.
2019/2020	**KZN Department of Transport (Ladysmith).** General Authorisation (GA) for the construction of Local Road L3415 within the Alfred Duma Local Municipality. Compilation of IWWMP Technical Document, Environmental Management Programme and conducting Public Participation.
2019/2020	**KZN Department of Transport (Estcourt).** General Authorisation (GA) for the construction of storm water infrastructure along Local Road L311 and Provincial Road P176, within the Inkosi Langalibalele Local Municipality. Compilation of IWWMP Technical Document, Environmental Management Programme and conducting Public Participation.
2019/2020	**KZN Department of Transport (Estcourt).** General Authorisation (GA) for the construction of storm water infrastructure along Provincial Road P280, within the Inkosi Langalibalele Local Municipality. Compilation of IWWMP Technical Document, Environmental Management Programme and conducting Public Participation.
2019/2020	**KZN Department of Transport (Estcourt).** General Authorisation (GA) for the construction of District Road D1240 within the Inkosi Langalibalele Local Municipality. Compilation of IWWMP Technical Document, Environmental Management Programme and conducting Public Participation.
2019/2020	**KZN Department of Transport (Estcourt).** General Authorisation (GA) for the construction of Madondo Bridge along Local Road L3113, within the Inkosi Langalibalele Local Municipality. Compilation of IWWMP Technical Document, Environmental Management Programme and conducting Public Participation.
2019	**KZN Department of Transport (Estcourt).** General Authorisation (GA) for the construction of District Road D1269, within the Inkosi Langalibalele Local Municipality. Compilation of IWWMP Technical Document, Environmental Management Programme and conducting Public Participation.
2019	**Okhahlamba Local Municipality**. General Authorisation (GA) for the construction of Mpameni Road, located within the Municipality. Compilation of IWWMP Technical Document, Environmental Management Programme and conducting Public Participation.
2018	**eThekwini Municipality**. General Authorisation (GA) for the Ogunjini & Mkhizwana Water Treatment Works, located within the eThekwini Municipality. Review of IWWMP Technical Document, Compilation of the Environmental Management Programme and conducting Public Participation.

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ENVIRONMENTAL CONTROL OFFICER (ECO) MONITORING

2021 - ongoing	**uMhlathuze Local Municipality.** The proposed construction of a 5ML reinforced concrete reservoir inlet and outlet pipework and ancillary works, Hlaza ward 32, Umhlathuze Local Municipality. Environmental Compliance monitoring including compilation of a site specific checklist, site visits and compilation of audit report for each site visit.
2020 - ongoing	**Eskom SOC Ltd.** The proposed Taweni sub-station and 132kV power line between the Taweni sub-station and the proposed Mfinizo Sub-station, Eastern Cape. Environmental Compliance monitoring including compilation of a site specific checklist, site visits and compilation of audit report for each site visit.
2020 - ongoing	**Tronox Mineral Sands (Pty) Ltd.** Fairbreeze Mine: External audit of water use licences for 2019, 2020 & 2021. External audit of water-use licenses including review of the water-use license conditions, compliance site visits and the compilation of compliance audit matrices and audit reports.
2020/2021	**ECA Consulting (Pty) Ltd.** Proposed Ekuvukeni bulk water pipeline in Alfred Duma Local Municipality and Uthukela District Municipalities. Environmental Compliance monitoring including compilation of a site specific checklist, site visits and compilation of audit report for each site visit. Compilation and submission of a section 24G application.
2020/2021	**Eskom SOC Ltd.** The proposed Qunu 132Kv powerline and Substation, Umzimvubu Local Municipality, Eastern Cape. Environmental Compliance monitoring including compilation of a site specific checklist, site visits and compilation of audit report for each site visit. Audit report and method statement compilation for the transportation of Aloe trees.
2020/2021	**Eskom SOC Ltd.** The proposed Makaula 132Kv powerline and Substation, Umzimvubu Local Municipality, Eastern Cape. Environmental Compliance monitoring including compilation of a site specific checklist, site visits and compilation of audit report for each site visit. Audit report and method statement compilation for the transportation of Aloe trees.
2019/2020	**eThekwini Planning.** Go-Durban Integrated Rapid Bus Transit Network (IRBTN) along corridor 09, proposed along portions of the Phoenix Highway & Phoenix Industrial Area. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the Department of Economic Development, Tourism and Environmental Affairs (EDTEA). Other duties included liaising with specialists to obtain tree removal permits and the completed of an Ecological Sweep for the Black Headed Dwarf Chameleon.
2019/2020	**Rupee Consulting Engineers.** The re-gravelling/ re-sealing and patchwork along Provincial Road P34-4. Environmental Compliance Monitoring/ auditing & reviewing (In terms of Section 28 of NEMA) and submission of monthly audit reports to the contractor and project team.
2019/2020	**Rupee Consulting Engineers.** The re-gravelling/ re-sealing and patchwork along Provincial Road P309. Environmental Compliance Monitoring/ auditing & reviewing (In terms of Section 28 of NEMA) and submission of monthly audit reports to the contractor and project team.
2019	**Department of Transport.** The construction of a new asphalt surface along P6-3 Kwa-Kopi, within the Tugela Ferry region. Environmental Compliance Monitoring/ auditing (In terms of Section 28 of NEMA) and submission of monthly audit reports to the contractor and project team.
2019	**Umkhanyakude District Municipality.** The upgrade to the existing Jozini Waste Water Treatment Works (WWTW) and decommissioning of the old sludge beds associated with the WWTW. Environmental Compliance Monitoring/ auditing (In terms of Section 28 of NEMA) and submission of monthly audit reports to the contractor, project team and the Department of Water and Sanitation.
2019	**eThekwini Department of Housing.** The construction of the Umbhayi Housing Development located within the Tongaat area. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the

