GEORGE
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CAPE TOWN
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ENVIRONMENTAL AWARENESS TRAINING BOOKLET

Environmental Monitor's Foreword

SES is here to ensure that everyone complies with the conditions of "Duty to Care". If these conditions are not complied with the project can be stopped and fines can be issued.

We hope that with your co-operation the project won't be stopped and fines won't be issued, and a successful project can be finished on time.

Notes:

- Workers working on this project must undergo environmental training.

- The information contained in this document should be used during day-to-day activities.

HOW IS THIS PROJECT IMPLEMENTING ENVIRONMENTAL MANAGEMENT?

This project is implementing Environmental Management on an ongoing basis throughout the duration of the project. The following aspects would be implemented to achieve the above stated:

- A dedicated Environmental Manager or Environmental Control Officer appointment to the project to implement and monitor Environmental Management.
- Regular environmental inspection on the site.
- Regular environmental training for workers
- Environmental audits on a regular basis.

WASTE TREATMENT

Refuse:

- Refuse waste includes: waste food, food containers, packaging materials, cans, bottles, newspapers and magazines.
- Day to day household waste should always be disposed of in the containers provided on site by the company.
- No dumping of waste anywhere other than in the bins provided.
- No burning of refuse.
- If there are not enough refuse containers on site, the ECO or supervisor needs to be informed.

Construction Waste:

- Construction waste includes: concrete, steel, cement, rock, pre-coated chips, wood, plastic, empty bags and rubble.
- Construction waste must be discarded in skips located in strategic areas for removal.
- Construction waste must not be discarded in holes or burned on site.

- Small amounts of construction waste should be collected and not discarded into vegetation or down fill slopes.
- Material should only be spoiled if a rehabilitation plan has been designed for the area.

Liquid waste:

- Liquid waste includes: concrete, paint, thinners, diesel, hydraulic fluids, cooking oil, chemicals, other fuel and sewage.
- Use facilities provided for waste.
- The liquid waste should be recycled as far as possible.
- Use chemical toilets and ablution facilities.

INFORM THE ENVIRONMENTAL CONTROL OFFICER (ECO) IMMEDIATELY OF ANY IMMEDIATE OR POTENTIAL ENVIRONMENTAL INCIDENT.

SPECIFIC ENVIRONMENTAL ISSUES

SPESIFIEKE OMGEWINGSKWESSIES
IMIBA ETHILE YEZOBUME BEMEKO YENDALO

The basic Do's and Don'ts towards environmental awareness are as follows:

Die basiese Moets en Moenies van omgewingsbesinning is as volg:

Oondoqo bo mawukwenze no mawungakwenzi kwilinge lezobume be meko yendalo bume ngoluhlobo:

Toilet Facilities:
Toilet Fasiliteite:
Izindlu Zangasese:

DO:
USE THE TOILET FACILITIES PROVIDED - REPORT FULL FACILITIES
MOET:
GEBRUIK MAAK VAN TOILET FASILITEITE WAT VOORSIEN WORD – RAPPORTEER AS FASILITEITE VOL IS
OMAWUKWENZE: SEBENZISA IZINDLU ZANGASESE EZIBONELELWEYO- NIKA INGXELO NGAMALUNGISELELO AGCWELEYO.

DO NOT:
USE THE BUSH
MOENIE:
DIE BOS GEBRUIK NIE
OMAWUNGAKWENZI: UKUSEBENZISA ITYHOLO.

Vehicles operation and maintenance:
Voertuig werking en onderhoud:
Ulawulo nophatho lezithuthi:

DO:
ENSURE THAT VEHICLES AND MACHINERY DO NOT LEAK FUEL OR OILS. REFUELLING, MAINTENANCE, SERVICING OR WASHING MUST BE DONE WITHIN THE DESIGNATED AREA IN THE CONSTRUCTION CAMP AREA ONLY.
MOET:
VERSEKER DAT VOERTUIE EN MASJINERIE NIE OLIES OF BRANDSTOF LEK NIE. VOLMAAK, ONDERHOUD, DIENS OF SKOONMAAK VAN VOERTUIE MOET SLEGS IN AANGEWYSTE AREAS IN DIE KONSTRUKSIE KAMP GESKIED.
OMAWUKWENZE: QINISEKISA IZITHUTHI NOMATSHINI ABAVUZI MAFUTHA OKANYE I OYILE, UKUGALELA, UKUPHATHA, UKULUNGISA OKANYE UKUHLAMBA KUFUNEKA KWENZIWE KUMMANDLA OTYUNJIWEYO KWINKAMPI YOLWAKHIWO KUPHELA NGOKUKHAWULEZILEYO.

DO:
REPORT ALL FUEL OR OIL SPILLS IMMEDIATELY & STOP THE SPILL CONTINUING.
MOET:
RAPPORTEER ENIGE BRANDSTOF OF OLIE STORTE & VERHOED DAT DIE STORT AANHOU.
OMAWUKWENZE: NIKA INGXELO NGE OLI NAMAFUTHA ACHITHEKILEYO, UZE UNQANDE UCHITHEKO LUNGAQHUBEKI.

DO:
PREVENT CONTAMINATION OR POLLUTION OF STREAMS AND WATER CHANNELS.
MOET:
VERHOED DIE KONTAMINASIE EN BESOEDELING VAN STROME & WATERKANALE.
OMAWUKWENZE : NQANDA USULELEKO OKANYE UNGCOLISEKO LWEMILAMBO NEMISELE YAMANZI.

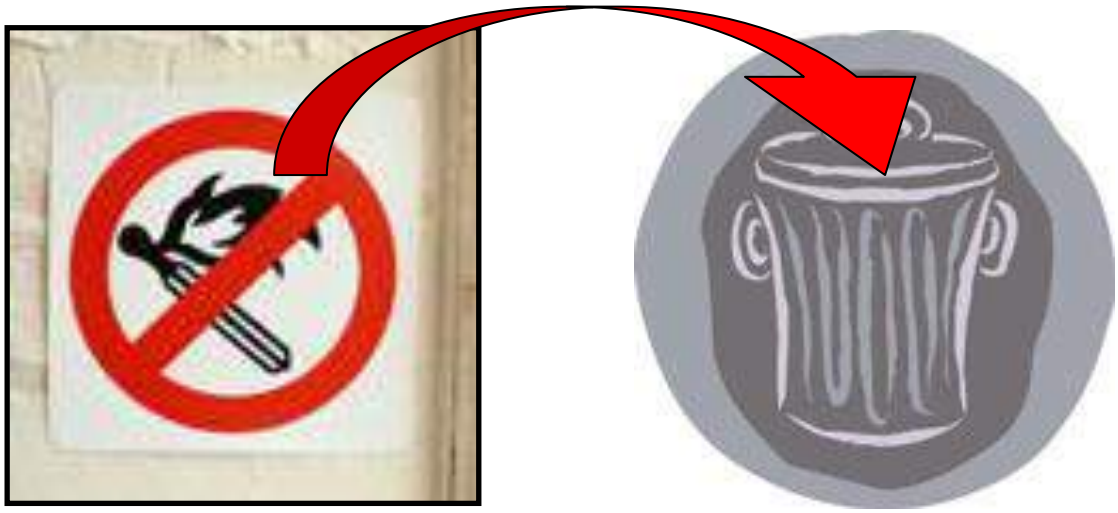
DO NOT:
ALLOW WASTE, LITTER, OILS OR FOREIGN MATERIALS INTO THE STREAM
MOENIE:
TOELAAT DAT AFVALPRODUKTE, GEMORS, OLIES OF VREEMDE MATERIALE IN STROME BELAND NIE.
OMAWUNGAKWENZI: MUSA UKUVUMELA INCITHO, ULAHLO, IOYILE OKANYE EZINYE IZINTO EMILANJENI.

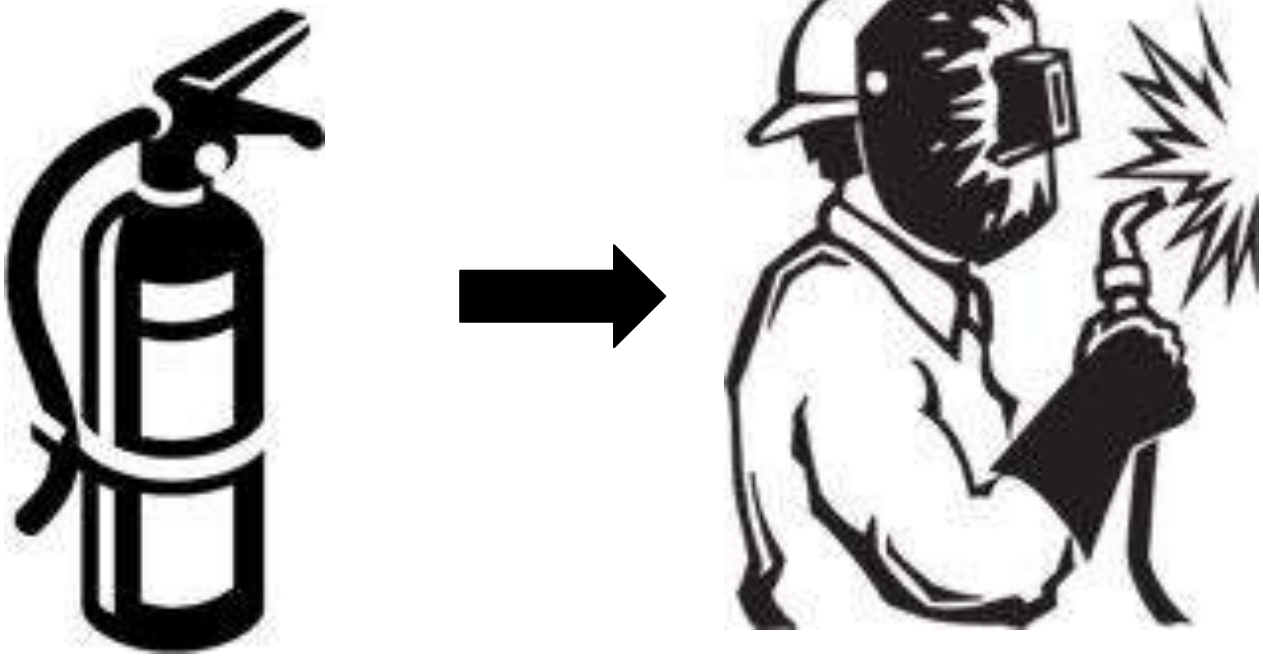
Fire Control:
Vuur Beheer:
Ulawulo Lemililo:

DO:
DISPOSE OF CIGARETTES AND MATCHES CAREFULLY. (Littering is an offence.)
MOET:
GOOI SIGARETTE & VUURHOUTJIES OP GEPASTE MANIER WEG WEG (rommelstrooi is 'n oortreding)
OMAWUKWENZE: LAHLA ISIGARETE NOOMATSHISI NGONONOPHELO (ukulahla lityala).

DO:
ENSURE A WORKING FIRE EXTINGUISHER IS IMMEDIATELY AT HAND IF ANY "HOT WORK" IS UNDERTAKEN e.g. welding, grinding, gas cutting etc.
MOET:
VERSEKER DAT 'N WERKENDE BRANDBLUSSER BYDERHAND IS INDIEN "WARM WERK" GEDOEN WORD bv. Sweiswerk.
OMAWUKWENZE: QINISEKISA ISICIMA-MLILO ESISEBENZAYO SISESANDLENI UKUBA KUKHO UMSEBENZI "OTSHISAYO" OWENZIWAYO, umz. ukuwelda, ugubo, ukuqhawula ugesi, njl.

DO NOT:
MAKE ANY FIRES
MOENIE:
ENIGE VURE MAAK OF ENIGEIETS VERBRAND NIE
OMAWUNGAKWENZI: UKWENZA IMILILO OKANYE UTSHISE NOKUBA YINTONI.





Fencing and Restricted Areas:
Omheining en Beperkte Areas:
Ubiyelo Nemimanndla Engavumelekanga:

DO:
CONFINE WORK AND STORAGE OF EQUIPMENT TO WITHIN THE IMMEDIATE WORK AREA.
MOET:
BEPERK ALLE WERK EN STOOR VAN GEREEDSKAP TOT IN DIE GEGEWE WERKAREA.
OMAWUKWENZE:GCINA UMSEBENZI NEZIXHOBO ZOKUSEBENZA NGAKUMMANDLA OKUSETYENZELWA KUWO.

DO NOT:
ENTER ANY FENCED OFF OR MARKED AREA. SUCH AREAS HAVE BEEN MARKED WITH "NO-GO AREA" SIGNS AND SHOULD BE ADHERED TO.
MOENIE:
ENIGE OMHEINDE OF GEMERKTE AREAS BINNEGAAN NIE. SULKE AREAS IS MET "NO-GO AREA" TEKENS GEMERK EN MOET GEHOORSAAM WORD.
OMAWUNGAKWENZI: MUSA UKUNGENA KWI NDAWO EBIYIWEYO OKANYE EPHAWULWEYO. IMIMANDLA ENJALO IPHAWULWE NGAMAGAMA ATHI **" NO-GO AREA**".

NO-GO AREA

Safety:
Veiligheid:
Ukhuseleko:

DO:
USE ALL SAFETY EQUIPMENT AND COMPLY WITH ALL SAFETY PROCEDURES.
MOET:
GEBRUIK ALLE VEILIGHEIDSGEREEDSKAP EN VOLDOEN AAN ALLE VEILIGHEIDS PROSEDURES.
OMAWUKWENZE: SEBENZISA ZONKE IZIXHOBO ZOKHUSELEKO, UZE UTHOBELE YONKE IMIGAQO YOKHUSELO.

Driving and Dust:
Bestuur en Stof:
Uqhubo Nothuli:

DO:
DRIVE ON DESIGNATED ROUTES ONLY.
MOET:
NET OP AANGEWYSTE ROETES BESTUUR.
OMAWUKWENZE: QHUBA KWIMIMANDLA EPHAWULWEYO KUPHELA.

DO NOT:
SPEED OR DRIVE RECKLESSLY
MOENIE:
JAAG OF ROEKELOOS BESTUUR NIE.
OMAWUNGAKWENZI: SUKUQHUBA NGESANTYA ESIPHEZULU OKANYE NGOKUNGAKHATHALI.

DO NOT:
ALLOW CEMENT TO BLOW AROUND.
MOENIE;
TOELAAT DAT SEMENT WEGWAAI NIE.
OMAWUNGAKWENZI: MUSUKUVUMELA ISAMENTE ISASAZWE.

DO NOT:
CAUSE EXCESSIVE DUST
MOENIE:
OORDREWE STOF VEROORSAAK NIE.


SLOW


PPC

Vegetation protection:
Plantegroei Beskerming:
Ukhuselo Lwezityalo:

DO NOT:
DAMAGE OR REMOVE ANY VEGETATION WITHOUT DIRECT INSTRUCTION.
MOENIE:
ENIGE PLANTEGROEI SONDER DIREKTE INSTRUKSIE BESKADIG OF VERWYDER NIE.
OMAWUNGAKWENZI: MUSA UKUTSHABALALISA OKANYE USUSE NASIPHINA ISITYALO NGAPHANDLE KOMYALELO.

Animals:
Diere:
Izilwanyana:

DO NOT:
INJURE, CAPTURE/SNARE, FEED OR CHASE ANIMALS – this includes birds, frogs, snakes, lizards, tortoises, etc.
MOENIE:
ENIGE DIERE BESEER, VANG, VOER OF JAAG NIE – dit sluit in: voëls, paddas, slange akkedisse, skilpaaie ens.
OMAWUNGAKWENZI: MUSA UKWENZAKALISA, UKUBAMBA, UKONDLA OKANYE UKULEQA IZILWANYANA- okuquka iintaka, amasele, iinyoka, amacilikishe, izikolopati.

DO:
REPORT ANY INJURY OF AN ANIMAL.
MOET:
DIE BESERING VAN 'N DIER RAPPORTEER.
OMAWUKWENZE: XELA NASIPHI ISENZAKALO SESILWANYANA.

Preventing Pollution:
Voorkoming van Besoedeling:
Ukhuselo Longcoliseko:

DO:
CLEAR YOUR WORK AREAS OF LITTER AND BUILDING RUBBLE AT THE END OF EACH DAY – use the waste bins provided and ensure that litter will not blow away.
MOET:
RUIM NA ELKE DAG DIE WERK AREA OP EN GOOI ENIGE ROMMEL WEG IN DIE GEGEWE HOUERS – maak seker dat rommel nie kan wegwaai nie.
OMAWUKWENZE: COCA INDAWO OSEBENZA KUYO, IZINTO EZILAHLIWEYO NENKUNKUMA YOKWAKHA QHO EKUPHELENI KWEMINI-sebenzisa imigqomo yenkunkuma uze uqiniseke ukuba inkunkuma ayivuthuzwa ngumoya.

DO NOT:
ALLOW WASTE BINS TO OVERFLOW OR WASTE TO BLOW AROUND.
MOENIE:
TOELAAT DAT ROMMELHOUERS OORVLOEI OF DAT ROMMEL ROND WAAI NIE.
OMAWUNGAKWENZI: MUSA UKUVUMELA IMIGQOMO YENKUNKUMA IGCWALE KAKHULU OKANYE INKUNKUMA ISASAZEKE.

DO NOT:
LITTER OR LEAVE FOOD LAYING AROUND
MOENIE:
ROMMEL OF KOS LAAT RONDLÊ NIE.
OMAWUNGAKWENZI: MUSA UKUNGCOLISA OKANYE USHIYE UKUTYA KULELE INDAWO YONKE.

DO NOT:
BURY ANY LITTER OR WASTE IN THE GROUND.
MOENIE:
ENIGE ROMMEL OF GEMORS IN DIE GROND BEGRAWE NIE.
OMAWUNGAKWENZI: MUSA UKUNGCWABA INKUNKUMA EMHLABENI.


GLASS
CARDBOARD
PAPER

CURRICULUM VITAE

MICHAEL JON BENNETT

PERSONAL

Profession: Principle Environmental Assessment Practitioner and Senior Environmental Control Officer, Sharples Environmental Services cc, George

Nationality: South African

Date of Birth: 22 October 1985

Languages: English (read, write and speak) & Afrikaans (read, write and speak)

Marital Status: Single

Drivers License: Code B

Health: Excellent

EAPASA Reg: 2021/3163

WORK EXPERIENCE

2014 – Present: Sharples Environmental Services cc, George, WC
Environmental Assessment Practitioner
I have gained extensive experience in assessments and monitoring and have worked on a variety of multidisciplinary projects and am proficient in:

- Basic Assessments Reports
- Water Use Authorisation Applications
- Environmental Monitoring and Reporting
- Environmental Management Programmes
- Environmental Control Officer Training
- Conducting Outeniqua Sensitive Coastal Area licensing applications

2016 – 2017: Sharples Environmental Services cc, Cape Town, WC
Intrim Office Manager, Environmental Assessment Practitioner

2011 – 2014: Peninsula Permits & NCC Group, Cape Town, WC
Environmental Control Officer

- Environmental Monitoring

TERTIARY EDUCATION

2010 University of Cape Town

- I hold a Bachelor of Science Degree specialising in Environmental and Geographic Science & Ocean and Atmospheric Science

PROJECTS

2023 George Urban Country Estate (Pty) Ltd

- Basic Assessment Report for the proposed residential development on erf 19374 (remainder erf 6182, erven 6179 and 6156), George, Western Cape

2023 George George Municipality

- Basic Assessment Report for the Upgrading of the Eden Pumpstation, George, Western Cape

2023 Mossel Bay Paprenax Trading 6 cc

- Amendment of Environmental Authorisation (Part 2, Substantive amendment) for the proposed establishment of a filling station and associated business infrastructure on a portion of erf 13996, Kwanonqaba, Mossel Bay, Western Cape

2023 George George Municipality

- Basic Assessment Report for proposed upgrade of the Schaapkop Pumpstation rising main on remainder of erf 464 and erf 13486, George, Western Cape

2023 George Garden Route Gateway Plaza

- Basic Assessment Report for proposed mixed-use development on portions 278 and 282 of farm Kraaibosch no. 195, George, Western Cape

2023 George George Municipality

- Basic Assessment Report for proposed development of a Photovoltaic Solar Plant on erf 2819, George, Western Cape

2023 George EARP Construction

- Basic Assessment Report for the proposed commercial development on portion 49 of Farm Hansmoeskraal 202, George, Western Cape

2022 George Pieterkoen Trust

- Basic Assessment Report for the proposed residential development on Portion 21 of the Farm Kraaibosch No. 195 (Pieter Koen), George, Western Cape

2022 Mossel Bay Dalmar

- Amendment of Environmental Authorisation (Part 2, Substantive amendment) for the Proposed Residential Development On A Portion Of The Farm Vaale Valley 219, Mossel Bay (Hartenbos Landgoed II), Western Cape

2022 George Dalmar

- Amendment of Environmental Authorisation Proposed Development of Herold's Bay Country Estate on A Portion of Portion 7 of The Farm Buffelsfontein No. 204, Herold's Bay, Western Cape

2022 George Pieterkoen Trust

- Basic Assessment Report for the proposed residential development on Portion 21 of the Farm Kraaibosch No. 195 (Pieter Koen), George, Western Cape

2022 Still Bay W. Nel & Irma Oosthuizen Trust IT 1596/2008

- Basic Assessment Report for the development of 5 residential units on erven 4139, 4140, 4141, 4142, 4143, 4144, 4145 (Erf 3997), Still Bay West, Western Cape

2022 George Octo Trading 377 cc

- Section 24 G Retrospective Environmental Authorisation for the alleged unlawful construction of a road clearance of vegetation to establish a house on remainder of Farm Holle Kloof 91 and Portion 1 of the Farm Plattekloof 131, Waboomskraal, George, Western Cape

2022 Knysna CapeNature

- Basic Assessment Report for the Proposed development on Portions 38 and 39 of Farm 205 and Remainder of Farm 211, Goukamma Nature Reserve, Knysna, Western Cape

2021 Prince Albert Jurie Klue

- Section 24 G Retrospective Environmental Authorisation for the alleged unlawful clearance of vegetation on Farm Angliers Bosch (Fernkloof), Remainder of Farm 157, Klaarstroom, Prince Albert, Western Cape

2021 Mossel Bay Mossel Bay Municipality

- Basic Assessment Report for the proposed Dana Bay Emergency Access Road on Remainder of Portion 7 of the Farm 225, Dana Bay, Mossel Bay, Western Cape

2021 Willowmore LEZMIN 2087cc

- Basic Assessment Report for the proposed development of Portion 1 of the Farm Matjiesfontein No. 206, Baviaanskloof, Division Willowmore, Eastern Cape

2020 Sedgefield Knysna Municipality

- Basic Assessment Report for the proposed housing development on erven 3861, 3865, 3866, 3917, 3918 and 5010 in Sedgefield, Knysna, Western Cape

2020 Mossel Bay Paprenax Trading 6 cc

- Basic Assessment Report for the proposed establishment of a filling station and associated business infrastructure on a portion of erf 13996, Kwanonqaba, Mossel Bay, Western Cape

2020 Ladismith Department of Transport and Public Works

- Maintenance Management Plan for the periodic maintenance of Trunk Road 31, section 4, km 30.8 to km 76.06, Barrydale to Ladismith, Western Cape

2020 Knysna Knysna Municipality

- Maintenance Management Plan for the Maintenance of the potable water pipeline system on Erven 4197, RE/1352, RE/1351, RE/1146 and 1316 in Knysna, Western Cape

2020 Humansdorp Kouga Municipality

- Environmental Control Officer for the Phase 1A of New municipal 66kV double circuit overhead line between the Melkhout substation at Humansdorp and the main intake substation at Jefferys Bay, Eastern Cape

2020 Humansdorp Kouga Municipality

- Environmental Control Officer for the Construction of a new 22kv overhead powerline between Melkhout substation and Allison Street, Humansdorp, Eastern Cape

2020 Knysna Knysna Municipality

- Environmental Control Officer for the Charlesford raw water pumping scheme: Upgrade and refurbishment of pumpstation: Mechanical and electrical, Knysna, Western Cape

2020 Seweweekspoort, Department of Transport & Public Works

- Amendment of Environmental Authorisation (Part 2, Substantive amendment) for the flood damage repairs to road structures on MR309 in Seweweekspoort, Western Cape

2019 – 2021 Seweweekspoort, Department of Transport & Public Works

- Environmental Control Officer for the flood damage repairs to road structures on MR309 in Seweweekspoort, Western Cape

2019 George George Municpality

- Environmental Control Officer for the Raising of the Garden Route Dam Spillway on Portion 3/352, Remainder of 536 of Erf 221, Erf 3055 and Erf 3056, George, Western Cape

2019 Laingsburg Department of Agriculture

- Environmental Control Officer for the Construction Of Erosion Prevention Structures Within The One In Ten Year Flood Line Of The Buffels River, Laingsburg, Western Cape

2019 Williston Williston Municipality

- Environmental Control Officer for the Upgrading of bulk water network in Williston – Phase 3, Williston, Northern Cape

2019 George George Municipality

- Environmental Control Officer for the construction of new 66kV overhead line between Ballots Bay and Glanwood substations, George, Western Cape

2019 Oudtshoorn Department of Transport & Public Works

- Environmental Control Officer for the Periodic maintenance of Trunk Road 31, Section 6, km 23.3 to km 47.8 Calitzdorp to Oudtshoorn, Western Cape

2019 Kleinbrak Mossel Bay Municipality

- Environmental Control Officer for the Upgrading of Beyers Street, Klienbrak River, Western Cape

2019 George Outeniqua Eye Clinic Body Corporate

- Environmental Control Officer for the proposed expansion of parking area on erf 5950 and part of remainder erf 464, George, Western Cape

2019 Mossel Bay Hey Innovations

- Basic Assessment Report for the proposed establishment of a residential development on Erf 2839, Great Brak River, Western Cape

2019 Oudtshoorn Oudtshoorn Municipality

- Environmental Management Programme for the Blossoms Emergency Supply Scheme, Oudtshoorn, Western Cape

2019 Humansdorp Clinkscales Maughan-Brown

- Environmental Management Programme for the proposed construction of a new 22kV overhead powerline between Melkhout Substation and Allison Street, Humansdorp, Eastern Cape

2019 George PN&MR Lotter Family Trust

- Addendum to the Environmetnal Management Programme for the Establishment of a Township (Rivendale) on Portions 5, 15, 16 and 31 of the Farm Hansmoeskraal 202, Western Cape

2019 Oudtshoorn Department of Transport and Public Works

- Basic Assessment Report for the Proposed Maintenance Activities of Trunk Road 33/4 between km 4.6 and km 14.4, Meiringspoort, Western Cape

2019 George Dynarc Capital

- Substantive amendment of environmental authorisation for the proposed Development of Portion 130, 131 and 132 of the Farm Gwayang 208

2019 George Department of Transport & Public Works

- Basic Assessment Report for the proposed Upgrading of Bridge No. 2221 on Trunk Road 2/9 at km 15.1 over the Maalgate River.

2018 - 2019 Oudtshoorn Department of Transport and Public Works

- Maintenance Management Plan for the proposed periodic maintenance of Trunk Road 31, section 6, km 23.3 to km 47.8, Western Cape

2018 - 2019 Humansdorp Clinkscales Maughan-Brown

- Applicability of the EIA regulations Checklist for the proposed new 22kV overhead line between Melkhout Substation and Allison Street, Eastern Cape

2018 - 2019 Knysna Knysna local Municipality

- Applicability of the EIA regulations Checklist for the proposed Rheenendal infill housing, subdivision and rezoning of portions of erf 42, 36 and 387 as well as erven 535, 536, 553, 54, 393, 406, 672, 673 and 68, Rheenendal, Western Cape

2018 - 2019 Knysna Knysna local Municipality

- Applicability of the EIA regulations Checklist for the proposed infill housing and subdivision of erven in Welsyndorp and the rezoning and subdivision of erven in Bosdorp, Karatara, Western Cape.

2018 Port Elizabeth ACSA P.E.

- Applicability of the EIA regulations Checklist for the proposed ACSA Port Elizabeth Airport Photovoltaic Plant, Eastern Cape Province

2018 Mossel Bay TopUp Prop Inv.

- Applicability of the EIA regulations Checklist for the proposed Farm Stall Centre and filing Station on Portion 65 of the Farm Hartenbosch 217, Hartenbos

2018 George Outeniqua Eye Clinic Body Corporate

- Basic Assessment Report for the proposed expansion of parking area on erf 5950 and part of remainder erf 464

2018 Beaufort West Beaufort West Municipality

- Environmental Control Officer for the First and Second Environmental Audit for the provision of adequate water supply within the jurisdiction of the Beaufort West municipality

2018 Mossel Bay Element Consulting Engineers

- Environmental Management Programme update for the replacement of 22kV overhead powerline between Power Town and Hartenbos and between Hartenbos and the Hartenbos sewage substation and the construction of a new 22kV overhead power line between the Midbrak and Kleinbrak Substations.

2018 Mossel Bay Element Consulting Engineers

- Environmental Control Officer for the construction of a new 22kV overhead power line between the Midbrak and Kleinbrak Substations

2018 Mossel Bay Element Consulting Engineers

- Environmental Control Officer for the Upgrade of Amy Searle Canal – Phase 5, Great Brak River

2018 Gouritsmond Hessequa Consulting Engineers

- Environmental Control Officer for the Upgrade and expansion of the Gouritsmond Water Water Treatment Works on remainder of erf 140, Gouritsmond

2018 George Biprops 14

- Environmental Control Officer for the residential development on portion 5 of the farm Kraaibosch No. 195, Groenkloof Woods: Phase C & D

2018 Knynsa Knysna Municipality

- Environmental Control Officer for upgrading of Knysna bulk water supply scheme: phase 2B

2018 Plettenberg Bay Bitou Municipality

- Environmental Control Officer for the upgrade of the Kranshoek Bulk Water Supply Scheme: Construction of Pipelines, reservoirs and associated infrastructure near Plettenberg Bay.

2018 Mossel Bay SMEC

- Environmental Control Officer for the Upgrade of Kusweg and associated infrastructure in Rheebok

2017 George EARP Construction

- Invasive Alien Management Plan for the proposed residential development on portions 21, 23, 24 & 48 of Farm Hansmoeskraal 202 near George

2017 Mossel Bay Mossel Bay Municipality

- Environmental Control Officer for the development of the new Mossel Bay municipal cemetery on erf 2001/0

2017 Knynsa Knysna Municipality

- Environmental Control Officer for the remedial work to prevent further settlement of the low-lift pump sump and retaining wall at Gouna River Pump Station

2017 Knynsa Knysna Municipality

- Environmental Control Officer for upgrading of Knysna bulk water supply scheme: phase 1

2017 George Biprops 14 (Pty) Ltd

- Environmental Control Officer for the residential development on portion 5 of the farm Kraaibosch No. 195

2017 Still Bay Hessequa Municipality

- Environmental Control Officer for the construction of a reservoir, booster pump station and associated infrastructure in Melkhoutfontein near Still Bay

2016 - 2017 Heidelberg Department of Transport & Public Works

- Environmental Control Officer for the flood damage repairs to structures in the Central Eden District Municipality Region, Heidelberg North

2016 - 2017 Riversdale Department of Transport & Public Works

- Environmental Control Officer for the flood damage repairs to structures in the Central Eden District Municipality Region, Riversdale East area

2016 - 2017 Still Bay Department of Transport & Public Works

- Environmental Control Officer for the upgrade of main road 332 near Still Bay

2016 - 2017 Mossel Bay The South Cape College

- Environmental Control Officer for the extension of the South Cape College: Phase 3, Mossel Bay Campus

2016 - 2017 Klein Brak Mossel Bay Municipality

- Environmental Control Officer for the removal of obstructions in the lower floodplain of the Klein Brak River Estuary

2016 Prince Albert Milway Trade and Invest 1014cc

- Basic Assessment for the proposed guest lodge on remainder of Farm Rietpoort 13

2016 Plettenberg Bay Bitou Municipality

- Basic Assessment for the proposed Qolweni phase 5 development near Plettenberg Bay

2016 Mossel Bay Element Consulting Engineers

- Environmental Management Programme for the replacement of 22kV overhead powerline between Power Town and Hartenbos and between Hartenbos and the Hartenbos sewage substation

2016 George SMEC

- Environmental Policy for the resurfacing of York Street, George

2016 Mossel Bay Department of Transport & Public Works

- Maintenance Management Plan for proposed upgrade of Louis Fourie Road.

2016 George Oaklands Bridge Country Estate HOA

- Maintenance Management Plan for proposed repair and maintenance of the riverbank at Oaklands Bridge Country Estate in Heather Park

2016 Gouritz Department of Transport & Public Works

- Update of the Maintenance Management Plan for proposed repair and maintenance of the Gouritz River Bridge bank protection along the R325 near Gouritzmond

2016 George Ivorybell Investment (Pty) Ltd

- Outeniqua Sensitive Coastal Area Environmental Impact Report for the proposed new house on erf 379 in Heralds Bay

2016 George George Municipality

- Environmental Assessment Report for the substantive amendment of environmental authorisation of the proposed upgrade and extension of the overhead power lines and associated substations

2016 Oudtshoorn SA Army Infantry School

- Environmental Control Officer for the construction of a fighting in built up areas (FIBUA) range on portion 10 of the farm Blaauwtjes Drift 110 in Oudtshoorn

2015 - 2016 Gouritz Department of Transport & Public Works

- Environmental Control Officer for the repair and maintenance of the Gouritz River Bridge bank protection along the R325 near Gouritzmond

2015 - 2016 Albertinia Garden Route Game Lodge (Pty) Ltd

- Environmental Control Officer for the five new units at the Garden Route Game Lodge

2015 - 2016 Mossel Bay Element Consulting Engineers

- Environmental Control Officer for the replacement of 22kV overhead powerline between Power Town and Hartenbos and between Hartenbos and the Hartenbos sewage substation

2014 - 2016 Plettenberg Bay Chauke Quanity Surveyers

- Environmental Control Officer for the Qolweni and Kwanokuthula High Density Units and engineering services

2016 Plettenberg Bay Bitou Municipality

- Environmental Control Officer for the civil engineering works for Kwanokuthula Phase 4 and the extension of Sishuba Street

2014 - 2016 Mossel Bay The South Cape College

- Environmental Control Officer for the extension of the South Cape College, Mossel Bay Campus

2016 George SMEC

- Environmental Control Officer for the resurfacing of York Street

2014 - 2015 Mossel bay The Muller Murray Trust

- Environmental Control Officer for the construction of gravity pipeline from the Nautilus take-off to the Boggomsbaai Reservoir phase 2

2015 Swellendam Casidra SOC Ltd

- Environmental Control Officer for the Grootvaderbos Groynes in the Buffeljags River

2015 George Element Consulting Engineers

- Environmental Control Officer for the upgrading and extension of overhead power lines and substations: construction of a new 66kV overhead line between Protea and Ballots Bay substation

2014 - 2015 George Department of Transport & Public Works

- Environmental Control Officer for the flood damage repair projects in the George and Knysna local municipal areas

2015 George BDE Consulting Engineers (Pty) Ltd

- Environmental Control Officer for the photovoltaic solar plant for the ACSA George Airport

2015 Heidelberg Bergstan South Africa

- Environmental Control Officer for the Duiwenhoks River stabilization works: Sites B31, B38 and B39

2015 Krakeel Element Consulting Engineers

- Environmental Control Officer for the construction of filling station at SSK Tuinrote Agri on portion 5 of the farm no. 320

2014 - 2015 Herbertsdale SMEC

- Environmental Control Officer for the flood damage repairs to structures in the Eden region: Herbertsdale area

2014 - 2015 George Department of Transport & Public Works

- Environmental Control Officer for the flood damage repair projects in the George and Knysna local municipal areas

2015 George SMEC

- Environmental Control Officer for the improvements to the Pacaltsdorp interchange and new pedestrian bridge

2014 - 2015 Still Bay De Villiers & Moore Consulting Engineers

- Environmental Control Officer for the Still Bay 66kV substation and overhead powerline

2014 Beaufort West Worley Parsons Consulting Engineers

- Environmental Control Officer for the Nelspoort bulk water supply scheme northeast of Nelspoort

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Version 1.2 - Final

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

In terms of
Regulation 22 (b) of Government Notice No. R385 in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998), July 2006 as amended 2008 and the Environmental Impact Assessment Regulations 2014 (as amended)

For
The Residential Development on Erf 19001, Heather Park, George: Arbour Estate

arbour
NATURE ESTATE

Compiled by	HilLand Environmental
Date	3 December 2023
Hilland reference	GEO23/1176/19
EA reference	16/3/3/1/D2/26/0023/22
Date of EA	13 June 2023
Validity period of EA	Until 30 June 2028

GEO23/1176/19
3 December 2023

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ARBOUR ESTATE:
A RESIDENTIAL DEVELOPMENT ON ERF 19001, HEATHER PARK, GEORGE

Submitted for:
DEADP approval post EA

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Table of Contents

List of Annexures

Annexure A	Locality Map
Annexure B	Site Development Plan Civil services plans Electrical services plans
Annexure C	"No-Go" Mapping
Annexure D	Environmental Induction Sheet and Register
Annexure E	Method Statement Form
Annexure F	Register of Rescued Indigenous vegetation
Annexure G	Landscape Philosophy, landscape- and rehabilitation plan
Annexure H	Stormwater management plan
Annexure I	CV of EAPs
Annexure J	List of plant species surveyed by specialist
Annexure K	Protected plant and tree species as adopted from the Acts
Annexure L	Alien Control Plan and approval Permit to retain Gums
Annexure M	Environmental Authorisation (EA)

National Environmental Management Act

An EMPr must comply with Section 24N of NEMA and the Environmental Impact Assessment Regulations 2014 (GN 982 Appendix 4) which requires that it must include the following:

REQUIREMENTS	REPORT SECTION
(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;	**Annexure I**
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	**Section 2**
(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;	**Annexure C**
(d) a description of the impact management [objectives] 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;	**Section 5, 6, 7 & 10**
(e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	**Section 5, 6, 7 & 10**
(f) a description of proposed impact management actions, identifying the manner in which the impact management [objectives and] outcomes contemplated in paragraph (d) [and (e)] will be achieved, and must, where applicable, include actions to –	**Section 5, 6, 7 & 10**

(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;	
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	**Section 3, 5, 6, 7 & 10**
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f)	**Section 3, 7 and 8**
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	**Section 3, 5, 6, 7 & 10**
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	**Section 3, 5, 6, 7, 9 & 10**
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	**Section 3, 5, 6, 7, 9 & 10**
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	**Section 3, 5, 6, 7, 9 & 10**
(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	**Section 3**
(n) any specific information that may be required by the competent authority.	**N/A**

1 INTRODUCTION

HilLand Environmental (Pty) Ltd, independent Environmental Assessment Practitioners (EAP), have been appointed by the applicant, **Cedardale Investments (Pty) Ltd**, represented by **Mr Amit Josepth Katz**, to ensure compliance with the regulations contained in the National Environmental Management Act (NEMA, No. 107 of 1998, as amended) and the Environmental Impact Assessment Regulations, 2014 (as amended) for the residential development on Erf 19001, Heather Park, George (Arbour Estate).

Signatura (Signature Homes (Pty) Ltd) will be the developer of the estate for Cedardale Investments, as such the EMPr is binding on Cedardale and Signatura and all their representatives, successors in title and the future HOA.

This Environmental Management Programme (EMPr) was developed as part of the requirements of a Basic Assessment in terms of NEMA and is submitted in accordance with the condition required in the EA (as issued 13th June 2023 - 16/3/3/1/D2/26/0023/22).

This EMPr is binding on the applicant, their representatives, and ALL successors in title / future developers in full or in part for the development as contemplated in this application and any future amendments to the approved layout / development plan, as well as the future Home Owners Association (HOA) and all property owners in the development.

The monitoring of compliance with the EMPr is mandatory in terms of the construction phase and compliance reporting is required at the **end** of the construction phases:

- installation of all **civil** services;
- construction of top structures as per the development programme and approved SDP.

This EMPr, in terms of the NEMA "duty of care", also includes the operational and rehabilitation phases that were highlighted as part of the process and it will be the **Developer's and subsequently the HOA's responsibility** to ensure compliance with the operational phases as they fall outside the scope of the Listed Activities to be authorized in terms of NEMA, but they fall under NEMBA as part of the alien clearing control plan.

The report is divided to provide a clear distinction between the construction phase(s) and the ongoing operational aspects of the development.

This EMPr **must be included in the tender documents** of **all** prospective contractors and must also be included in the final contract awarded. **The EMPr is binding on all contractors, sub-contractors, agents, consultants and construction staff on the property.**

The full and approved EMPr will be made available to all contractors working on the project. Certain fundamental aspects are therefore of importance:

- The EMPr and these requirements are binding on all contractors and their sub-contractors.

- **It is the responsibility of the applicant/ holder /developer /owner / HOA** to ensure that his/her main contractor and any sub-contractors are made aware of the environmental requirements for working on the estate.
- The contractor(s) will be required to make good any damage caused through their actions or the actions of their sub-contractors (in addition to any penalties for non-compliance issued).

Please note that this EMPr is a dynamic document, which will grow and be changed with new developments in the field as the need arises.

As per the EA, a copy of this EMPr and EA must be kept on-site and on any website associated with the development (HOA) so that it is available to all landowners and their successors in title.

2 DEVELOPMENT PROPOSAL

The development consists of a mixed residential estate community which includes simplex and duplex homes and apartments together with a clubhouse and various community facilities, the required engineering services and internal access roads and a forested rehabilitation conservation corridor area.

Proposed as part of the SDP:

- 84 Housing units (5 different types-);
- 3 apartment blocks with 95 flats/apartment units;
- Internal roads and driveways;
- Parking areas;
- Internal open space areas;
- Forested rehabilitation corridor;
- Communal recreational, Club house and Guard house facilities;
- Associated civil services and electrical connections.

The residential estate development is set back behind the line depicted on the SDP as "edge of bush" (hereinafter referred to as the "development setback line") and the area between this line and the Malgas River must be managed as an open space area. This area is be managed as a riparian conservation rehabilitation corridor.

- Only the security fence may be constructed beyond this line as depicted on the SDP.
- No new buildings, structures or bulk engineering services infrastructure may be constructed / installed in the open space area, unless specifically included in the approved SDP (and its required services) and part of the rehabilitation plan as considered and included in the Final BAR which was authorised.
- The storm water swales and attenuation ponds fall within this area and will form part of the rehabilitation area once complete.

- Alien clearing to be undertaken in accordance with the approved Alien Control Plan and permit (as attached).

The SDP below represents the **Revision 21, 2023/07/21** – to be authorised in terms of the Part 1 amendment and future addendum to the EA. This SDP has been approved by the George Municipality.

Landscape Master Plan (Annexure G)

Compliance with the EMPr is required for the construction phase for both civil services and buildings as the case may be.

Any changes to, or deviations from the scope of the alternative described above must be accepted or approved, in writing, by the Competent Authority before such changes or deviations may be implemented.

3 TERMS OF REFERENCE

The main terms of reference of this EMPr are to identify and mitigate any potential negative environmental impacts that may be associated with listed activities approved in terms of NEMA for the construction of the residential estate on Erf 19001, George.

The contractor will be required to make good any damage caused through their actions or the actions of their sub-contractors (in addition to any penalties for non-compliance issued).

3.1 LISTED ACTIVITIES AUTHORISED IN THE NEMA ENVIRONMENTAL PROCESS

The following listed activities, in terms of the Environmental Impact Assessment Regulations (2014, as amended) (GN NO. R. 324 - 327) will be triggered by the residential development on Erf 19001, George and may be undertaken by the holder:

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1**	Describe the portion of the proposed development to which the applicable listed activity relates.
27	**The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation,** except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	**The proposed development on the property will require the clearance of more than 1ha of vegetation (but less than 20ha). This has been assessed by a SACNASP registered specialist. The vegetation is transformed and does not support any intact ecosystem.**
28	**Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture,** game farming, equestrian purposes or afforestation **on or after 01 April 1998 and where such development:** **(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares**; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	**The property is located in the urban area of George, is bigger than 5ha and has been previously approved for development but was not yet developed. The property was historically used for agriculture.**
Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3**	**Describe the portion of the proposed development to which the applicable listed activity relates.**
12	**The clearance of an area of 300 square metres or more of indigenous vegetation** except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. **i. Western Cape** **i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;** **ii. Within critical biodiversity areas identified in bioregional plans;** iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal	**The property had not been mapped as forming part of any critically endangered or endangered ecosystem listed in terms of NEMBA.** **As such, this activity would not have been triggered (prior to the 18 November 2022)** **The specialist has verified that no Garden Route Shale Fynbos remains on site.** **The Ecosystem status change from Vulnerable (2011) to Endangered (2022) is noted and as such this listed activity will now need to be authorised.**

	will occur behind the development setback line on erven in urban areas; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.	 **Screen shot from Cape Farm Mapper showing the SANBI remnants as Gazetted**

Note – no activities within 32m of the watercourse are authorised and no activities are planned or intended within 32m of the watercourse other than alien clearing as per the approved ACP.