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	contractor, project team, Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
2019	**eThekwini Planning.** The construction of the Emona Housing Development, located within the Stanger region. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the contractor, project team, Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
2018	**Department of Transport.** The construction of a high-level bridge along District Road D385, within the Estcourt region. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the contractor, project team, Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
2018	**Department of Transport.** The construction of a Low-level bridge along Local Road L464, within the Ladysmith region. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the contractor, project team, Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
2018	**Department of Transport.** The construction of a Low-level bridge along District Road D276, within the Ladysmith region. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the contractor, project team, Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
2017/2018	**Department of Transport.** The construction of a High-level bridge (Nhlezi Bridge), within the Ladysmith region. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the contractor, project team, Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
2017/2018	**Department of Transport.** The construction of a High-level bridge (Buffels Bridge), within the Ladysmith region. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the contractor, project team, Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
2017	**Department of Transport.** The upgrade and extension of District Road D1724. Environmental Compliance Monitoring/ auditing (In terms of Section 28 of NEMA) and submission of monthly audit reports to the contractor and project team.
2017	**Department of Transport.** The upgrade and extension of Gwala Road, within the Tongaat region. Environmental Compliance Monitoring/ auditing and submission of monthly audit reports to the contractor, project team, Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA)

EDUCATION:

2021 – ongoing	: Bachelor of Science (Bsc.) Honours (Environmental Management) – University of South Africa (UNISA)
2013 - 2015	**:** Bachelor of Science (Environmental Science) – University of KwaZulu-Natal Pietermaritzburg (Majoring in Environmental Systems and Biology)
2008 - 2012	**:** Raisethorpe Secondary School (Pietermaritzburg)

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EMPLOYMENT HISTORY:

March 2020 – Present **Agricultural, Community, Environmental and Rural Development Consultants (Pty) Ltd. t/a ACER (Africa) Environmental Consultants**
Environmental Consultant/ ECO

May 2017 – March 2020 **Hanslab Environmental Consultants**
Environmental Consultant/ ECO

February 2016 – July 2016 **GreenGrid Energy**
Environmental Safety Officer/ Intern

Languages:

LANGUAGE	SPEAK	READ	WRITE
English	Excellent	Excellent	Excellent
Afrikaans	Fair	Fair	Fair

References:
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Mr. Keanu Singh
Hydrologist – GroundTruth
Email: keanu@groundtruth.co.za
Tel: 071 473 4573

CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe my qualifications and experience.

Cameron E. Singh
18 October 2021