These activities relate to the construction of a residential estate on the property and the impacts associated with those activities are covered in this EMPr.

Various technical reports and specialist assessments have been undertaken in order to inform the application and the impacts anticipated and the mitigation measures proposed are included in this report.

The triggering of any **NEW** listed activities will require environmental authorisation first before the activity may commence.

3.2 ENVIRONMENTAL CONTROL OFFICER (ECO)

An environmental control officer (ECO) must be appointed to oversee the installation of services during **civil and top structure construction** on-site, ensure compliance with the Environmental Authorisation (EA) and the Environmental Management Programme (EMPr) and to assist with issues as they may arise on site. **Any phase will be regarded as complete once the associated communal landscaping for that area is complete**.

It will be the ECO's responsibility to ensure that the mitigation / rehabilitation measures and recommendations referred to in the EA are implemented and complied with by the owner / developer /HOA as the case may be.

The **applicant/developer / HOA** will be responsible for the remuneration of the ECO and any other expenses encountered in the process of environmental monitoring of the construction.

3.2.1 SELECTION OF THE ECO

The appointed ECO must be able to demonstrate that (s)he is of sufficient competency to undertake the required task. This includes:

- Previous experience of environmental control of similar sites.

- Working experience with contractors.
- Knowledge of the particular project and expected areas of concern.

3.2.2 ROLES AND RESPONSIBILITIES OF THE ECO

The ECO will undertake the following tasks:

- Ensure **compliance** with the EMPr at all times during the pre-construction and civil construction phases;
- Ensure compliance with relevant management **conditions** of the EA during the pre-construction and civil construction phases;
- To work in close co-operation with the resident engineer, contractors, management and HOA of the site;
- Meet with the contractors to set out the environmental parameters within which they must work (pre-construction and civil construction phase);
- Provide an **Environmental Induction (Environmental Education)** with all contractors **prior** to the commencement of any work (pre-construction phase (civil building));
- Indicate where all no-go areas are to be demarcated and to ensure adherence to these delimitations at the induction session **BEFORE** any construction commences on-site (pre-construction phase);
- Indicate where **plant rescue** may be necessary, and what species should be rescued on this site (pre-construction phase);
- Ensure that the required **haybale protection barrier** is installed **prior** to any earthworks commencing on site
- Indicate where **erosion protection and siltation prevention measures** are required or need to be supplemented and to ensure correct implementation;
- Advise on **rehabilitation requirements** according to the different areas;
- Check up on general environmentally friendly construction practices (e.g. no littering, safe and secure environment, contamination risks, etc.);
- Ensure that the correct earthworks practices are adhered to, e.g., no encroachment into the surrounding vegetation, separation of topsoil and subsoil, correct stockpiling and stripping of topsoil).
- Provide a report back at site meetings (during the pre-construction and civil construction phase) to report on and assess the success of the environmental control and to determine any further environmental control measures which may be necessary;
- The ECO should visit the site **every two weeks** during the **construction phase** and rehabilitation thereof. Th frequency may be increase to weekly site inspections. The ECO is to be available at any time as required by the contractors, resident engineer or authorities;
- The ECO should conduct inspections **every two weeks** of the **rehabilitation phase** following civil construction to ensure success until the area is suitably reinstated and secure;

- The ECO has the discretion to undertake more frequent visits if he/she feels this is justified due to the actions of the contractors and to make ad hoc visits in order to ensure compliance;
- The ECO is to keep a site diary; a photographic record of activities taking place on site as well as copies of all monthly reports submitted to the Department, a schedule of current site activities including the monitoring of such activities and complaints register of all public complaints and the remedies applied to such complaints;
- **During civil construction phase: Monthly monitoring reports** must be compiled submitted to the developer (team), local authority and submitted to DEADP **quarterly (every three months),** except when there is non-compliance observed.
- **During rehabilitation phase: Monthly monitoring reports** must be compiled submitted to the developer (team), local authority and DEADP.
- The ECO is to submit a **completion report** to the competent authority (**DEADP- George Office**) and **applicant** at the following stages:
    - upon completion of the civil construction phase
    - upon completion of the top structure construction phase

  these reports need to be submitted **before** the EA lapses;
- It must be noted that the **ECO HAS THE AUTHORITY TO SUSPEND WORK ON SITE FOR ANY ACTION BEING UNDERTAKEN THAT DOES NOT COMPLY WITH THE ENVIRONMENTAL REQUIREMENTS OF THE SITE**. Such a stop order has immediate effect and will be communicated through the resident engineer to the contractor responsible.

4 CONDITIONS OF THE ENVIRONMENTAL AUTHORISATION (EA)

Conditions of Environmental Authorisation:

EIA REFERENCE NUMBER: 16/3/3/1/D2/26/0023/22
NEAS REFERENCE: WCP/EIA/0001158/2022
DATE OF ISSUE: 13 June 2023

Note that this section only includes the relevant conditions and must be read in conjunction with the attached EA (Annexure M).

Condition
Scope and Validity Period of authorisation
1. This Environmental Authorisation is granted for the period from date of issue until **30 June 2028** (validity period), during which period the Holder must ensure that the— (a) physical implementation of all the authorised listed activities is started with and concluded at the site; (b) construction monitoring and reporting requirements are undertaken at the site and submitted to the Competent Authority in time to allow said authority to process such documents timeously; (c) post construction rehabilitation and monitoring requirements is undertaken and completed at the site; and (d) environmental auditing requirements are complied with; and that such auditing is finalised in time to allow the competent authority to be able to process the environmental audits timeously within the specified validity period.
2. The construction phase of the Environmental Authorisation is subject to the following:

2.1 The Holder must finalise the post construction rehabilitation and monitoring requirements within a period of 3-months from the date the development activity (construction phase) is concluded.

3. The Holder is authorised to undertake the listed activities specified in Section B above in accordance with the Preferred Alternative described in the FBAR dated 9 March 2023 on the site as described in Section C above.
This Environmental Authorisation is only for the implementation of the Preferred Alternative which entails:
The Holder is herein authorised to undertake the following activities that includes the listed activities as it relates to the transformation of land previously used for agriculture and the clearance of indigenous vegetation for the construction of the residential development and associated structures and infrastructure.

The specific details of the proposed development on the property comprises of the following:

- 84 Housing units (5 different types-);
- 3 apartment blocks with 95 flats/apartment units;
- Internal roads and driveways;
- Parking areas;
- Internal open space areas;
- Communal recreational, Club house and Guard house facilities;
- Associated civil services and electrical connections.

The development must be implemented in accordance with the layout developed by Robert Silke and Partners (as amended – Revision 21 dated 24 February 2023 (addendum to EA dated 10 November 2023) ~~dated 24 February 2023) Drawing number 202203 SKE 200 Rev 16~~ (Annexure 2).

4. This Environmental Authorisation may only be implemented in accordance with an approved Environmental Management Programme ("EMPr").

5. The Holder shall be responsible for ensuring compliance with the conditions by any person acting on his/her behalf, including an agent, sub-contractor, employee or any person rendering a service to the Holder.

6. Any changes to, or deviations from the scope of the alternative described in section B above must be accepted or approved, in writing, by the Competent Authority before such changes or deviations may be implemented. In assessing whether to grant such acceptance/approval or not, the Competent Authority may request information in order to evaluate the significance and impacts of such changes or deviations, and it may be necessary for the Holder to apply for further authorisation in terms of the applicable legislation.

Written notice to the Competent Authority

8. Seven calendar days' notice, in writing, must be given to the Competent Authority before commencement of any activities. 8.1. The notice must make clear reference to the site details and EIA Reference number given above.

8.2. The notice must also include proof of compliance with the following conditions described herein: **Conditions no.: 7**, **10** and **12.**

9. Seven calendar days' written notice must be given to the Competent Authority on completion of the construction activities.

Management of activity

11. The EMPr must be included in all contract documentation for all phases of implementation

Monitoring

12. The Holder must appoint a suitably experienced Environmental Control Officer ("ECO"), for the duration of the construction and rehabilitation phases of implementation contained herein.

13. The ECO must– 13.1. be appointed prior to commencement of any works (i.e. removal and movement of soil);

13.2. ensure compliance with the EMPr and the conditions contained herein;

13.3. keep record of all activities on the site; problems identified; transgressions noted and a task schedule of tasks undertaken by the ECO;

13.4. remain employed until all development activities are concluded, and the post construction rehabilitation and monitoring requirements are finalised; and

13.5. the ECO must conduct site inspections at least every 2 (two) weeks and must submit ECO Monitoring Reports on a monthly basis to the competent authority.

14. A copy of the Environmental Authorisation, EMPr, any independent assessments of financial provision for rehabilitation and environmental liability, closure plans, audit reports and compliance monitoring reports must be kept at the site of the authorised activities and be made available to anyone on request, and where the Holder has website, such documents must be made available on such publicly accessible website.

15. Access to the site referred to in Section C must be granted, and the environmental reports mentioned above must be produced, to any authorised official representing the Competent Authority who requests to see it for the purposes of assessing and/or monitoring compliance with the conditions contained herein.

Environmental Auditing

16. The Holder must, for the period during which the environmental authorisation and EMPr remain valid ensure the compliance with the conditions of the environmental authorisation and the EMPr, is audited.

17. The frequency of auditing of compliance with the conditions of the environmental authorisation and of compliance with the EMPr, must adhere to the following programme:
17.1. Auditing during the non-operational phase (construction activities):

17.1.1. During the period which the development activities have been commenced with on the site, the Holder must ensure annual environmental audit(s) are undertaken and the Environmental Audit Report(s) submitted annually to the Competent Authority.

17.1.2. A final Environmental Audit Report for the construction phase (non-operational component) must be submitted to the Competent Authority within **three (3) months** of completion of the construction phase.

18. The Environmental Audit Report(s), must–

18.1. be prepared and submitted to the Competent Authority, by an independent person with the relevant environmental auditing expertise. Such person may not be the ECO or EAP who conducted the EIA process;

18.2. provide verifiable findings, in a structured and systematic manner, on–

18.2.1. the level of compliance with the conditions of the environmental authorisation and the EMPr and whether this is sufficient or not; and

18.2.2. the ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.

18.3. identify and assess any new impacts and risks as a result of undertaking the activity;
18.4. evaluate the effectiveness of the EMPr;
18.5. identify shortcomings in the EMPr;
18.6. identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr;
18.7. indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation;
18.8. indicate the date on which the maintenance/ rehabilitation was commenced with and the progress of the rehabilitation;
18.9. include a photographic record of the site(s) applicable to the audit; and
18.10. be informed by the ECO reports.

19. The Holder must, within 7 calendar days of the submission of the audit report to the Competent Authority, notify all potential and registered I&APs of the submission and make the report available to anyone on request and on a publicly accessible website (if applicable).

Specific Conditions

20. The residential estate development must be set back behind the line depicted on the SDP as "edge of bush" (hereinafter referred to as the "development setback line") and the area between this line and the Malgas River must be managed as an open space area and must not be developed. Further to this—

20.1. Only the security fence may be constructed beyond this line as depicted on the SDP.

20.2. No new buildings, structures or bulk engineering services infrastructure may be constructed / installed in the open space area, unless the necessary authorisation has been obtained.

21. The open space area between the development setback line and the Malgas River must be managed for a conservation use. Further to the above—
21.1. The Holder must ensure that alien invasive plant species will be removed from the open space area within the specified validity period in accordance with an approved Invasive Alien Clearing Plan.

21.2. A copy of the approved Invasive Alien Clearing Plan issued in terms of the National Environmental Management: Biodiversity Act, 2004 (Act no 10 of 2004) ("NEM:BA") must be submitted to this Department prior to commencement of the activities on the site (see annexure I of this EMPr).

21.3. The Holder of the EA must adopt a "Conservation Management Plan" (CMP) and must address and / or incorporate the following—

(a) Fire management requirements (i.e., protective and ecological).
(b) No planting except for rehabilitation in terms of an approved management plan.
(c) No collection or damaging of fauna and flora.
(d) No vehicles of any type are permitted, except for rehabilitation and management in terms of an approved management plan.
(e) Financial provisions for the management and upkeep of the conservation area.

Note: Failure to complete this action prior to the validity period of this Environmental Authorisation expiring, may require the amendment of the environmental authorisation or EMPr. **The CMP must be compiled prior to the transfer of the first erf and must be included in the purchase agreements**. A copy of the CMP must be submitted to the Competent Authority prior to the lapsing of this Environmental Authorisation's validity period. **Note**: The CMP should be ready for implementation with the establishment of Homeowners' Association ("HOA").
22. Should any heritage remains be exposed during excavations or any other actions on the site(s), these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape. Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from Heritage Western Cape. Heritage remains may only be disturbed by a suitably qualified heritage specialist working under a directive from the relevant Heritage Resources Authority. Heritage remains include meteorites, archaeological and/or paleontological remains (including fossil shells and trace fossils); coins; indigenous and/or colonial ceramics; any articles of value or antiquity; marine shell heaps; stone artefacts and bone remains; structures and other built features with heritage significance; rock art and rock engravings; shipwrecks; and/or graves or unmarked human burials including grave goods and/or associated burial material.

5 MANAGEMENT OUTCOMES AND OBJECTIVES FROM THE BASIC ASSESSMENT REPORT (BAR)

The following specific requirements have been generated from the specialist assessment of the application and apply specifically to the work on site – **note- only actions that can be directly related to environmental management during preparation and construction are included in the EMPr. Mitigation measures and recommendations made that apply to the planning and approvals, design or layout are included in the BAR for assessment and are NOT reported on in the EMPr as they will have already been addressed in the final design approved for construction**.

- Biodiversity requirements:
    - Installation of the haybale protection screen 2.5m offset from the top of the steep slope prior to any earthworks or vegetation clearing taking place.

- Storm water management – implement SUDS principles as included in the Storm water management plan (Annexure H)

- Wetland species rescue – rescue all *Wachendorfia, Aristea,* Cyperacea etc (as directed by the ECO) from within the various artificial wet areas of the site prior to vegetation clearing and earthworks - to be used for the landscaping of the "wetland detention swales" on site.

- No physical activities which result in soil disturbance may take place within the riparian zone and the riparian buffer except for those specifically indicated (connection to the existing municipal sewage line and installation of the security fence at the 1m offset from the steep slope

- Restoration of the riparian zone and habitat – the area is to be cleared of alien vegetation according to the Alien Control Plan submitted and be rehabilitated according to the Rehabilitation plan produced by the Landscape Architects.

- Alien clearing to comply with an approved ACP in terms of NEMBA. Roots to remain in the soil and NOT be pulled out mechanically.

- The isolated fynbos species rescue (as directed by the ECO) - recovered prior to vegetation clearing and earthworks and be used for the landscaping on site.

- The top layer of topsoil to be recovered for use in landscaping.

- Visual requirements:
    - Construction phase mitigation measures
        - Store and keep excavation machinery and trucks out of sight of surrounding residential areas as far as possible.
        - Ensure that excavation machinery and trucks entering and leaving the site do not leave any rubble, sand, rock, branches or other unwanted material on roads liking to the site.
        - Screen the site camp from view using appropriate materials that blend into the surrounding vegetation.
        - Ensure that site construction hoarding is dark in colour and free of excessive branding.
        - Prohibit excessive signage outside the construction camp.
        - Keep site lighting to a minimum and prevent the use of flood type lighting as far as possible.
        - Ensure that the site is kept neat and clean. Collect and dispose of litter appropriately to prevent any potential wind-blown litter on or off the site.
        - Ensure that site clearing is delayed as long as possible prior to construction in any particular area.
        - Limit site clearing to within the minimum footprint required for construction.
        - Protect existing vegetation in all areas that do not fall directly into the construction footprint.
        - Do not damage or destroy vegetation on adjacent properties.
        - Control erosion immediately to prevent visual scarring of the landscape.
        - Control dust using the appropriate dust suppression techniques.
        - Rehabilitate eroded / denuded areas as soon as possible following construction in any particular area.
        - Ensure that vegetation and tree planting is installed as per the landscape master plan and in terms of the landscape guidelines.
        - Ensure that tree rehabilitation planting associated with the forest along the river is installed as per the tree rehabilitation plan.
        - During rehabilitation, reduce and control dust as far as possible by seeding or reinstating indigenous vegetation.
        - Large retaining structures should be stepped and designed to be integrated with natural vegetation and
        - Building forms and volumetric/elevational components articulated to avoid a monolithic form and flat facades.
        - Protect the existing trees that are not planned for removal as per the tree rehabilitation plan along the river bank to ensure screening of the proposed development.

- Operational phase
  - Ensure that the landscape master plan prepared by the appointed SACLAP registered professional landscape architect is implemented and monitored by the appointed landscape architect during construction. The landscape master plan must include visual screening that offsets the visual impact of the built form and establishes a green network of indigenous vegetation at the site.
  - Implement the landscape master plan to include visual screening elements including tree planting along the boundary edge associated with the Homewood development.
  - High vertical walls, as well as the use of 'terraforce'/'loffelstein' embankments should be avoided. Retaining structures should be stepped and designed to be integrated with natural vegetation and planting.
  - Make use of natural, contextually appropriate materials.
  - Ensure that low level, unobtrusive and contextually appropriate signage is used.
  - Keep reflective surfaces to a minimum or ensure that these areas are shaded by roof overhangs, where possible.
  - Ensure that non-reflective, colour appropriate paving surfaces are used as far as possible.
  - Place services underground, where possible. Electrical sub-stations, etc. to be incorporated into built form/ structures.
  - Lighting should be minimized and designed appropriately along the following guidelines: o Use low level lighting around buildings and along paths and streets.
    - Avoid neon, spot or up-lighting.
    - Screen and filter lights sources as far as possible.
    - Shield external lights on buildings to cast light only upon the area required to be illuminated.
    - Ensure that naked light sources are not visible from beyond the site.
    - Ensure that no light is emitted into the sky.
  - Lighting must be low energy and must be shielded down lighting to minimise light impacts and night and light spillage into the surrounding nature areas.
  - Ensure that fencing is visually permeable, contextually appropriate and softened with planting to provide visual screening. Use appropriate colours such as dark grey, charcoal and black that are visually recessive.
  - Prepare a landscape guideline document based on the landscape philosophy and ensure that it is implemented by the Home Owners' Association during the operational phase.
  - A Site Development Plan must be prepared for approval by the local authority before construction activities can commence.

- Make allowance for on-going landscape maintenance to allow site vegetation to mature sufficiently to allow the environment to achieve maximum VAC.
- Areas that are infested with invasive vegetation must be rehabilitated carefully to ensure that no erosion or exposed areas result from rehabilitation activities.
- Avoid the scarring of slopes along the Malgas River due to excavation by making use of appropriate stabilizing techniques and technologies.
- Site clearing must be carefully controlled to minimize potential damage and erosion and all areas that are disturbed must be repaired and rehabilitated.
- All areas disturbed during construction activities must be rehabilitated using appropriate vegetation.
- Minimize cut and fill and where this is required, stabilization techniques must be integrated to incorporate natural materials and appropriate indigenous vegetation. Any vertical retaining structures should be staggered in height and should not exceed 1.2m.
- Ensure that stormwater from building rooftops and stormwater surface flow is harnessed and captured in swales and planting areas to encourage plant growth and rehabilitation.

- **Geotechnical requirements:**
  - **Earthworks & trenching –** follow engineering designs
  - **Stormwater drainage –** follow the Stormwater Management Plan
  - **Roads, Foundations and floors –** follow the engineering designs
- **Socio- economic requirements**: The project developer is to use locally sourced inputs where feasible in order to maximize the benefit to the economy.

  - **Construction phase - Main contractor to ensure the following: -**
    - Keep record of locally sourced inputs - to maximize the benefit to the local economy. Sub-contracting of local construction companies to occur as far as possible for the construction of facilities.
    - Contractor to have a community liaison officer - Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.
    - Keep record of all training courses for employees to ensure that employees gain as much as possible from the work experience. Facilitate the transfer of knowledge between experienced employees and the staff.
    - Contractor to perform a skills audit to determine the potential skills that could be sourced in the area.

- Main contractor to ensure 24-hour security on site and increased patrol in the neighbourhood
- Comply to traffic regulations and management to ensure minimal impact on traffic. Work restricted to normal working hours. Limit traveling times of construction vehicles in peak times.
- Comply to policies regarding noise and dust regulation methods close to roads and other existing infrastructure.

o **Operational phase -** The project developer should make effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy.

- Keep record of local Small and Medium Enterprises supplying inputs required for the maintenance and operation of the facility.

- Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.

The following objectives were identified in the assessment:

Objective: **Prevention of loss of natural vegetation** - this impact is at face value minimal as there is little to no remaining natural vegetation on or off the site. The rehabilitation in the riparian zone will see return of the natural vegetation over time which is a positive impact and conservation outcome.

Impacts to avoid:

- Unnecessary access into the riparian buffer area
- Unnecessary disturbance of topsoil and remaining vegetation

Management actions:

- Alien clearing through an approved Alien Control Plan and rehabilitation programme
- All pathways and recreational use in the riparian rehabilitation zone to be limited and to be designed to follow contours, limit erosion and control use so that it will not result in damage.
- Ongoing maintenance of the open space area through alien clearing and management of pathways and rehabilitation.
- Plant rescue in the development area of the few remaining indigenous species to be used in the rehabilitation and landscaping areas
- Restoration and rehabilitation of the riparian corridor to recreate a riparian buffer zone of indigenous vegetation.

Management Outcome:

- Sound conservation management area which meets the ecological corridor requirements and supports the CBA and ESA principles.

Objective: **Prevention of soil erosion** – loss of topsoil and subsequent erosion, especially on steeper slopes can lead to damage to infrastructure over time and disturbance to riparian ecosystems (through the silt loading)

Impacts to avoid:

- Unnecessary disturbance of soil
- Unnecessary disturbance of vegetation
- Loss of soil on disturbed areas
- Erosion due to fence construction

Management actions:

- SUDS principles in storm water management limit concentration of storm water and encourage infiltration of water back into the soil profile.
- Installation of the hay bale silt fence along the steep slope interface of the development area prior to any earthworks commencing in any phase associated with that slope.
- Installation of the security fencing above the haybale protection with its designed gabion base, to further protect the slope from any uncontrolled surface flow during construction. Fence designed to follow the contour as far as possible with a gabion base to prevent any form of scour along its base during the operational phase. Surface flow will be able to pass through the gabion at the base of the fence without concentrating and causing erosion.
- Areas susceptible to erosion must be covered / protected and erosion mitigation measures must be implemented – silt fencing, hay bales, swales, sand bags and other means of slowing water down and allowing sediment to be deposited before it is transported away from its origin.
- Only disturb the area where installation of services is taking place so as to avoid unnecessary exposed areas where erosion may take place (development in phases).
- Stabilization and landscaping must be done following construction and to the satisfaction of the ECO to limit exposed areas
- During alien clearing avoid disturbance of the soil and do not remove the roots of alien trees.
- Brush pack screen silt fence of alien cleared vegetation to be installed approximately 2m away from the edge of the river on the slope as a final silt trapping element and to prevent vertical movement of people up and down the slope which may disturb the riverbanks
- Brush packing of alien vegetation in contour rows within the alien clearing area to prevent vertical movement up and down the slope which leads to erosion.
- Regular inspection of any services on site during the operational phase to early identify any potential erosion problems (pipelines, manholes, fences, pathways etc) and repair immediately to prevent the escalation and damage from occurring.

Management Outcome:

- Soil erosion will be kept to a minimum during construction and maintenance during the operational phase will ensure that erosion does not become a problem.

Objective: **Prevention of pollution** – during the construction phase potential pollution sources are construction vehicles leaking, cement / concrete batching areas, washing areas for paints, litter etc. During the operational phase potential pollution sources are blocked sewer manholes resulting in sewage spills, litter, oil spillage on roads etc

Impacts to avoid:

- Potential leaks from vehicles/construction machinery
- Spillages of hazardous substances
- Leakage of chemical ablution facilities
- Blockages in sewer system and overflow
- Contamination run-off from the construction site
- Waste, such as construction materials etc., which may be blown / washed away into the surrounding environment

Management actions:

- Vehicles and machinery must be well-maintained
- Drip-trays must be used for vehicles / machinery while standing in the camp site
- Leaks on construction vehicles to be immediately repaired or the vehicle removed from site until it no longer leaks.
- Ablution facilities must be well-maintained and regularly emptied
- Litter control essential throughout construction and operational phases
- Cement / concrete must be mixed on impermeable surfaces, concrete batching areas must have surrounding bunding to prevent the movement out of the area of spillage, no washing of any ready mix trucks on site
- Operational management must include regular inspections of pollution sources (even where they are municipal services like the sewer line running through the property and manholes)
- Monitoring by contractor and ECO

Management Outcome:

- No contamination of the environment and adjacent sensitive area (open space - north) and / or adjacent properties / areas
- Good housekeeping

Objective: Prevention of impact of potential heritage resources - none anticipated to be likely on site, however once excavations begin there must be due care to observe if any become evident.

Impacts to avoid:

- Damage to potential heritage resources on the property

Management actions:

- As per the EMPr, should any heritage resources be discovered, work will cease and HWC will be contacted to advise further

Management Outcome:

- Potential heritage impacts are mitigated and avoided

Objective: **Management of open space**

Impacts to avoid:

- Incorrect or no management of communal open space areas

Management actions:

- Alien invasive management to be done throughout the lifetime of the development in accordance with the approved ACP in terms of NEMBA
- All areas of disturbed topsoil to be revegetated / landscaped as soon as possible to prevent loss of topsoil
- Development levy to be secured for ongoing alien management, rehabilitation and landscaping of the internal open space areas
- Rescue and stockpile topsoil from the construction areas to use for rehabilitation and landscaping
- Implement the rehabilitation plan as produced by Planning Partners
- Implement the landscaping plan as produced by Planning Partners
- Management to continue by the HOA throughout the lifetime of the development
- Management and maintenance budget to be included in the annual HOA budget for the internal open space areas
- Management measures implemented should be done in accordance with the EMPr and inputs made by the ECO
- Packed brush windrows in the riparian areas to prevent vertical movement and path formation and potential erosion.
- Maintenance of all pathways to ensure no erosion is starting to take place. Raised wooden walkways used where erosion is a concern, bark or woodchips on pathways to act as a surface and prevent erosion.

Management Outcome:

- Sound management of riparian zone and buffer area.
- Sound management of the internal open space areas
- Continued use and enjoyment of the internal open space areas by the residents
- No uncontrolled movement through or disturbance of the riparian habitat/ forest
- An integrated landscape between the homes and infrastructure consisting of mostly indigenous species, that blends seamlessly into the rehabilitated riparian forest fringe and buffer right down to the Malgas River.
- Provide a habitat for movement of wildlife through the unfenced and rehabilitated riparian area (buffer and riparian zone).
- Transform the site from a "degraded invaded river forest and kikuyu field to a vibrant local indigenous habitat for people and wildlife alike and aim to set the standard for responsible resilient development and be an example of what needs to be done up, down and across the river" (Planning Partners, 2022)

6 SPECIFICALLY REQUIRED ENVIRONMENTAL MANAGEMENT PRACTICES

6.1 PRE-CONSTRUCTION PHASE

6.1.1 DEADP NOTIFICATIONS

- In accordance with the EA, seven (7) calendar days' notice must be provided to DEADP **before** commencement of any activities. Notification must include proof of appointment of an Environmental Control Officer (ECO)
- DEADP must be given a seven (7) calendar days' notice on **completion** of the construction activities.

6.1.2 ENVIRONMENTAL INDUCTION (EDUCATION)

- All civil construction and building staff **must** be briefed by the ECO in an environmental education programme regarding the environmental status and requirements of the site, **prior** to any activities commencing on site. This will include providing general guidelines for minimizing environmental damage during construction, as well as education with regards to basic environmental ethics, such as prevention of littering, the lighting of fires, etc. Records of environmental training (attendance register and training content) must be kept. Please refer to Annexure D of this EMPr.
- Induction required for **all contractors** prior to them commencing on site.

6.1.3 METHOD STATEMENT

- Before the contractor(s) begins each construction activity the Contractor and Site Agent shall, **prior to the commencement** of such activity involving construction, maintenance or rehabilitation, give the ECO a written plan setting out the following:
    - Location of the construction camp
    - Storage of construction materials and hazardous substances (if any)
    - Location of the stockpile sites for the top 30cm of topsoil (required in windrows in and around each phase for use in the rehabilitation and landscaping)
    - Location of any stockpile sites for subsoil or plan for removal from site
    - Solid waste plan
    - Wastewater plan
    - Erosion and sedimentation control plan
    - Fire control
    - Protection of natural features
    - Cement and concrete batching plan

The ECO is to approve the method statement **before** the works may commence. A pro-forma method statement showing what is required is attached in Annexure E.

6.1.4 VEGETATION CLEARANCE AND PLANT RESCUE PROGRAMME

Drone footage of the property (specialist David Hoare, 2022)

- The clearance of vegetation on the entire development area will over time be requirement for the development. However, **as vegetative cover is critical to preventing erosion and movement of silt, the vegetation must only be cleared in the immediate working area for any activity for the phase under construction.**
- Demarcation of this area and no-go fencing between the working zone and steep forest slopes is essential.
- All activities must be restricted to the demarcated working zone.
- No work may commence in a phase until the required hay bale protective screen has been installed along that section of the steep slope edge.

- **Plant rescue must be undertaken prior to the commencement of any clearing activities taking place on-site or in a particular phase**. ECO to advise as to what requires transplant in each phase. A record of rescued plant is to be maintained (please refer to the attached table that should be filled out in Annexure F).
- Rescue plants **must be collected and stored** in the on-site nursery located within the working zone for later use in the landscaping phase. Landscape architect to advise on the nursery and replanting.
- For successful transplant a sod including the desired plant with its roots intact should be removed and replanted.
- The grass area is to be mowed **AFTER** plant rescue but prior to commencement to reduce the vegetation biomass. This mulch will form part of the organic material collected with the topsoil.
- Alien clearing to follow the approved ACP in terms of NEMBA and must commence as indicated in the phasing on the Rehabilitation plan (annexure G)
- Stockpiling of cut alien vegetation shall only be permitted in areas indicated by the ECO. No cut alien vegetation shall be burnt on site without the necessary burning permit.
- Should any endangered species or protected species listed in Schedule 3 and 4, in terms of the Western Cape Nature Conservation Laws Amendment Act, 2000 (Act No. 3 of 2000) or Protected Tree Species in accordance with the National Forests Act, 1998 (Act No.84 of 1998) be discovered during vegetation clearance, it may not be removed without the relevant permit and licensing. Please see Annexure K for this list of species as adapted from these Acts.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Pre-construction and Construction phases							
Clearance of vegetation	Development area on Erf 19001	Plant rescue programme must be implemented **prior** to the commencement of vegetation clearing as per the EMPr Vegetation clearing must be **limited** to the work area and clear demarcation of the no-go areas will be required to ensure no disturbance beyond the development area	During the pre-construction of the development	Plant rescue to be conducted **in conjunction** with the ECO prior to the commencement of vegetation clearance (civil service installation and infrastructure construction)	**Weekly** inspection of pre-construction activities (vegetation clearing) will be required	Applicant. Contractor. ECO.	To be included in the **monthly** monitoring report

6.1.5 PROTECTION OF FAUNA (ANIMALS)

- The removal, damage or disturbance of animals must be avoided.
- Should any animal be caught up or trapped in the construction area, the ECO should be requested to assist (e.g., relocate snakes trapped in the construction trench etc.)
- The contractor(s) shall be responsible for ensuring all employees are aware of the need to prevent any harmful effects on wildlife on or around the construction site as a result of their activities.
- The contractor(s) shall ensure that no hunting, trapping, shooting, poisoning or otherwise disturbance of any fauna takes place.
- The riparian area is a strict NO-GO area unless undertaking a task specific to the area.

6.1.6 SOIL PROTECTION

- As topsoil is a valuable resource, it **must be stripped to stockpile from all construction areas <u>before work commences in that specific area</u>**. Landscape architect / ECO to advise as to where to stockpile.
- Disturbance of vegetation and topsoil is only to take place according to a programme in approved construction areas as the work in that area is due to begin – this is to avoid large areas being exposed to erosion risk when work is not taking place in that area.
- The topsoil must be stockpiled for use in rehabilitation and landscaping and must **not** be contaminated with other building materials and / or subsoil. The landscape architect / ECO will indicate the position of the topsoil stockpile berms over the site.
- Where possible, topsoil can be placed directly into the required landscaping areas or swales so that they have time to settle and so the soil does not have to be double handled. Where landscape berms / swales are created, they need to be shaped to their final shape immediately prior to the soil settling and becoming hard and difficult to move.
- Such landscape berms or swales must be vegetated with a cover crop to prevent movement and thereafter be planted with the desired indigenous landscaping material as directed by the Landscape Architect
- <u>Topsoil can only be removed from the site</u> with the written approval of the ECO / landscape architect.
- The vegetation roots and any surface organic matter are to be removed together with the topsoil and are to be stockpiled for use during the rehabilitation phase.
- The stockpiles must be protected against erosion including wind (vegetation can be permitted to grow on the stockpile to keep it secure and prevent wind movement. No alien invasive plants may grow on the stockpile).
- The soil removed for construction of **services** (which will all be underground such as the sewage / water network, stormwater outlet structures etc.) must not be removed, but placed to the side of the trench, while the sub-soil is placed to the other side. The soil is returned in the same order with the vegetated topsoil closing the trench and stimulating re-growth.
- No topsoil stripping is to take place prior to the completion of the plant rescue

programme.

- Any surplus subsoil that needs to be stockpiled for cut and fill operations must be stockpiled in an approved stockpile area as agreed to by the ECO.
- Stockpiles must be screened and protected from wind and water erosion
- Silt fencing needs to be installed before construction works commence to ensure that there is limited movement of silt on site. As the topography falls away towards the river the installation of the haybale silt barrier along this steep interface boundary is critical to protect so that NO silt can leave the site.

6.1.7 DISCOVERY OF HERITAGE RESOURCES

Based on the final comments from Heritage Western Cape (HWC), the proposed development will not adversely impact on cultural heritage resources and as such it was supported by HWC.

However, although not anticipated, should it be suspected that an object or structure of heritage value has been uncovered during earthworks or the clearing of vegetation (including but not limited to bones, burial sites, structures older than 50 years, stone tools, shell middens, pottery etc.), then all work is to immediately **cease,** and the ECO is to be contacted to inform Heritage Western Cape (HWC). Work shall not recommence until HWC have visited the site, inspected the object in question and advised on how to proceed. If the object requires removal by a trained archaeologist, this process will be at the expense of the developer. It is the contractor's responsibility to ensure all staff on site is aware of this procedure.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Pre-construction and Construction phases							
Clearance of vegetation and earthworks required during the construction phase (civil and construction on the property)	Development on Erf 19001	Should any object or structure of heritage value be discovered, work is to **cease**, ECO is to be contacted and advise accordingly	Pre-construction and construction phase	ECO to monitor compliance during the pre-construction and construction phase	Continual monitoring of compliance	Contractor to ensure that work ceases should any object or structure of heritage value be discovered, and the ECO should be contacted The ECO is to contact HWC and advise accordingly	To be included in compliance monitoring report

6.2 GENERAL CONSTRUCTION REQUIREMENTS

6.2.1 ACCESS TO THE SITE

Access to the site is via Witfontein Street and Tommy Joubert Avenue through Homewood Estate. Ingress and egress movement will be controlled by means of an access control gate situated on the property.

Construction vehicles and future residents will use this access. Any alternative construction access is to be approved by the ECO and local authority prior to being used.

Construction vehicles are to respect the rights of other road users and the residents through Homewood.

The following will be of importance:

- Movement of construction vehicles must be **restricted** to the designated roads only - any temporary haul roads must be approved by the ECO.
- Rules of conduct for contractors are likely to be set up by the developer and subsequent HOA and will include contractors complying with the EMPr and any construction access routes designated for such purposes.
- Access to the area is to be monitored during construction.
- The contractor(s) must ensure that vehicles leaving the site are clean and, wherever possible, do not deposit mud, any other earth material and concrete on the road surface. Where this is unavoidable, it must be cleaned on a daily basis and may not be permitted to enter the storm water system.
- During the construction of the new residential development and the new entrance to the property, it is essential that traffic flow is **correctly managed** especially since this is an existing access to Homewood Estate. This implies appropriate signage and visible demarcation of the work area and the areas which traffic must adhere to.

6.2.2 SITE AGENT

- The main contractor shall appoint a responsible agent to ensure that they comply with this EMPr and all its conditions. This party is to report directly to the ECO and will need to attend the induction and be briefed on the requirements by the ECO.

6.2.3 USE OF LOCAL LABOUR

- It is strongly recommended that local labour is used for the construction phase of this project. "Local" implies people within the George area.
- Records are to be kept of all personnel and subcontractors employed by the contractor. The main contractor is to provide the breakdowns of their various sub-contractors. **These records are to be provided to the ECO by the contractor(s) on a monthly basis.**

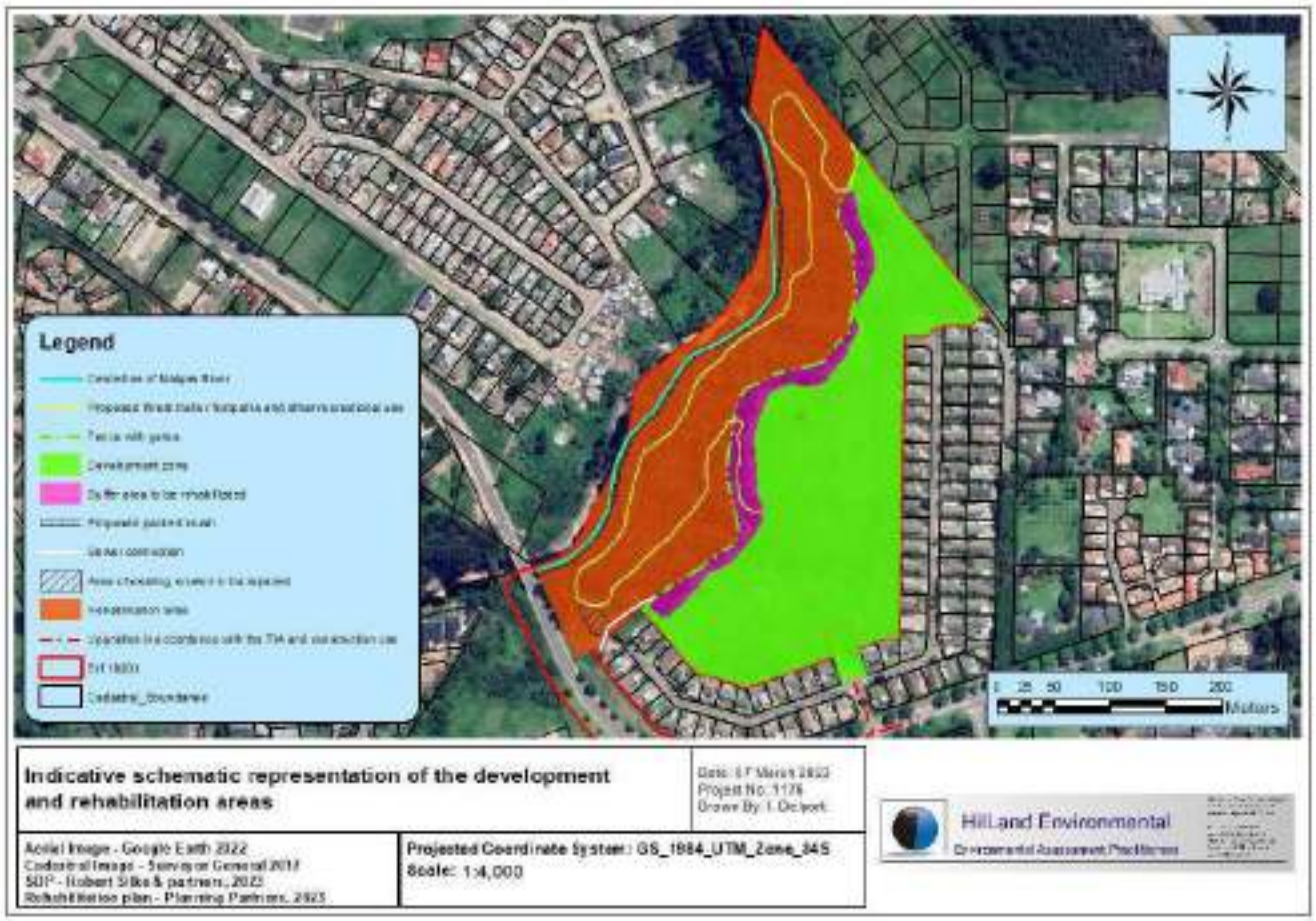
Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Socio-economic benefits through the creation of short- and long-term employment	Construction and operation of the development	The use of local labour to maximise positive benefit to the local area	During the construction and operational phase of the development	ECO inspections and contractor and management/ developer to ensure compliance	**Monthly** monitoring of submission of records by the **contractor**(s)	Management. Contractor. ECO.	ECO to monitor. To be included in the **monthly** monitoring report

6.2.4 DEMARCATION OF NO-GO AREAS

The steep valley beyond the development footprint is regarded as a sensitive no-go area. No construction works may impact on these areas, only rehabilitation works as per the rehabilitation plan including the alien clearing in accordance with the approved Alien Control Plan.

The haybale screen along the 2.5m offset from the slope edge is viewed as the edge of the development zone and must be installed prior to any activities commencing on site in relation to earthworks or vegetation clearing.

Only the security fence is located on the outside of this barrier at the 1m offset mark. NO activities may take place beyond this line without approval from the ECO and an approved Method Statement for such works.



(also attached t Annexure C)

The surveyor is to mark out the 1:4 slope line so that the various offsets are clearly identifiable.

- All people working on site must be made aware of the boundaries within which work is to be done.

- As there may be multiple contractors on site at any time it is critical that each contractor is aware of the extent of their work area and remain within the work area.
- During civil construction the areas not under construction are regarded as NO-GO areas.
- During construction of top structures the entire site is regarded as NO-GO with the exception of the site that has been handed over to the specific builder(s).

The following applies:

- **Civil contractors and Building contractors** - all areas **outside** that of the defined works (roads and pipeline route or building platforms) is deemed a no-go area.
- Disturbance within the work area is to be kept to the minimum, as **all disturbed areas will require stabilization** (placing topsoil and re-seeding to ensure vegetative cover) on completion of the work **by the contractor**.
- All construction activities must be **restricted** to the demarcated areas to ensure that no further disturbance into the surrounding vegetation.
- No encroachment or activities may take place outside the work areas.
- Storage sites for construction material and access must be approved by the ECO prior to commencing (and areas will require rehabilitation after use).
- No-Go areas will be required to be demarcated by the contractor to ensure that they are visible at all times, to all personnel.
- **Haybale silt fencing must be installed between the development zone and steep slope open space areas prior to any work commencing in that area.**
- Methods of demarcation will be agreed with the ECO and may include danger tape, rope, fencing, shade cloth, mulch bags, wire fencing etc. Method of demarcation will depend on the work that will be undertaken.
- In light of the above, should access be required through a no-go area, permission must be obtained from the ECO in writing prior to the use of such an area. The open space area (steep sloped areas outside the development area) may only be accessed for rehabilitation / specified maintenance purposes.
- Adjacent properties to the construction site may not be entered by any construction staff if permission is not granted by the owner.
- The ECO should monitor adherence to the No-Go area policy.
- Access into the No-Go areas by personnel is strictly forbidden (i.e., Work breaks such as lunch are not permitted outside the defined work area - no entry into the neighbouring properties or open space areas). A spot fine will be imposed against the contractor in the event of contravention of the no-go policy up to a maximum of R5 000 per incident).

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Demarcation of no-go areas and protection of sensitive areas	Development on Erf 19001	The contractors are to comply with the requirements of the EMPr	During the construction of the development (civil and	ECO and contractor to continually monitor compliance	ECO to conduct **weekly** inspections of	Contractor to implement no-go demarcation	ECO to monitor during the construction phase. To be included in the

		Demarcation of working areas is required by means of shade netting (**around development area(s)**) and danger tape / netting (civil construction and trenches)	building construction)	during construction	construction works	ECO and contractor to monitor the site	**monthly** monitoring report

6.2.5 CONSTRUCTION SITE CAMP

- The area must be indicated and approved by the ECO (through the submission of the **method statement** by the contractor).
- Ablution facilities (chemical toilets) are to be provided at the campsite for use of the staff (one toilet per 15 people) **– to be in place prior to commencement of activities on site**.
- A dedicated area must be created within the campsite for refuse and waste management. These are to be disposed of at the various approved waste disposal sites.
- **No** accommodation with the exception of a night watchman is permitted on site by contractors or their staff during the construction period**.**
- **No open fires are to be permitted. The storage of any potential ignition sources on the property must be removed from site at end of day.**
- Storage of all materials required for the contract must occur within this campsite, or otherwise approved area (by the ECO).
- **Any concrete batching plant areas** are to be approved by the ECO prior to utilisation and must be equipped with suitable settling ponds and trapping mechanisms to ensure that contaminated water does not leave the restricted area. Recommenced that no batching plant areas are located within 50m of the top of the steep slope.
- No ready-mix trucks are permitted to rinse their tanks on site or along the access roads to and from the site. **Any spillage is to be immediately cleaned by the responsible contractor / supplier / owner.**
- **No** temporary diesel storage tanks may be brought to the site.
- Adequate signage must be erected at the construction site to ensure that safety regulations are adhered to.

6.2.6 STORAGE OF CONSTRUCTION MATERIAL

The following must be adhered to:

- All stockpile sites to be approved by the ECO and/or landowner, **prior** to the commencement of stockpiling.
- All stockpile sites within the development area are to be demarcated with silt-fences and/or danger tape, where necessary.
- Silt protection measures around stockpile sites may be required.

- All construction material should be stored within the site camp / boundary (if space allows it).
- **No** construction material is to be stored outside of the site camp / development area without written permission from the appropriate landowner, HOA and ECO.
- **No** construction material is to be stored on steep sloped areas (close proximity to the open space area).
- No hazardous materials to be stored on site like diesel, petrol etc. without written approval by DEADP.
- Any material removed from bulk earthworks that is not going to be used as part of the cut and fill, **MUST** be removed from site to an approved disposal site immediately. Temporary storage of cut material for future fill MUST be agreed by the ECO and MAY NOT be beyond the development footprint.

6.2.7 FIRE PROTECTION

- The contractor must take all reasonable and active steps to avoid increasing this risk of fire (especially to prevent damage to surrounding properties and vegetation). **No** open fires or naked flames for heating or cooking shall be allowed anywhere on site. The contractor shall ensure that all personnel are aware of the fire risk and the need to extinguish cigarettes before disposal. Cigarettes may **not** be disposed of onsite and must be disposed of properly in receptacles for this purpose.

  No burning of waste on ANY PART of the site should be permitted.

- The contractor shall identify the authorities responsible for fighting fires in the area and shall liaise with them regarding procedures should a fire start. The contractor shall ensure that his staff are aware of the fire danger at all times and are aware of the procedure to be followed in the event of a fire. The contractor shall also ensure that all the necessary telephone numbers etc. are posted at conspicuous and relevant locations in the event of an emergency. The contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it.

6.2.8 HEALTH AND SAFETY

- The Occupational Health and Safety Act (Act number 85 of 1993) must be complied with.
- The H&S Officer is to copy the ECO in on his/her reports for record purposes.

6.2.9 WASTE MANAGEMENT

- It is recommended that an integrated waste management approach must be used that is based on waste minimisation and must include reduction, recycling, re-use and disposal where appropriate. Only approved waste disposal methods are allowed. The contractor shall ensure that all site personnel are instructed in the proper disposal of all waste. The contractor shall ensure that **sufficient disposal facilities** are available.

- **Recycling** must be encouraged on-site and recycling bins must be provided and clearly marked.

- Disposal of all waste materials must be done at suitable facilities. **No dumping** of any waste material on or off-site is permitted.

- Documentary evidence of all disposed contaminated products, waste or residues, which have been generated during the construction phase must be kept.

- The contractor shall ensure that the site is maintained in a **neat and tidy** condition and kept **free of litter (including the open space area)**. Measures must be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse. At all places of work, the contractor shall provide **litter bins, containers** and **refuse collection facilities** for later disposal. Litter to be removed from the site on a **daily** basis (through daily litter picking before the site is closed for the day). Rubbish bins must be provided on-site and regularly cleaned / emptied.

- **Solid waste** may be temporarily stored on-site in a **designated area** approved by the ECO prior to collection and disposal. Solid waste must be removed on a **weekly basis** to a licensed municipal waste site.

- Waste storage **containers** shall be covered, tip-proof, weatherproof and scavenger proof. The **waste storage area** shall be **fenced off** to prevent wind-blown litter.

- The contract staff must be clearly briefed on the 'no litter policy'. **The site is to be kept clean of litter, even if it is not caused by the contractor staff.**

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Construction of buildings and associated waste	Development on Erf 19001	Waste management should be done in accordance with the EMPr	During the construction of the development (civil and building(s) construction)	ECO and contractor to continually monitor the site during construction	ECO to conduct **weekly** inspections of construction works	Contractor to implement sound waste management ECO and contractor to monitor the site	ECO to monitor during the construction phase. To be included in the **monthly** monitoring report

6.2.10 ABLUTION FACILITIES

- Ablution facilities must be provided for all contraction staff working on site (this includes during pre-construction activities).

- Contractors must provide chemical ablution facilities for all construction personnel working on the site. The number of chemical toilets required must adhere to the H&S requirements applicable at the time of the contract.
- Toilets shall be of a **neat** construction and shall be provided with doors and locks and shall be secured to prevent them from blowing over.
- Sanitation provision and servicing shall be to the satisfaction of the environmental control officer (ECO).
- The contractor shall ensure that the toilet(s) are emptied **regularly** and also **before** weekends and public holiday periods.
- Failure to use the chemical toilet provided and making use of the vegetation either on or off-site **will result in maximum penalty fine being awarded in addition to requiring the contractor to clean up**.

6.2.11 GEOTECHNICAL RECOMMENDATIONS

The Geotechnical assessment undertaken included guidance for the engineers in terms of design constraints.

6.2.12 SOIL EROSION AND STORMWATER MANAGEMENT

- The Stormwater management plan (SUDS) must be implemented as proposed.
- Limit clearing of vegetation as far as possible as this prevents the movement of silt.
- **No construction to commence until the haybale silt fence is in place along the steep slope line adjacent to the phase intended for construction.**

- Stringent mitigation measures must be imposed during construction to minimise runoff, possible silt run-off and contamination of water leaving the site (especially into the open space area (steep sloped areas)).
- Use of silt-fencing, rows of onion bags, mulch, brushwood, sandbags and deflection berms (the choice depending on the situation). These mitigation measures are essential in all exposed areas.
- Areas requiring erosion control mechanisms are to be identified by the contractor and

ECO. Instructions by the ECO are to be given to the contractor as required.

- In the event of erosion damage or silt movement, the contractor will be liable for a fine and is responsible for the clean-up and required to reinstate the conditions to normal as determined by the ECO.
- To decrease the risk of water pollution, all construction materials must be secured (e.g., only stockpiling at a pre-determined site, around which there must be a silt protection boundary) so that there is **no wash away**.
- In the case of contaminated water run-off, silt can be stopped by means of sandbags and following the rain the contaminated area should be cleaned. All measures must be taken to avoid contaminated water entering any water bodies (perennial – Malgas River) and adjacent open space area in any way.
- It is the responsibility of the contractor working inside any trench at any specific time to ensure that their works are protected from damage which may be caused through runoff of rainwater inside the trench. The use of sandbags, mulch bags or any other appropriate methods of slowing down the flow of water within a trench is required.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Potential erosion during the construction of the development.	Development on Erf 19001	The contractor is to comply with the EMPr requirements regarding erosion prevention. Emergency erosion protection materials (haybales, sandbags, geotextile fabric, shade cloth and/or biddum) are to be kept on-site to treat erosion area as soon as it appears	During the construction of the development (civil and building(s) construction)	ECO and contractor to continually monitor the site during construction for signs of potential erosion	ECO to conduct **weekly** inspections of construction works	ECO and contractor to monitor the site	ECO to monitor during the construction phase. To be included in the **monthly** monitoring report.

6.2.13 CONCRETE AND CEMENT WORKS

- No concrete mixing or batch bund areas within 50m of the top of slope leading to the Malgas River.
- Mixing areas must be defined on-site and **clearly** demarcated.
- Cement powder has a high alkalinity pH rating, which can contaminate and affect both soil and water pH dramatically. A shift in pH can have serious consequences on the functioning of the soil, water organisms and plants.
- All concrete must be mixed in a batching area that is bunded .

- Cement mixing must be either readymix, from the batching area or mixed on trays / on thick plastic and not on the soil.
- **Bunding** through the use of sandbag walls around any mixing areas is recommended, together with an impermeable base.
- **Contaminated soil** from such bunds to be disposed of at the municipal waste disposal site.
- When using Ready-mix concrete, care must be taken to prevent spills from the trucks while offloading.
- **Cement contaminated water may not enter any open space area or water bodies (west).**
- The contractors and sub-contractors need to ensure that the used cement bags do not create a litter problem.
- Any cement or concrete contaminated soil must be removed and disposed of appropriately.
- Excess or spilt concrete should be disposed of at a suitable registered landfill site.
- No water for the mixing of cement may be sourced from any river system (Malgas River).
- No cement water or the like may enter the storm water system which will end up in the Malgas River – **bunding is essential**.
- **No mixing to be done in environmentally sensitive areas or areas where there is a high risk of cement contaminated water entering the SUDS stormwater system.**

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Cement and concrete works	Development on Erf 19001	Cement and concrete works are to comply with the EMPr Appropriate bunding and mixing on impermeable surfaces must be implemented	During the construction of the development (civil and building(s) construction)	ECO and contractor to continually monitor the site during construction	ECO to conduct **weekly** inspections of construction works	Contractor to implement mitigation measures as per the EMPr ECO and contractor to monitor the site	ECO to monitor during the construction phase. To be included in the **monthly** monitoring report

6.2.14 NOISE, DUST MANAGEMENT AND NUISANCE MEASURES

- During civil construction, work is limited to normal working hours as dictated by the local authority.
- The building(s) should comply with the normal Municipal building control requirements.
- Dust mitigation measures should be implemented as required. This will include spraying of water on gravel roads or exposed areas that generate dust or covering haul roads / exposed areas with wood chip to reduce the generation of dust.
- Dust management includes the management of dust off any stockpile sites
- Temporary stockpile sites may not be placed in areas that are going to result in a nuisance or eyesore to neighbours.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Construction of residential development	Residential development on Erf 19001	Contractor to comply with SANS 10400 regulations pertaining to noise creation. Dust mitigation measures must be implemented as necessary	During the construction of the development (civil and building construction)	ECO and contractor to continually monitor the site during construction	ECO to conduct **weekly** inspections of construction works	Contractor to implement mitigation measures as per the EMPr ECO and contractor to monitor the site	ECO to monitor during the construction phase. To be included in the **monthly** monitoring report

6.2.15 STABILIZATION REQUIREMENTS (AFTER CONSTRUCTION)

- Stabilization of disturbed area as a result of civil construction must be rehabilitated to the satisfaction of the ECO. This will include, but is not limited to the following:
    - use of sandbags, mulch bags as erosion ministration measures, seeding of bare areas with an indigenous grass seed mixture / the use of indigenous grass sods (ECO to advice) etc.
- The ECO is to advise on the rehabilitation measure that should be implemented as it will be case specific.
- No bare or exposed areas are to be left for a period of more than 2 months (if construction is due to commence on that exposed are within 2 months no rehabilitation is required, if construction is to commence after a 2-month period, the area must be immediately rehabilitated and must remain stabilized until the future construction works commence).
- The stormwater system must be protected through the installation of additional silt-fencing and re-vegetation of exposed areas. All stormwater flow must be protected against erosion and continual maintenance thereof will be required as the surface runoff will change as the construction progresses.
- Any silt traps need to be cleared on a weekly basis during the construction phase to ensure that silt traps remain effective.

6.3 BUILDING CONSTRUCTION PHASE

Unit-buildings - The total footprint of a building zone / phase should be demarcated with 1.5 m (height) shade cloth for the **entire** period of the construction to prevent unnecessary disturbance. All areas outside this demarcation must be considered **no-go areas for all construction staff**.

It is recommended that all buildings follow the construction phase requirements of this EMPr while building to ensure no adverse impact on the surrounding natural areas or to the landscaping and rehabilitation done and to the SUDS storm water systems which form part of the landscape. It is anticipated that the developer will be undertaking all construction, however this would apply to any owner builder as well. An owner builder would need to

demarcate their building area. The developer and subsequently the HOA should set up a system to enforce this.

6.3.1 IMPLEMENTATION OF ENERGY AND WATER SAVING TECHNIQUES

Water savings and energy saving measures to be applied wherever possible.

The use of low flow water fittings, installation of rain water harvesting tanks and the link to the SUDS stormwater system.

7 REHABILITATION PHASE

In accordance with the EA, the holder must finalise the post construction rehabilitation and monitoring requirements within a period of **3-months** from the date the development activity (construction phase) is concluded.

Any damage to private property or open space areas must be reinstated to the state it was before construction commenced and must be done to the satisfaction of the landowner and ECO.

Rehabilitation of damaged areas (development area) will include, but is not limited to the following:

- All building rubble must be completely removed and disposed of at an approved landfill site;
- Compacted topsoil must be raked loose;
- Contaminated soil must be disposed of at an approved landfill site;
- Return topsoil to the area;
- Reinstate the vegetation in accordance with the Landscape Master Plan;
- Implementation of additional erosion control methods as required – instructed by the ECO;
- Maintenance of SUDS stormwater system at all times;
- Repair of erosion around the existing municipal sewer line;
- Repair of erosion as a result of historic land fill on the steep slopes.

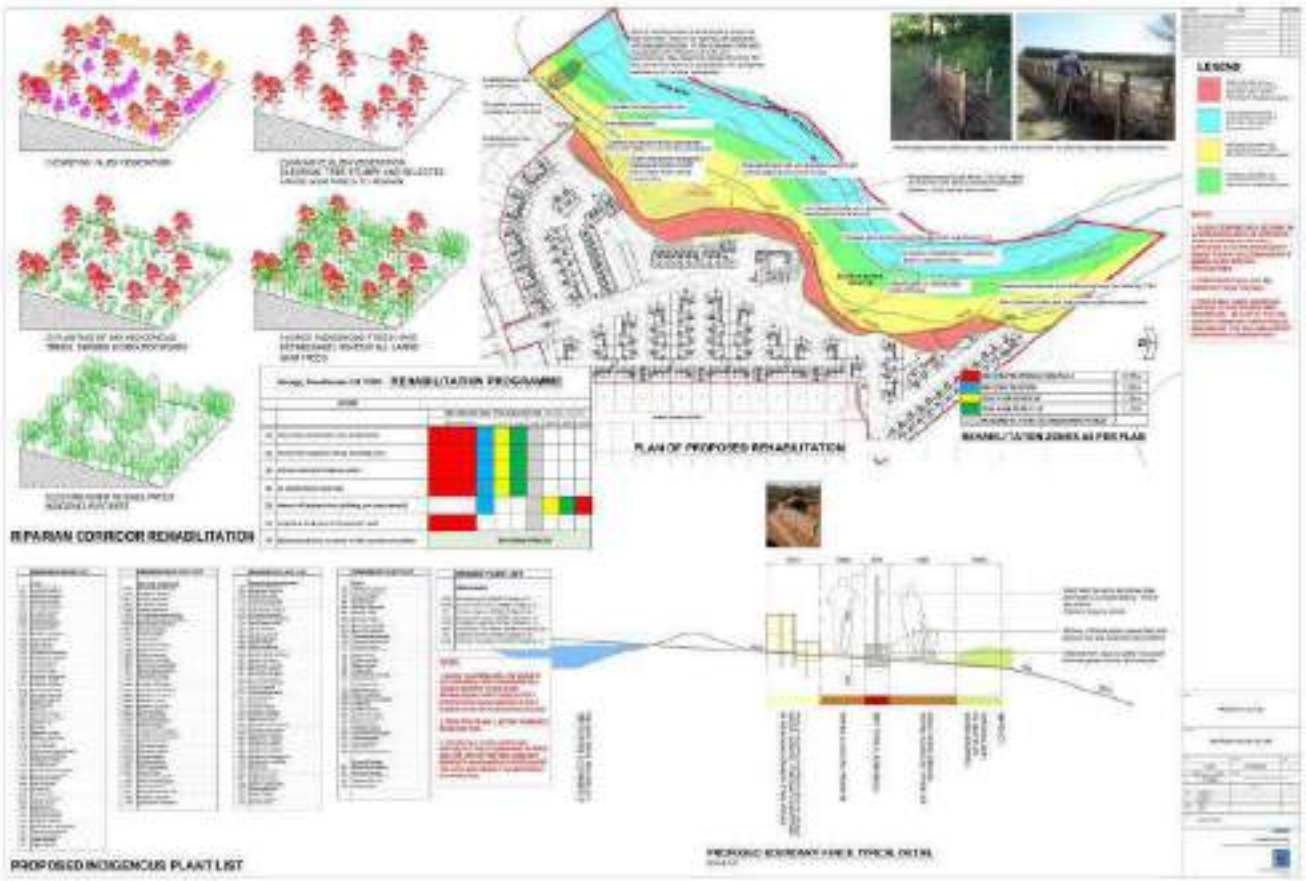
Attached to Annexure G see the landscape philosophy, landscape master plan and rehabilitation plan.

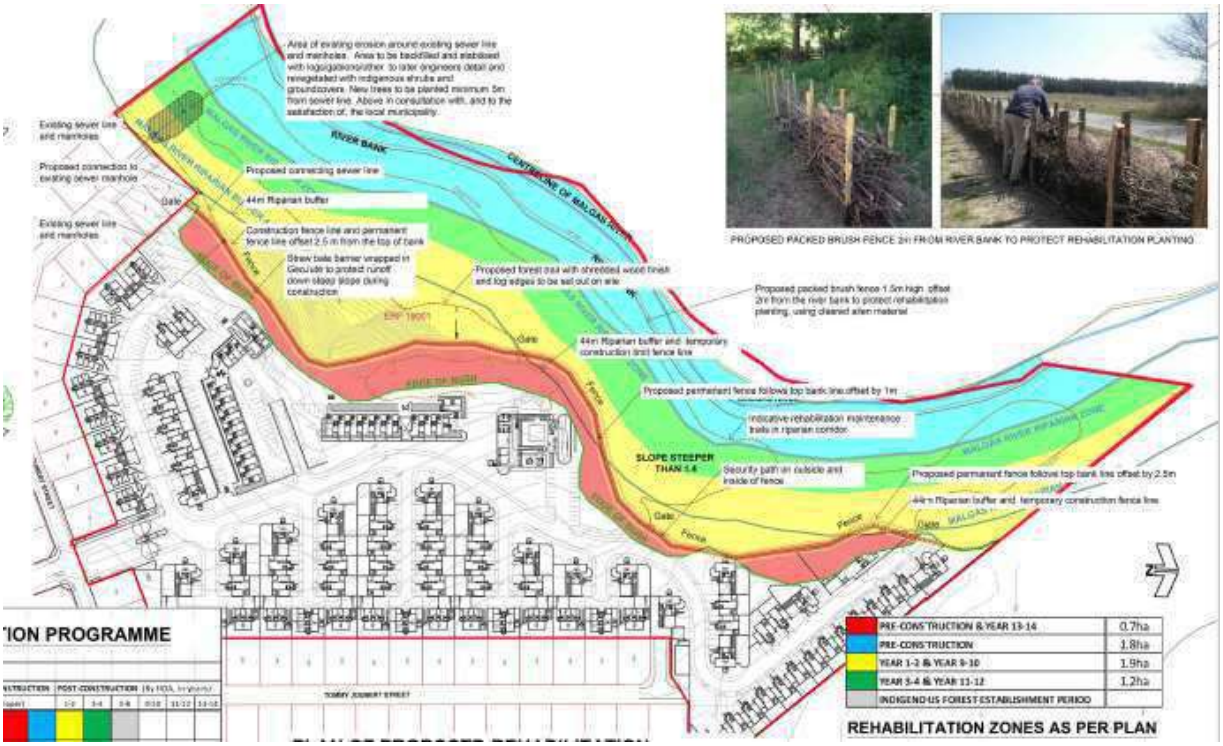
- **Forest rehabilitation**

The open space area along the river will be conserved as a riparian corridor and the existing alien dominated vegetation will be rehabilitated back to indigenous forest. The forest

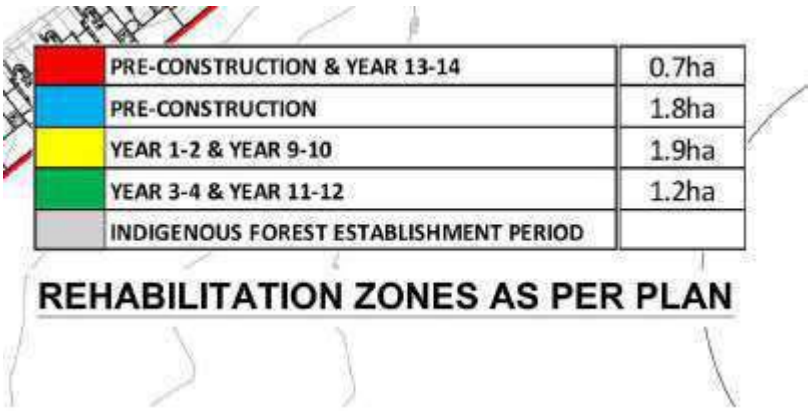
rehabilitation will be done in conjunction with the alien clearing done in terms of the Alien Control Plan (ACP) – separate report (annexure L) as submitted in terms of NEMBA to the Biosecurity Directorate.

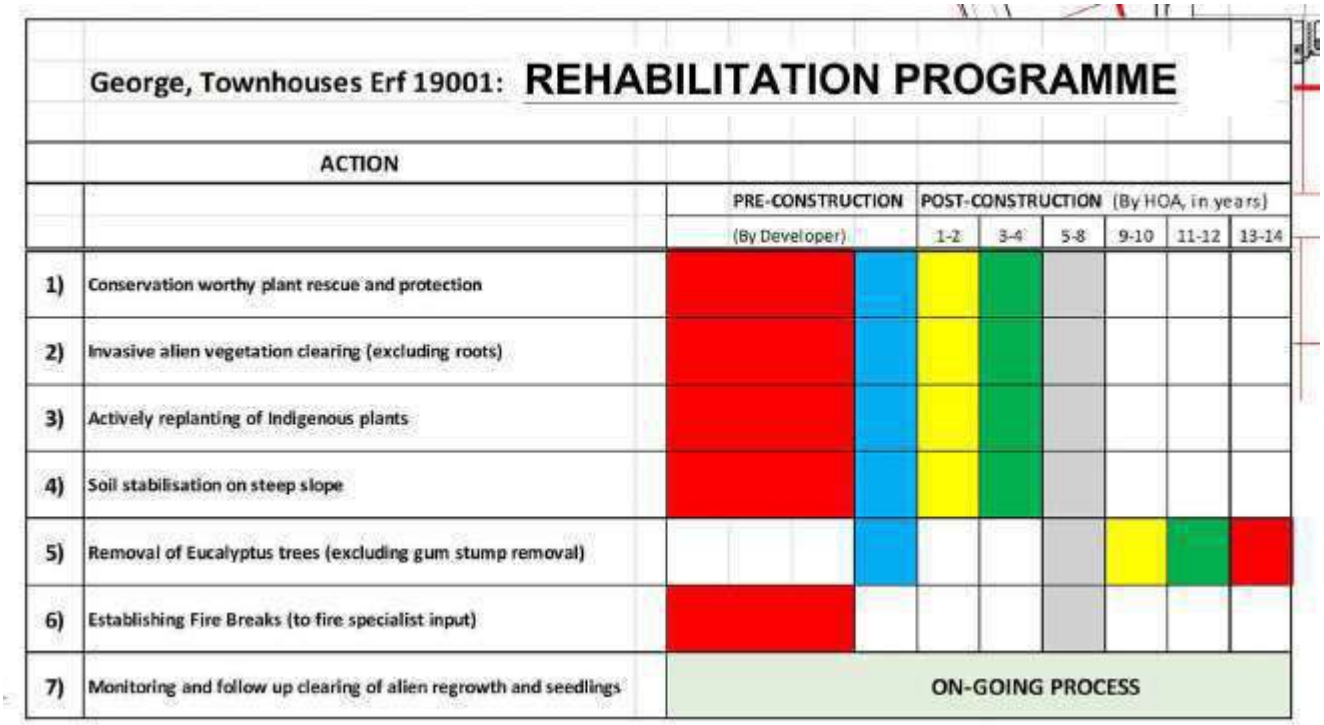
This open space area will be systematically rehabilitated to indigenous forest (part done by the developer and part by the HOA), the following rehabilitation plan is proposed (also attached):





Rehabilitation programme:



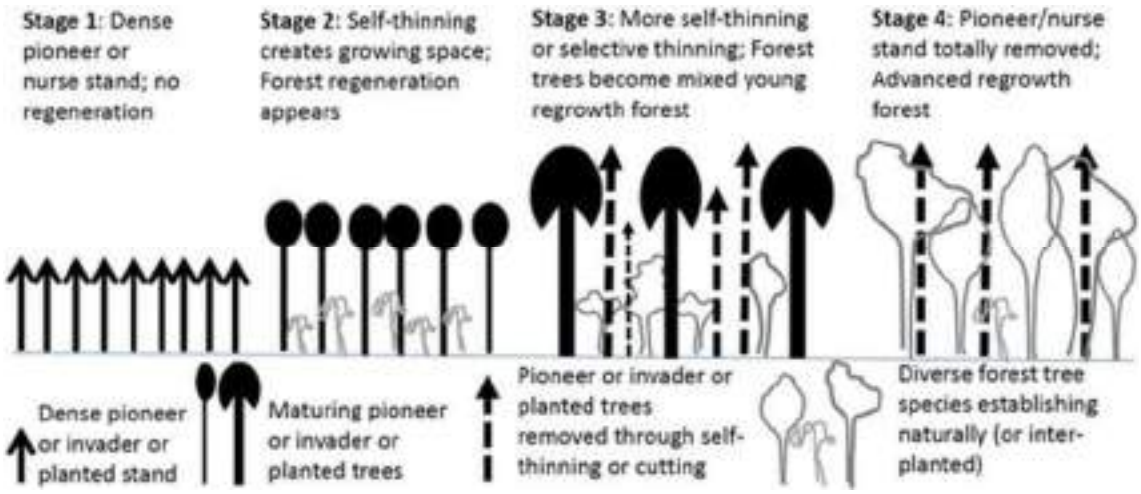


Forest rehabilitation plan (Planning Partners, 2023) – clearing activities will commence within the red highlighted area (riparian habitat) as no permit will be issued in accordance with NEM:BA to retain the Gum trees

A permit is in place to retain certain of the Gum trees within the valley outside of the riparian zone while the area is systematically cleared

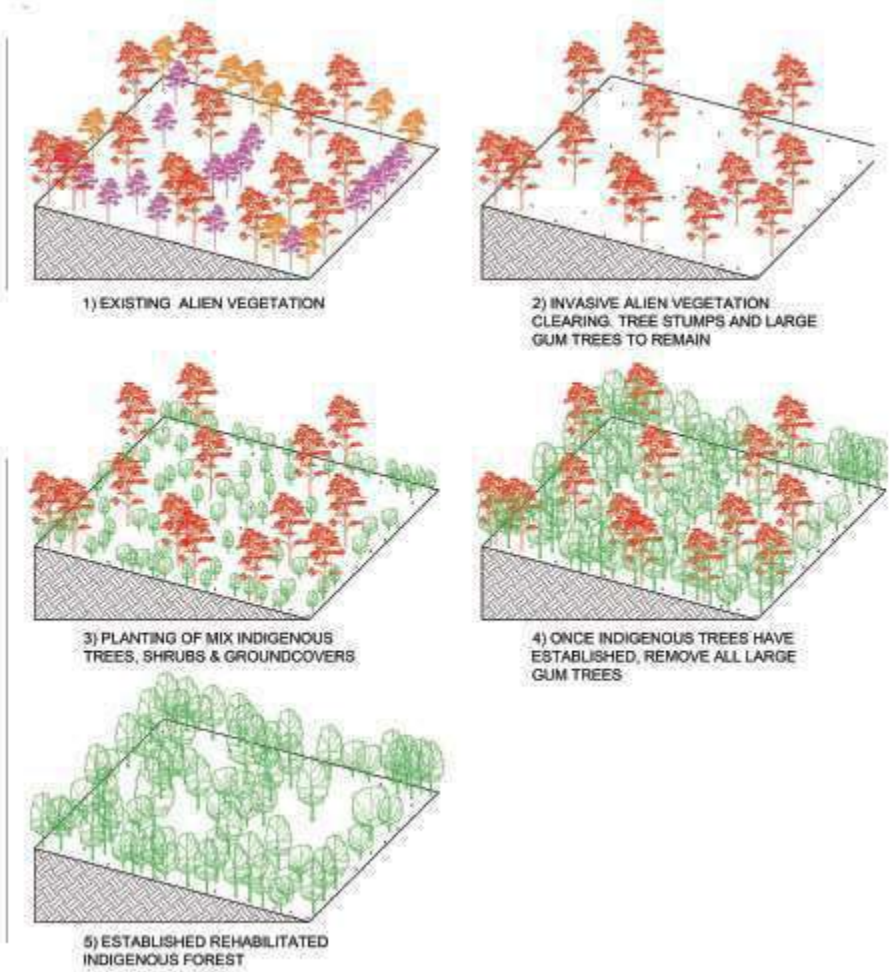
The alien trees to remain will act as a visual screen and nursery for the forest succession programme. The use of existing canopy trees (even if they are alien) has been shown to facilitate to recovery of the indigenous forest through natural succession. Methods to be implemented on the property include the harvesting alien trees with commercial value to help fund the alien clearing and rehabilitation. Remaining trees must be kept as canopy stand for the recovery of shade-tolerant natural forest species. The remaining alien trees need to be systematically ring-barked (selective thinning), which will allow the forest trees to become mixed young regrowth, essentially speeding up the recovery process at a low cost (Geldenhuys et al., 2017). Please refer to the figure below for a visual representation of the process to be implemented.

Only the alien clearing contractor and the rehabilitation contractor(s) are permitted to work in the riverine "no-go" area under the guidance of the ECO and the Landscape Architect.



"Conceptual model of the relationship between stand development stage and the establishment of understorey vegetation of natural forest tree regeneration" (adapted from Geldenhuys, 2013 & Geldenhuys et al., 2017)

Visual representation of the forest rehabilitation that will be implemented.



Recreational use of rehabilitating forest area:

As specified in the rehabilitation plan a forest trail will be created using shredded wood finish and log edges to be set out on site. These trails will follow contours to ensure that there is no erosion and will be for pedestrian access only. No cycling will be permitted on the trails as the slopes are too steep and use by mountain bicycles will result in erosion.

Where necessary steps and raised boardwalk can be used to protect the slopes from erosion caused by foot traffic.

Recreational use to be confirmed with the ECO and Landscape Architect prior to installation to ensure that it meets the requirements of NEMA.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Pre-construction commencement of forest rehabilitation & Rehabilitation phase							
Rehabilitation of damaged areas and forest rehabilitation	Development on Erf 19001	Rehabilitation measures should be implemented as per the EMPr All building rubble must be completely removed and disposed of at an approved landfill site; Compacted topsoil must be raked loose; Contaminated soil must be disposed of at an approved landfill site; Indigenous grass seed can be sowed within required areas (as indicated by the ECO); Open space areas are to be planted with indigenous vegetation; Implementation of additional erosion control methods as required; & Implementation of forest rehabilitation measure in	Upon completion of civil service installations and building(s) construction	Contractor to implement mitigation measures ECO and contractor to monitor rehabilitation phase	ECO to conduct **weekly** inspections of rehabilitation of home building and every 6 months for remaining rehabilitation measures implemented	Contractor to implement mitigation measures ECO and contractor to monitor rehabilitation phase Applicant to ensure implementation of systematic alien clearing in forest areas (pre-construction as included on the rehabilitation plan)	ECO to monitor during rehabilitation phase. ECO to submit **final compliance monitoring report** upon completion of **civil** construction and **rehabilitation** phase and **building** construction and **rehabilitation** phase to sign-off environmental compliance. To be included within compliance report.

		accordance with the plan					

8 MONITORING REQUIREMENTS AND REPORTS

- An **induction** meeting with the ECO and the contractor (**civil and building**) to ensure that they are aware of the requirements of this EMPr and the EA before the commencement of the installation of services or building works.
- An induction meeting between the alien clearing team and ECO is recommended to ensure that the approved clearing methods are implemented.
- Induction registers to be kept for all contractors on site.
- The ECO must inspect work areas prior to civil installations and demarcate no-go areas or indicated areas of sensitivity.
- ECO is to ensure that the haybale silt fence is installed along the steep slope edge prior to any works commencing in a phase.
- The ECO is to do a site inspection **once a week** of all **civil installations** and submit a **monthly** compliance monitoring report to the applicant, developer, contractor and DEADP.
- The ECO is to monitor the **building works** on a **2 weekly basis** and submit a compliance monitoring report every second month to the applicant, developer, HOA and DEADP as the case may be while construction is in progress.
- The ECO **monitoring reports** are to advise on any remedial actions or changes that are required to the method statements in order to ensure that the impacts identified and any that may become evident are mitigated and managed. Should it be necessary the EMPr must be updated / amended to take these into account if they cannot be adequately handled in a revised method statement.
- Upon **completion of civil installations**, a **final monitoring report** must be submitted by the ECO to sign-off compliance with environmental requirements. The report must be submitted to DEADP, the applicant, the developer, management and HOA as the case may be.
- On **completion the buildings (top structures)** the ECO is to issue a **completion report** prior to occupation certificates being issued. This may be done in phases based on the developer's programme.
- Once **all phases are completed** the ECO is to issue **the final monitoring report** to DEADP, the applicant, the developer, management and the HOA.
- Copies of all compliance reports should be sent to DEADP for record purposes.

9 AUDITING REQUIREMENTS

Note that audits must be undertaken by an independent person (i.e. not the EAP and appointment ECO).

- Auditing during the non-operational phase (construction activities:
    - During the period which the development activities have been commenced with on the site, the Holder must ensure **annual environmental audit(s)** are undertaken and the Environmental Audit Report(s) submitted annually to the Competent Authority.
    - A final Environmental Audit Report for the construction phase (non-operational component) must be submitted to the Competent Authority within **three (3) months of completion of the construction phase.**
- The audit is to report on the success of the implementation of the EA and the EMPr as the case may be.
- This audit must be **undertaken prior to the completion date of the EA**.

- Auditing requirements are to cover **ONLY the Construction phase for Civil services and Buildings** and does not extend to the operational phase of the development.

Specific dates referenced in the EA

Date of issue of EA:	13 June 2023
Commencement must take place before:	30 June 2028 physical implementation of all listed activities

Additional environmental auditing may be undertaken as required within the EA or as determined by the Environmental Regulations applicable at the time. The audit report must adhere to the requirements of the applicable legislation and / or regulations at the time.

10 OPERATIONAL PHASE

The HOA of the residential development is bound by their general Duty of Care, as stated in Section 28 of the National Environmental Management Act, 1998 (as amended). As such it is recommended that the Operational phase monitoring should be conducted by the HOA (who may appoint an ECO to assist and offer advice as required by the HOA).

As construction is a primary source of disturbance and damage to the environment, any contractors working for the HOA (doing alterations etc.) should comply with the general conditions above in relation to building contractors.

The EA for the development covers the initial construction, installation of services and construction of all the top structures. At that point the final audit is undertaken and the EA is regarded as having been concluded.

The operational phase of the development is not subject to NEMA unless any specific items that trigger NEMA are undertaken.

The Developer will commence with the various activities on the site and the HOA will take over the long-term implementation and maintenance of the development.

10.1 RESIDENTIAL AREA MANAGEMENT

10.1.1 INTERNAL PRIVATE OPEN SPACE AREAS, ROAD RESERVES AND GARDENING

The HOA is encouraged to plant water-saving, local indigenous plants and to maintain a balance of **80% locally indigenous vegetation** within the internal open space areas.

Listed invasive species are prohibited and must be removed as observed.

The use of indigenous trees and shrubs as screening plants, such as along the boundaries of the development areas, will result in the formation of bush clumps or pockets of thicket vegetation, which will once again provide food and shelter to the local fauna and birdlife as well as maintain a natural landscape.

The following is essential within these internal open space areas;

- These areas may be used for approved recreational activities, structures and / or water features;
- These areas should be continually monitored for any signs of erosion; &
- These areas will fall under the responsibility of the residential development's management / HOA.
- The HOA should develop a policy regarding the private landscaping of communal areas (like road verges), to avoid potential conflict.

Rainwater harvesting is recommended for landscaping purposes.

Private gardens must comply with the 80% locally indigenous planting requirement.

Landscape Master plan (Planning Partners, 2023)

10.1.2 DOMESTIC ANIMALS AND ANIMAL MANAGEMENT

The HOA must develop a policy for domestic animals within the estate.

10.2 STORMWATER MANAGEMENT

As with all systems the SUDS storm water management system must be maintained and monitored by the HOA to ensure that there is no erosion or intervention required.

The stormwater control philosophy is one of reducing concentration and encouraging spread and infiltration into the natural vegetation and recharging the natural infiltration laterite layer.

A stormwater management plan has been compiled (attached to Annexure H). *"Once the stormwater treatment and attenuation facilities have been constructed, the operation, maintenance and monitoring will remain the responsibility of the developer/property-owner or maintenance staff.*

The development of a maintenance plan should form part of the design process and line up with the catchment's stormwater, litter and water quality management plan/s. To guarantee the structure is practical and will be financially manageable, it is advisable that the

maintenance plan is translated into a Life-Cycle costing model to allow the HOA to budget suitably. Failure to guarantee adequate maintenance is likely to cause the system not to function properly" (Urban Engineering, 2022).

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Operational phase							
Operation of stormwater outlets	Stormwater outlets installed	The stormwater outlets will be located close to the development footprint in order to limit disturbance. The incorporation of detention and retention ponds will allow stormwater to dissipate naturally into the environment. Stringent erosion control will be implemented where necessary during the operation of the development. Ongoing maintenance will ensure that any localised erosion will be rehabilitated before it becomes problematic. The stormwater control philosophy is one of reducing concentration and encouraging spread and infiltration into the natural vegetation. Implementation mitigation measures as per the stormwater management plan.	During the operational phase of the development	Management / HOA to monitor and implement mitigation measures ECO to monitor during operation of the development	Management / HOA to implement mitigation measures and conduct regular inspections ECO to conduct inspections as required	Management / HOA and appointed contractor to implement and monitor ECO to monitor	ECO to monitor To be included in the **yearly** monitoring report.

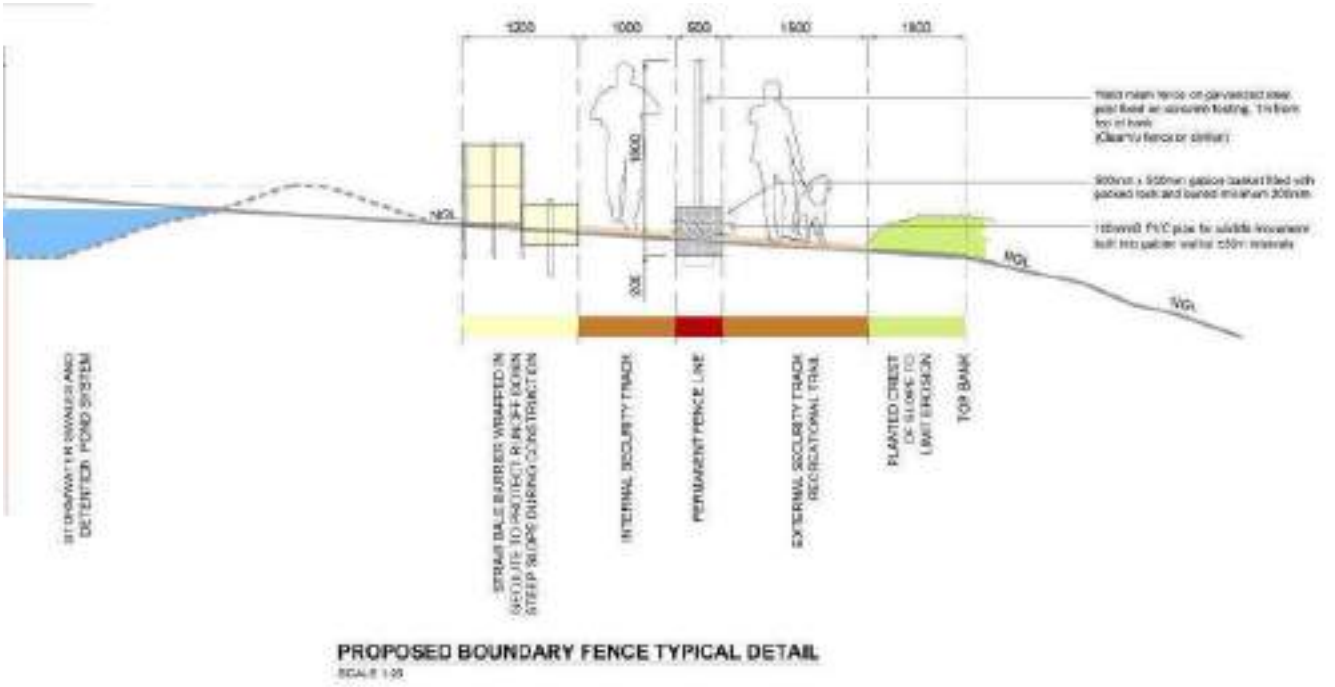
10.3 FENCING

Security fencing will be installed between the development area and the open space of the riparian corridor. The fence will be located 1m upslope from the "top of bank" line as indicated

on the plans and will be constructed during the construction phase. The HOA will be responsible for ongoing maintenance of the fence line.

The fence will consist of a lightweight material (clear-vu type) with a gabion basket base to control erosion through any form of surface flow. 100mm pipes will be installed through the gabions to allow for movement of small wildlife at 30m intervals.

Design proposed:



Typical design of the proposed fence

Fence line indicated by the white dotted line

10.4 WASTE MANAGEMENT

The development's refuse is collected by the local authority – please comply with their collection requirements. Homeowners must be encouraged to re-use, reduce and recycle (**this needs to be included in the HOA's house rules to ensure compliance**). A suitable refuse area will be located within the development area for the collection of solid waste generated by the development. HOA to provide homeowners / residents with guidance as to when and how waste collection will be handled.

Normal domestic refuse will form part of the municipal waste stream. **No waste may be disposed of in the internal or forest open space areas, or anywhere else if not designated as a waste disposal area.** All waste must be disposed of in appropriate municipal or other authorised dumping sites.

NO dumping of garden refuse on any part of the common property or open space area is permitted.

10.5 FIRE MANAGEMENT

Firebreaks are a legal requirement in terms of the National Veld and Forest Act, 1998 (NVFA). Internal roads and building lines along the boundaries (to be vegetated) will double-up as firebreaks and firescaping with suitable vegetation will form part of the landscape plan.

10.6 INVASIVE ALIEN PLANT CONTROL

In terms of the Alien and Invasive Species Regulations, NEM:BA, 2014 specific alien plant species are prohibited and should be removed (by implementing approved methods).

Any alien invasive species germinating must be removed immediately for the life of the development. Initial alien clearing over the entire property is to be undertaken by the Holder of the EA / developer so that any areas handed over to the HOA are free of alien vegetation or are in the process of being removed are part of the controlled forest rehabilitation plan. The ongoing management and removal of alien vegetation remains the responsibility of the HOA and the individual landowners on their private properties.

10.7 CONSERVATION MANAGEMENT PLAN (CMP)

10.7.1 ACCESS AND USE

The open space area may be used for recreational activities on demarcated paths. No vehicle access within this area is permitted and the use of the footpaths is restricted to pedestrians (no cycling). Use of the conservation area by Homeowners will be limited to the pathways set out and recreational use allocated to the area. HOA rules will need to be developed for this area and these will need to be agreed to by DEADP and any amendments to such rules approved by DEADP. These rules must cover aspects such as dogs being on a lead at all times in the conservation area and remaining on the designated pathways unless undertaking alien follow-up management or erosion repair works.

10.7.2 EROSION PREVENTION AND CONTROL

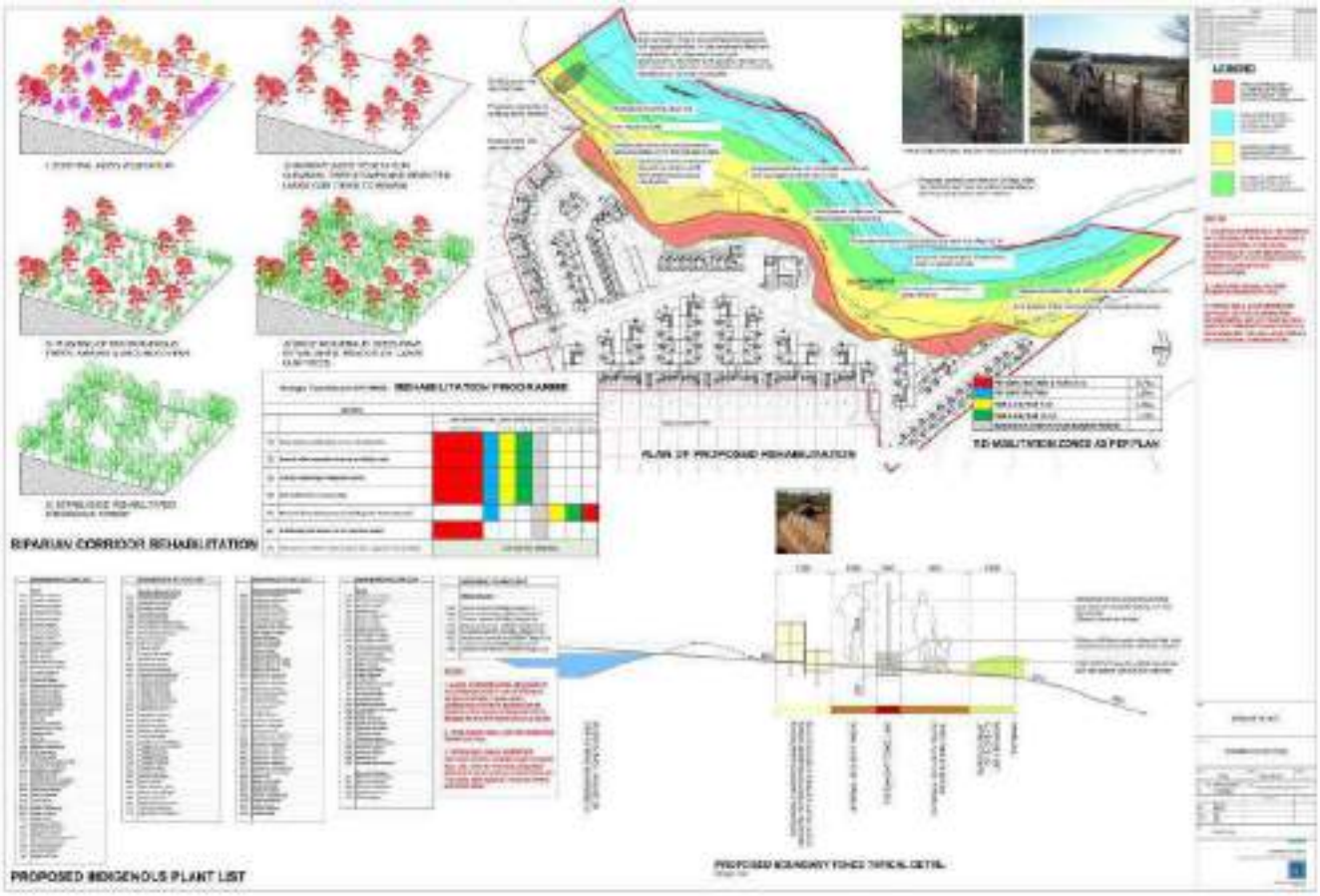
The conservation of open space must be regularly monitored by the HOA during the operation to identify areas susceptible to erosion. The required erosion control measures must be implemented within these areas as approved by the ECO which includes (but not limited to); sandbags, mulch filled orange bags, swales, geotextile fabric, biddum etc.

10.7.3 VEGETATION MANAGEMENT

No removal of indigenous vegetation / collection of vegetation is permitted. There may be no collection or damaging of flora within this area.

Rehabilitation of the open space area will be done in accordance with the rehabilitation plan. After initial alien clearing and planting in accordance with the rehabilitation plan, natural plant succession will be encouraged.

The emphasis is on rehabilitation of the afrotemperate forest as indicated in the rehabilitation plan. Ongoing alien clearing is required in accordance with the ACP and allowing the natural forest and thicket species to return. The area is NOT a landscape zone, but will be retained with a "light touch" of removing alien species, maintaining pathways, repairing erosion and leaving nature to come back on its own.



10.7.4 FIRE REGIME

As this property is within the built up urban area, no firebreaks are required. Firescaping can be incorporated into the rehabilitation zone between the development and the riparian buffer zone.

The conservation open space area will be rehabilitated to indigenous forest with systematic removal of alien invasive vegetation. No ecological controlled burns will be required as this is a forest ecosystem area and not fynbos.

10.7.5 INVASIVE VEGETATION MANAGEMENT

Alien invasive vegetation will be eradicated in accordance with the approved alien control plan.

10.7.6 INFRASTRUCTURE DEVELOPMENT AND MANAGEMENT

No infrastructure will be permitted in the open space area, other than ECO approved recreational structures (benches, pathways and the silt trapping brush walls etc).

Ecological fences:

To protect the rehabilitation area, a brush packed fence will be situated 2m from the river bank to prevent vertical movement up and down the steep slope. In addition, sections of bush packed fence are proposed as windrows within the rehabilitation area to control vertical movement and control and limit erosion and silt movement while the natural vegetation is restoring.

PROPOSED PACKED BRUSH FENCE 2m FROM RIVER BANK TO PROTECT REHABILITATION PLANTING

10.7.7 FINANCIAL PROVISIONS

Financial provisions for the developer for implementation and the HOA ongoing management of the conservation area is required. All initial works and landscaping is included in the Developers budget and the HOA will collect levies that cover the ongoing maintenance of the riparian zone as well as all internal communal landscaping.

11 DECOMISSIONING PHASE

Should there ever be a need for decommissioning, decommissioning activities need to adhere to the applicable legislation at the time. All material foreign to the site must be removed from the site and must be disposed of at an approved waste disposal site.

Any material that can be recycled should be recycled.

12 PENALTIES FOR NON-COMPLIANCE

Penalties in terms of Chapter 9 of the Western Cape Bill on Planning and Development as published in the Extraordinary Provincial Gazette No 5183, 3 October 1997, are applicable for any action, which leads to damage to the natural environment.

In addition to the penalties in terms of the Act (NEMA), spot fines up to a maximum value of R10 000 per offence can be instituted at the discretion of the ECO for any breach or non-compliance in terms of the EMPr and EA (FINES ISSUED WILL INCREASE EXPONENTIALLY FOR REPEAT OFFENCES).

In the event of damage being caused, the contractor will be responsible for the cost of cleanup, repair or rehabilitation as necessary, as well as being liable for the fine.

A fund is to be established for the collection of fines and the spending of this fund is to be at the discretion of the ECO for environmental rehabilitation of the area.

13 CONCLUSION

This EMPr is binding on all contractors on site and constitutes Best Practice for construction activities. This EMPr may be updated with specific conditions required by the Environmental Authorisation.

This EMPr is binding for the full construction phase of Civil Services (all phases) and for the construction of all units (all phases).

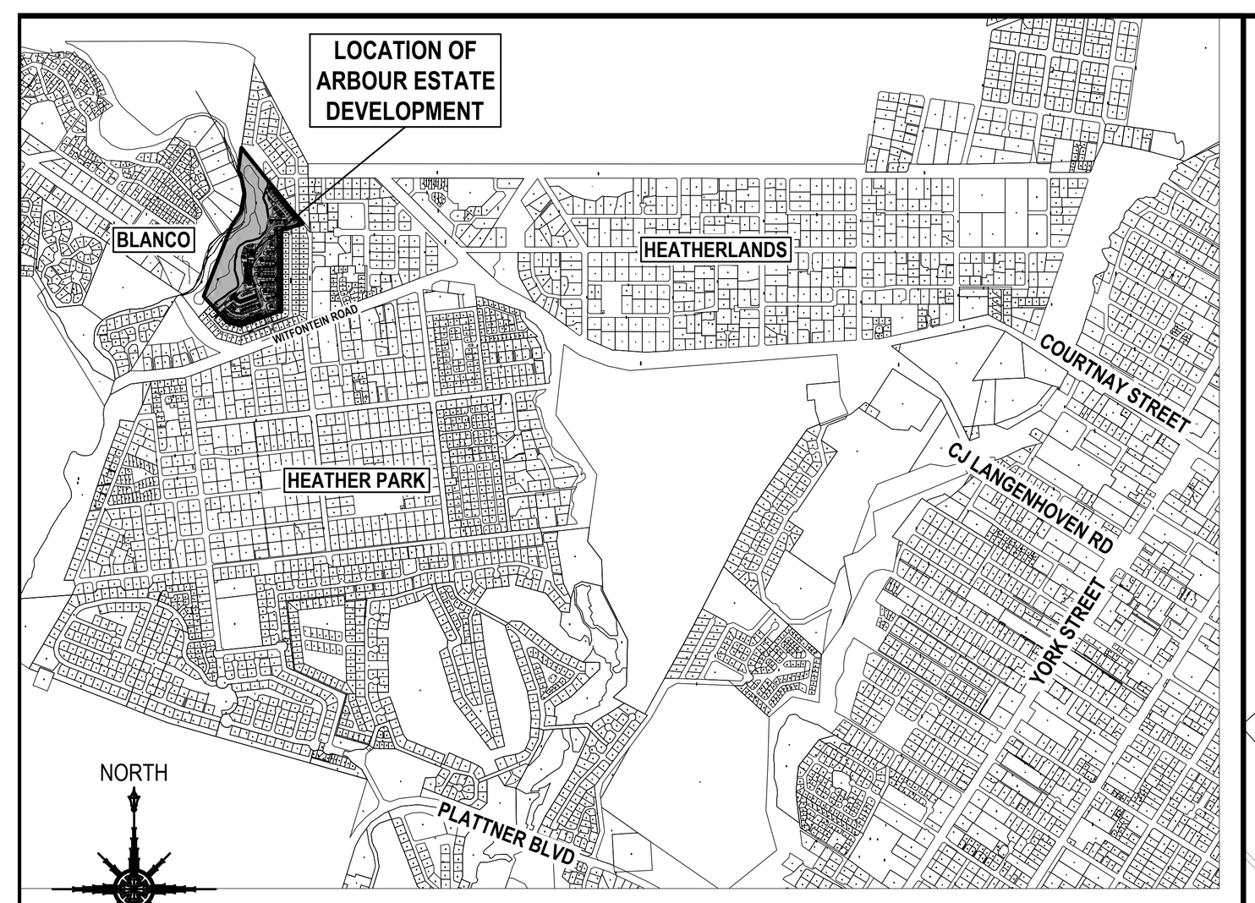
ANNEXURE A
Locality Map

Locality Map of Erf 19001, Heather Park, George

Aerial Image - Google Earth 2022
Cadastral Image - Surveyor General 2017

Hillland Environmental

ANNEXURE B
Site Development Plan



LOCALITY PLAN

PLAN LAYOUT

SCALE 1:500

LEGEND

185A*3P — MV CABLE SIZES
- P - PILCA
- X - XLPE
- NO. OF CORES
- A - ALUMINIUM
- C - COPPER
- CONDUCTOR SIZE IN mm²

95A*4P — LV CABLE SIZES
- P - PVCAS
- NO. OF CORES
- A - ALUMINIUM
- C - COPPER
- CONDUCTOR SIZE IN mm²

MINIATURE SUBSTATION

GROUND MOUNTED LV DISTRIBUTION KIOSK

11kV UNDERGROUND CABLE

LV UNDERGROUND CABLE

UNDERGROUND SERVICE CONNECTION CABLE INSTALLED UP TO 1m INSIDE ERF BOUNDARY. 16C*2P UNLESS SHOWN OTHERWISE.

FUTURE UNDERGROUND SERVICE CONNECTION CABLE, INSTALLED BY BUILDERS ELECTRICIAN. 16C*2P UNLESS SHOWN OTHERWISE.

EXISTING CABLES AND EQUIPMENT

PLANNED CABLES AND EQUIPMENT

THROUGH-JOINT IN UNDERGROUND CABLE

NOTES

1. MV IN THIS CASE IS 11 000 VOLTS.
2. THE EXACT POSITIONS OF MINIATURE SUBSTATIONS, KIOSKS AND STREETLIGHTS TO BE DETERMINED ON SITE IN CONJUNCTION WITH THE ENGINEER.
3. REFER TO DRAWINGS 10605/E/02 TO 09 FOR SLEEVE LAYOUT, SCHEMATIC DIAGRAM AND OTHER DETAILS.
4. THE CIVIL CONTRACTOR SHALL INSTALL ALL SLEEVES REQUIRED FOR ELECTRICAL CABLES, INSIDE THE DEVELOPMENT BOUNDARIES. ALL SLEEVES REQUIRED OUTSIDE THE DEVELOPMENT BOUNDARIES TO BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
5. THE EXISTING TAR ROAD AND PAVED DRIVEWAY IN THESE POSITIONS MUST BE CUT / REMOVED AND RE-INSTATED TO ORIGINAL FINISH AFTER THE INSTALLATION OF SLEEVES.
6. ELECTRICAL CABLES SHALL BE LAID MIN. 400mm FROM ANY EXISTING WATER OR SEWER PIPES.
7. 110mm Ø uPVC SLEEVES SHALL BE USED FOR LV AND 160mm Ø uPVC SLEEVES FOR MV CABLES.
8. ALLOW 1 METRE SLACK IN ALL CABLES BELOW DISTRIBUTION KIOSK AND STREETLIGHT POLE.
9. AT EACH LV DISTRIBUTION KIOSK, A 30m LENGTH OF COPPER CLAD STEEL (CCS) EARTH WIRE, SHALL BE LAID WITH THE INCOMING SUPPLY CABLE. THE CCS SHALL BE 35mm² EQUIVALENT COPPER SIZE (53.49mm²), UNLESS INDICATED OTHERWISE ON THE SCHEMATIC DIAGRAM. THE EARTH RESISTANCE SHALL BE ≤7.5 OHMS.
10. THE ELECTRICAL CONTRACT WILL RUN CONCURRENT WITH THE CIVIL CONTRACT, AND THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO CO-ORDINATE ALL HIS ACTIVITIES WITH THE CIVIL CONTRACTOR AND CO-OPERATE WITH HIM TO ENSURE THAT THE CONTRACT IS COMPLETED ON TIME.
11. THE POSITIONS SHOWN OF EXISTING SERVICES ARE APPROXIMATE ONLY. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO EXCAVATE INSPECTION TRENCHES TO LOCATE THESE EXISTING SERVICES BEFORE TRENCHING FOR CABLES COMMENCE.

THIS DRAWING IS TO BE USED FOR THE ENGINEERING SERVICE DEPICTED ONLY.

ELECTRICAL

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CESA Consulting Engineers South Africa

PROJECT
ARBOUR ESTATE DEVELOPMENT ON ERF 19001, HEATHER PARK, GEORGE

DRAWING TITLE
BULK MV SUPPLY, MV & LV RETICULATION PLAN LAYOUT

DRAWN	DESIGNED	CHECKED	APPROVED
MvM	GSA	GSA	

SCALE	DATE	CAD REF No.	DWG-SIZE
1:500	14/07/2023	10605-E-01	A0

DRAWING NO	REVISION
10605/E/01	2

REVISIONS

No.	DATE	DRAWN	DESCRIPTION
1	2023/08/15	MvM	LAYOUT REVISED AS PER ARCHITECT REV 21. POSITION OF MS NO.1 & 2 AND GENERATORS REVISED AS PER CLIENT.
2	2023/09/13	MvM	ALL CABLES INSIDE DEVELOPMENT MOVED TO CENTRE UNDERNEATH THE ROADS.

LOCALITY PLAN

PLAN LAYOUT

SCALE 1:500

NOTES

1. MV IN THIS CASE IS 11 000 VOLTS.
2. THE EXACT POSITIONS OF MINIATURE SUBSTATIONS, KIOSKS AND STREETLIGHTS TO BE DETERMINED ON SITE IN CONJUNCTION WITH THE ENGINEER.
3. REFER TO DRAWINGS 10605/E/02 TO 09 FOR SLEEVE LAYOUT, SCHEMATIC DIAGRAM AND OTHER DETAILS.
4. THE CIVIL CONTRACTOR SHALL INSTALL ALL SLEEVES REQUIRED FOR ELECTRICAL CABLES, INSIDE THE DEVELOPMENT BOUNDARIES. ALL SLEEVES REQUIRED OUTSIDE THE DEVELOPMENT BOUNDARIES TO BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
5. THE EXISTING TAR ROAD AND PAVED DRIVEWAY IN THESE POSITIONS MUST BE CUT / REMOVED AND RE-INSTATED TO ORIGINAL FINISH AFTER THE INSTALLATION OF SLEEVES.
6. ELECTRICAL CABLES SHALL BE LAID MIN. 400MM FROM ANY EXISTING WATER OR SEWER PIPES.
7. 110mm Ø UPVC SLEEVES SHALL BE USED FOR LV AND 160mm Ø UPVC SLEEVES FOR MV CABLES.
8. ALLOW 1 METRE SLACK IN ALL CABLES BELOW DISTRIBUTION KIOSK AND STREETLIGHT POLE.
9. AT EACH LV DISTRIBUTION KIOSK, A 30m LENGTH OF COPPER CLAD STEEL (CCS) EARTH WIRE, SHALL BE LAID WITH THE INCOMING SUPPLY CABLE. THE CCS SHALL BE 35mm² EQUIVALENT COPPER SIZE (53.49mm²), UNLESS INDICATED OTHERWISE ON THE SCHEMATIC DIAGRAM. THE EARTH RESISTANCE SHALL BE ≤7.5 OHMS.
10. THE ELECTRICAL CONTRACT WILL RUN CONCURRENT WITH THE CIVIL CONTRACT, AND THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO CO-ORDINATE ALL HIS ACTIVITIES WITH THE CIVIL CONTRACTOR AND CO-OPERATE WITH HIM TO ENSURE THAT THE CONTRACT IS COMPLETED ON TIME.
11. THE POSITIONS SHOWN OF EXISTING SERVICES ARE APPROXIMATE ONLY. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO EXCAVATE INSPECTION TRENCHES TO LOCATE THESE EXISTING SERVICES BEFORE TRENCHING FOR CABLES COMMENCE.
12. ALL STREETLIGHT CABLE SHALL BE 10C*2P + 16mm² BARE COPPER EARTH WIRE, UNLESS OTHERWISE SHOWN.
13. SLEEVES TO EXTEND 1m BEYOND ROAD EDGE.
14. EACH SLEEVE TO BE FITTED WITH A GALVANISED STEEL DRAW WIRE EXTENDING 1m BEYOND BOTH ENDS.
15. ALL OPEN (SPARE) SLEEVE ENDS MUST BE PLUGGED (SEALED) USING STANDARD DUCT PLUGS / DUCT END CAPS TO PREVENT THE INGRESS OF DIRT AND MOISTURE.
16. SLEEVE ENDS NOT TO BE SEALED AFTER INSTALLATION OF CABLES.
17. THE POSITIONS OF ALL SLEEVE ENDS SHALL BE PERMANENTLY MARKED ON THE KERB BY THE CIVIL CONTRACTOR. FOR EACH SLEEVE A 75mm LONG LINE SHALL BE CUT INTO THE KERB AND BE PAINTED RED.

THIS DRAWING IS TO BE USED FOR THE ENGINEERING SERVICE DEPICTED ONLY.

ELECTRICAL

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CESA
Consulting Engineers South Africa

PROJECT

ARBOUR ESTATE DEVELOPMENT ON ERF 19001, HEATHER PARK, GEORGE

DRAWING TITLE

STREET LIGHTING AND SLEEVE PLAN LAYOUT

DRAWN	DESIGNED	CHECKED	APPROVED
MvM	GSA	GSA	

SCALE	DATE	CAD REF No.	DWG-SIZE
1:500	14/07/2023	10605-E-02	A0

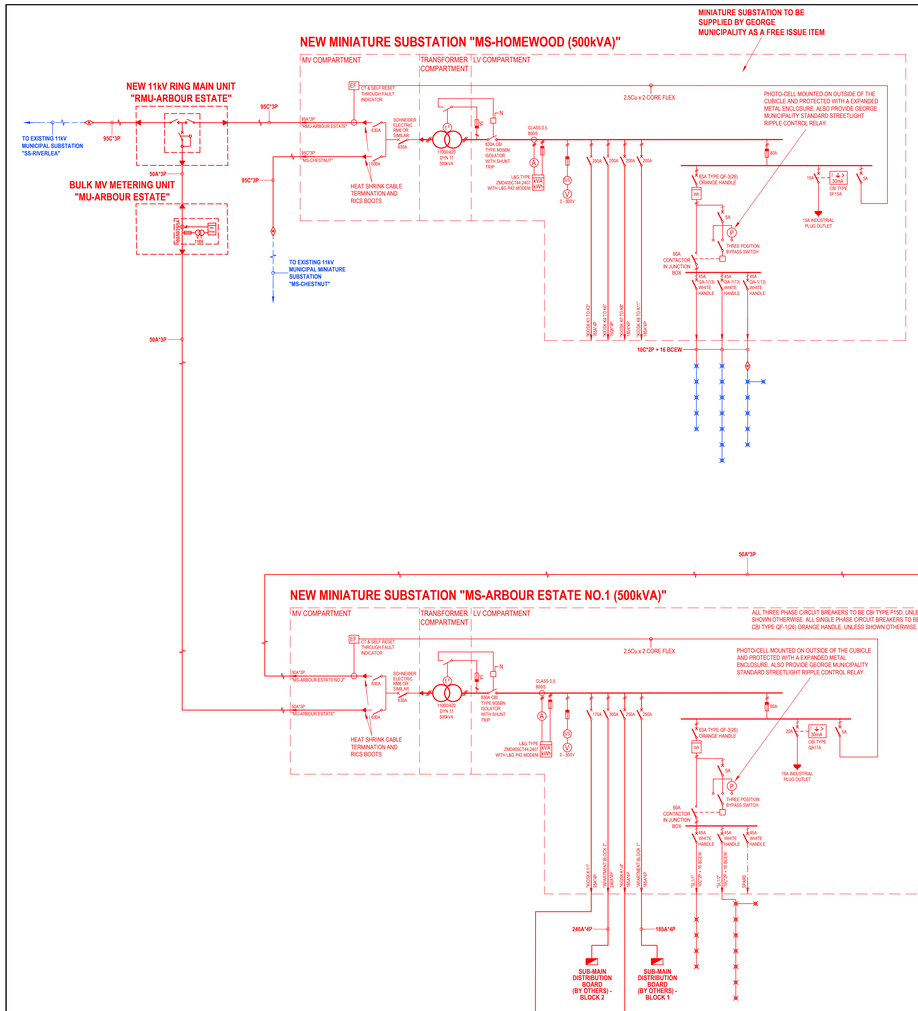
DRAWING NO	REVISION
10605/E/02	2

REVISIONS

No.	DATE	DRAWN	DESCRIPTION
1	2023/07/17	MvM	LAYOUT REVISED AS PER ARCHITECT REV 21. POSITION OF MS NO.1 & 2 AND GENERATORS REVISED AS PER CLIENT.
2	2023/09/13	MvM	ALL CABLES INSIDE DEVELOPMENT MOVED TO CENTRE UNDERNEATH THE ROADS.

LEGEND

▭▭▭	MINIATURE SUBSTATION
⬡	GROUND MOUNTED LV DISTRIBUTION KIOSK
⊗	BOLLARD TYPE STREETLIGHT
SL1/1	STREETLIGHT NUMBER
⊗	POST TOP TYPE STREETLIGHT
SL1/1	STREETLIGHT NUMBER
⬭	PLANNED uPVC SLEEVE, 2 x 110mm Ø, UNLESS SHOWN OTHERWISE
—	EXISTING CABLES AND EQUIPMENT
—	PLANNED CABLES AND EQUIPMENT



SCHEMATIC DIAGRAM OF EXISTING "MS-HOMEWOOD (500kVA)" TO BE DISCONNECTED AND REMOVED

LEGEND

REFER TO DRAWING NO. S/E/2 - STANDARD GRAPHICAL SYMBOLS FOR ELECTRICAL RETICULATION SYSTEMS

95A*3P
MV CABLE SIZES
- P - PILCA
- X - XLPE
- NO CORES
- A - ALUMINIUM
- C - COPPER
- CONDUCTOR SIZE IN mm²

185A*4P
LV CABLE SIZES
- P - PVCAS
- NO. OF CORES
- A - ALUMINIUM
- C - COPPER
- CONDUCTOR SIZE IN mm²

10C*2P + 16 BCEW
STREETLIGHT CABLE SIZES
- BARE COPPER EARTH WIRE
- CONDUCTOR SIZE IN mm²
- P - PVCAS
- NO. OF CORES
- C - COPPER
- A - ALUMINIUM
- CONDUCTOR SIZE IN mm²

⊗ — STREETLIGHT
SL1 — NUMBER

🟦	EXISTING CABLES AND EQUIPMENT
🟥	PLANNED CABLES AND EQUIPMENT
🟩	FUTURE CABLES AND EQUIPMENT

NOTES

1. ALL KIOSK SHALL BE SIMILAR OR APPROVED EQUAL TO GOLNIX POLYETHYLENE TYPE AS SPECIFIED.
2. ALL LIVE BUSBARS / TERMINALS IN KIOSK SHALL BE SHROUDED.
3. NEUTRAL BAR IN KIOSKS SHALL BE BONDED TO EARTH STUD AS SPECIFIED.
4. ALL CABLES SHALL BE CLEARLY LABELED AT TERMINATION, INDICATING THEIR DESIGNATION AND SIZE.
5. ALL SERVICE CONNECTIONS TO HOUSES SHALL BE 16mm² Cu x 2 CORE PVCAS, UNLESS SHOWN OTHERWISE.
6. ALL SERVICE CONNECTION CIRCUIT BREAKERS IN KIOSK SHALL BE 63A CBI TYPE QF-1 (26) CURVE 1 (ORANGE HANDLE), UNLESS SHOWN OTHERWISE.
7. SPACE PROVISION SHALL BE MADE FOR FUTURE HEXING TYPE kWh METERS INSTALLED PER HOUSE CONNECTION.
8. ALL STREETLIGHT CABLES SHALL BE 10C*2P + 16mm² BARE COPPER EARTH WIRE.
9. AT EACH KIOSK A 30m LENGTH OF COPPER CLAD STEEL (CCS) EARTH WIRE SHALL BE LAID WITH THE INCOMING SUPPLY CABLE. THE CCS SHALL BE 35mm² EQUIVALENT COPPER SIZE (53.49mm²), UNLESS INDICATED OTHERWISE.

REVISIONS

No.	DATE	DRAWN	DESCRIPTION
1	2023/07/17	MvM	LAYOUT REVISED AS PER ARCHITECT REV 21. REVISED AS PER RELOCATED MINIATURE SUBSTATION POSITIONS.
2	2023/09/13	MvM	TWO(2) SERVICE CONNECTION CABLES SIZES REVISED TO THREE PHASE, ONE EACH AT LV KIOSK K2/1 AND K2/4.

THIS DRAWING IS TO BE USED FOR THE ENGINEERING SERVICE DEPICTED ONLY.

ELECTRICAL

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PROJECT
ARBOUR ESTATE DEVELOPMENT ON ERF 19001, HEATHER PARK, GEORGE

DRAWING TITLE
SCHEMATIC DIAGRAM

DRAWN	DESIGNED	CHECKED	APPROVED
MvM	GSA	GSA	
SCALE	DATE	CAD REF No.	DWG-SIZE
N.T.S.	14/07/2023	10605-E-03	A0

DRAWING NO
10605/E/03

REVISION
2

Preferred Site Plan (indicative)

Date: 07 March 2023
Project No: 1176
Drawn By: I. Delport

Aerial Image - Google Earth 2022
Cadastral Image - Surveyor General 2017
SDP - Robert Silke & partners, 2023
Rehabilitation plan - Planning Partners, 2023

Projected Coordinate System: GS_1984_UTM_Zone_34S
Scale: 1:4,370

HilLand Environmental
Environmental Assessment Practitioners

Masterplan Layout (Scale 1:500 @ A0)

HOUSE TYPES:
- TYPE A : 108m² 3-BEDROOM, 2 BATHROOM SIMPLEX + 42m² DOUBLE GARAGE (AVERAGE 350m² PLOTS) - x24
- TYPE B : 107m² 3-BEDROOM, 2 BATHROOM DUPLEX + 39m² DOUBLE GARAGE (AVERAGE 220m² PLOTS) - x41
- TYPE C : 134m² 3-BEDROOM, 2 BATHROOM DUPLEX + 41m² DOUBLE GARAGE (AVERAGE 380m² PLOTS) - x17
- TYPE D : 140m² 3-BEDROOM, 2 BATHROOM SIMPLEX + 41m² DOUBLE GARAGE (PLOT SIZE - 325m²) - x1
- TYPE E : 240m² 4-BEDROOM, 4 BATHROOM DUPLEX + 60m² TRIPLE GARAGE (PLOT SIZE - 1006m²) - x1

} 84x HOUSES

APARTMENTS:
- BLOCK 1 : 2 BEDROOM FLAT = 41 FLATS
- BLOCK 2 : 2 BEDROOM FLATS = 36 FLATS
- BLOCK 3: 2 BEDROOM FLATS = 18 FLATS

} 95 FLATS

PARKING BAYS = 168 BAYS

VISITORS PARKING:
138 TANDEM APRON BAYS IN FRONT OF GARAGES
19 BAYS AT CLUBHOUSE
4 PARALLEL BAYS + 10 BAYS AT SOUTH ELBOW LANE
2 PARALLEL BAYS AT HOUSE TYPE E

Scale Bar 1:500
0 10 50 100

SPECIFICATIONS

All work to be done from figured dimensions only. All work must comply with the South African Bureau of Standards SANS 10400, the South African National Building Regulations and relevant South African National Standards. All dimensions and levels to be confirmed on site prior to the commencement of work. All dimensions to be confirmed on site before producing shop drawings or manufacturing of any component. All dimensions to be confirmed on site before ordering of any component. All dimensional discrepancy to be reported to Robert Silke & Partners.

This drawing to be read in conjunction with drawing No's:

FOR INFORMATION

Rev.	Description	Date	Drawn
21	REVISED AND UPDATED LAYOUT	2023.07.27	AG&wm
20	REVISED AND UPDATED LAYOUT	2023.07.06	AG&wm
19	REVISED AND UPDATED LAYOUT	2023.06.15	AG&wm
18	REVISED AND UPDATED LAYOUT	2023.06.14	AG&wm
17	REVISED AND UPDATED LAYOUT	2023.06.06	AG&wm
16	REVISED AND UPDATED LAYOUT	2023.02.24	AG&wm
15	REVISED AND UPDATED LAYOUT	2023.02.20	AG&wm
14	REVISED AND UPDATED LAYOUT	2023.02.16	AG&wm
13	REVISED AND UPDATED LAYOUT	2023.02.16	AG&wm
12	REVISED AND UPDATED LAYOUT	2023.02.14	AG&wm
11	REVISED AND UPDATED LAYOUT	2022.11.18	AG&wm
10	REVISED AND UPDATED LAYOUT	2022.11.17	AG&wm
09	REVISED AND UPDATED LAYOUT	2022.11.15	AG&wm
08	REVISED AND UPDATED LAYOUT	2022.08.25	AG&wm
07	REVISED AND UPDATED LAYOUT	2022.08.18	AG&wm
06	REVISED AND UPDATED LAYOUT	2022.08.11	AG&wm
05	REVISED AND UPDATED LAYOUT	2022.08.08	AG&wm
04	FINAL DRAFT	2022.07.29	AG&wm
03	ZONE LINES ADDED TO LAYOUT	2022.07.07	AG&wm
02	REVISED AND UPDATED LAYOUT	2022.06.24	AG&wm
01	ISSUE FOR INFORMATION	2022.03.17	AG&wm

RobertSilke &partners
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Robert Silke is a registered PrArch with SACAP - Reg. No. 20900
Robert McGiven is a registered PrArch with SACAP - Reg. No. 6934

Project Title: ARBOUR ESTATE

Client: Signatura

Site Location: ERF 19001, Witfontein Road, Heather Park, George

Drawing Title: Detailed Masterplan

Drawn: AG&wm
Checked: RLS
Date of Print: 2023 07 27
Date of Copy:

Drawing No: 202203 SKE 200
Revision No: 21

2023/09/28 G:\.shortcut-targets-by-id\1qqxoBTkl9PVA7t3r9bg2Bv3dUOXE7HWx\202203 Arbour Estate\202203_SKE_200_Rev21.dwg

ANNEXURE G

arbour
NATURE ESTATE

0 10 20 50 100m

NOTES

NO	DATE	REVISION	DRAWN
J	28/07/23	UPDATED TO REV 21 SITE LAYOUT	TD
J	23/08/23	"ENTRANCE TROAT" LAYOUT	CAT
K	31/08/23	"ENTRANCE TROAT", PATH AMMENDMENTS, ADDITION OF BRIDGES, DOG PARK RELOCATION	CAT
L	13/09/23	"ENTRANCE TROAT", ADDITIONAL PVG PLANTING	CAT
M	22/09/23	"ENTRANCE TROAT", ADDITIONAL PVG PLANTING	CAT

LEGEND

- MIXED INDIGENOUS TREES
- PALM-LIKE SPECIMEN
- SHRUBS & GROUNDCOVERS
- VERGE LANDSCAPE AREA TO ACCOMMODATE BIO-RETENTION DEPRESSIONS / PONDS
- LAWN
- PEDESTRIAN FOOTPATH
  Cabrico Brick, Wheatstone Piazzas, 50mm x 70mm x 200mm
- PEDESTRIAN ROAD CROSSINGS
  Cabrico Brick, Wheatstone, 73mm x 106mm x 222mm
- ROADS
  Cabrico Brick, Rustic Blend Variation, 73mm x 106mm x 222mm
- ROAD INTERSECTIONS
  C.E.L. Exposed Aggregate Interlocking Paver, Brownstone Coarse, 70mm x 100mm x 200mm
- GRASS-BLOCK PAVING
  C.E.L. Grassblock, 100mm x 570mm x 380mm
- PLAY EQUIPMENT
- HOUSE GARDENS TO HOA DESIGN GUIDELINES. MINIMUM STABILISING LAWN AND 1 TREE PER HOUSE BY DEVELOPER.
- HOUSE FRONT GARDENS BY DEVELOPER, INCLUDING ONGOING MAINTENANCE, AND HEDGE BETWEEN SHARED DRIVEWAYS.
- STORMWATER SWALE / CHANNEL INCLUDING GABION WEIRS WHERE REQUIRED
- GABION WALLS / WEIRS TO SPREAD WATER AND REDUCE EROSION TO SLOPE CHANNEL
- SELECTED GUM TREES TO REMAIN UNTIL NEW INDIGENOUS TREES ARE ESTABLISHED
- PROPOSED FENCE OFFSET 2.5m FROM TOP BANK WITH GATED ACCESS TO RIPARIAN CORRIDOR
- SECURITY FOOTPATH ALONG FENCE LINE ON BOTH SIDES
- INDICATIVE FOREST FOOTPATH
- RIPARIAN CORRIDOR REHABILITATION TO INDIGENOUS FOREST FOLLOWING ALIEN CLEARANCE
- MALGAS RIVER
- PACKED ROCK CROSSING

INDIGENOUS PLANT LIST

Trees
~~Afrocarpus falcatus~~
Afrocarpus latifolius
~~Allophylus decipiens~~
Apodytes dimidiata
Brachylaena nerifolia
Burchellia bubalina
Buddleja saligna
Buddleja salvifolia
Cassine aethiopica
Canthium inerme
Canthium mundianum
Cassine pappilosa
Celtis Africana
Celtis africana
Chionanthus foveolatus
Calodendrum capense
Cunonia capensis
Curtisia dentate
~~Cussonia spicata~~
Diospyros dichrophylla
Diospyros lycoides
~~Diospyros whyteana~~
~~Ekebergia capensis~~
Ficus sur
~~Grewia occidentalis~~
~~Harpephyllum caffrum~~
~~Halleria lucida~~
Ilex mitis
Kiggelaria Africana
Maytenus heterophylla
~~Nuxia floribunda~~
Ochna serrulata
~~Olea europea subsp Africana~~
Pittosporum viridiflorum
Platylophus trifoliatus
Psoralea pinnata
Pterocelastrus tricuspidatus
Rapanea melanophloeos
Rhamnus prinoides
~~Salix mucronata~~
Schotia affra
Scutia myrtina
Searsia chirindensis
Searsia crenata
Searsia lucida
Sideroxylon inerme
~~Sparmannia Africana~~
Syzygium cordatum
Tarchonanthus camphoratus
Tarchonanthus littoralis
Trimeria grandifora
Vepris lanceolata
Virgilia divaricata
~~Vachellia karoo~~
Vachellia xanthophloea

INDIGENOUS PLANT LIST

Shrubs & Small trees
Anisodontea scabrosa
Aspalathus florifera
Buddleja salviifolia
Burchella bubalina
Carissa bispinosa
Chrysanthemoides incana
Chrysanthemoides monilifera
Eriocephalus africanus
Euryops virgineus
Felicia echinata
Felicia filifolia
Freylinia lanceolata
Gnidia tomentosa
Gnidia squarrosa
Grewia occidentalis
Hermannia hyssopifolia
Hibiscus pedunculatus
Hypoestes aristata
Leonotus leonorus
Leonotus ocymifolia
Lobostemon fruticosus
Leucadendron spp.
Melianthus comosus
Melianthus major
Metalasia muricata
Myrica cordifolia
Myrica quercifolia
Orphium frutescens
Passerina rigida
Pelargonium cordifolium
Pelargonium quercifolium
Podalyria sericea
Polygala fruticosa
Polygala myrtifolia
Polygala virgata
Protea spp
Psoralea pinnata
Relhania punjgens
Rhus crenata
Salvia africana_lutea
Salvia chamelaeagna
Stoebe plumose
Sutherlandia frutescens
Tephrosia capensis
Zygophyllum morgsana

INDIGENOUS PLANT LIST

Groundcovers & Perennials
Asparagus densiflorus
Carpobrotus deliciosus
Carpobrotus edulis
Chaetacanthus setiger
Chascanum dehiscens
Chlorophytum comosum
Chrysocoma tenuifolia
Drosanthemum floribundus
Falkia repens Oortjies
Felicia aethiopica
Felicia ammeloides
Felicia erigeroides
Felicia echinata
Gazania krebsiana
Gazania rigens var rigens
Gazania rigens var uniflora Gazania
Geranium incanum
Helichrysum cymosum
Helichrysum petiolare
Helichrysum teretifolium
Hermannia saccifera
Hydrocotyle bonariensis
Justicia capensis
Knowltonia vesicatoria
Linum africanum
Lobelia alata
Lobelia cuneifolia
Lobelia sp. Sky Blue
Monopsis unidentata
Oedera imbricata
Osteospermum fruticosum
Otholobium decumbens
Pelargonium betulinum
Pelargonium capitatum
Pelargonium fragrans
Pelargonium fruticosum
Pelargonium peltatum
Pelargonium odoratissimum
Plecostachys serpyllifolia
Salvia muirii
Selago corymbosa
Selago glomerata
Selago thunbergii
Solanum quadrangulare
Stachys aethiopica
Sutera cordata
Vernonia capensis
Walafrida nitida

INDIGENOUS PLANT LIST

Bulbs
Agapanthus africanus
Amaryllis belladonna
Aristea ensifolia
Aristea major
Babiana angustifolia
Babiana villosa
Bobartia aphylla
Boophane disticha
Brunsvigia marginata
Brunsvigia orientalis
Chasmanthe aethiopica
Chasmanthe floribunda
Cyrtanthus elatus
Dierama pulcherrimum
Dietes bicolor
Dietes grandiflora
Dietes iridoides
Freesia alba
Haemanthus coccineus
Hypoxis setosa
Ixia campanulata
Kniphofia uvaria
Moraea spathulata
Ornithogalum suaveolens
Oxalis hirta
Oxalis purpurea
Scadoxis puniceus
Sparaxia grandiflora
Tritonia crocata
Tulbaghia violacea
Wachendorfia thyrsifolia
Watsonia galpinii
Watsonia pillansii
Watsonia sp
Zantedeschia aethiopica

Ferns & Fernlike
Blechnum punctulatum
Blechnum tabulare
Rumohra adiantiformis
Streptocarpus rexii
Todea barbata

INDIGENOUS PLANT LIST

Wetland Species
Berzelia lanuginosa
Calopsis paniculata
Carex clavata
Carpha glomerata
Cliffortia ericifolia
Cliffortia ferruginea
Cliffortia strobilifera
Cotula vulgaris
Cyperus longus
Cyperus sphaerospermus
Cyperus textilis
Elegia tectorum
Falkia repens
Ficinia hirsuta
Ficinia indica
Geranium incanum
Grammatotheca bergiana
Halleria elliptica
Helictotrichon turgidulum
Imperata cylindrica
Isolepis ludwigii
Isolepis prolifer
Isolepis rubicunda
Juncus capensis
Juncus effusus
Juncus kraussii
Kniphofia uvaria
Leonotis leonurus
Leucadendron levisanus
Mariscus congestus
Mentha aquatica
Mentha longifolia
Merxmuellera cincta
Monopsis lutea
Morella serrata
Nidorella foetida
Orpheum frutescens
Otholobium virgatum
Passerina paludosa
Phragmites australis
Plecostachys serpyllifolia
Prionium serratum
Psoralea aphylla
Psoralea repens
Pteridium aquilinum
Restio quadratus
Restio tetragonus
Salix mucronata
Scirpoides nodosus
Searsia angustifolia
Senecio halimifolius
Virgilia oroboides
Wachendorfia thyrsiflora
Watsonia meriana
Zantedeschia aethiopica

NON-LOCAL TROPICAL-LIKE INDIGENOUS PLANT LIST

Trees
Dombeya burgessiae
Ensete ventricosum
Erythrina caffra
Euphorbia ingens
Euphorbia triangularis
Phoenix reclinata
Strelitzia nicolai

Shrubs
Strelitzia reginae
Strelitzia juncea

Groundcovers
Asystasia gangetica
Chlorophytum comosum 'Variegatum'
Chlorophytum saundersiae
Clivia miniata
Eucomis autumnalis
Pelargonium spp.
Plectranthus spp.
Setaria megaphylla

NON-INVASIVE EXOTIC PLANT LIST

Trees
Dracaena draco
Macadamia tetraphylla
Pandanus utilis
Plumeria rubra
Ravenala madagascariensis
Schefflera actinophylla

Shrubs
Acanthus mollis
Camellia japonica
Fatsia japonica
Hibiscus spp
Monstera deliciosa
Philodendron selloum
Raphiolepis indica
Schefflera arboricola

Groundcovers / Creepers
Bougainvillea spp.
Philodendron xanadu
Pyrostegia venusta
Sansevieria trifasciata
Syngonium podophyllum

Strike-through indicates tree species omitted due to PSHB beatle.

LANDSCAPE MASTER PLAN NOTES:

A. IMPLEMENTATION AND MAINTENANCE

1. The developer is responsible for the phased implementation of the landscape, with each phase completed prior to Occupancy Certificate being issued per phase.
2. Implementation of landscape within the property boundary shall be to the satisfaction of the Director: Environmental Management.
3. The cost of implementation of all landscaping shall be for the account of the developer.
4. The managing body will be responsible for the on-going landscape maintenance and associated costs.
5. No protected trees may be lopped, topped or felled.

B. WATER SOURCE

1. Water will be supplied from boreholes. Ideally landscaping should be implemented during the rainy season.

C. IRRIGATION

1. A fully automatic irrigation system will be installed to all landscape areas.

D. PLANTING SPECIFICATIONS

1. All planting to be indigenous, as per the approved plant species list, and water-wise.
2. Trees to be a minimum height of 1.8m.
3. Average plant density to be 4 plants per square meter

PLANNING PARTNERS
LANDSCAPE ARCHITECTS

ANTHONY WAIN
PROFESSIONAL LANDSCAPE ARCHITECT
90047
SACLAP REGISTRATION NUMBER

PROJECT
ARBOUR ESTATE

DRAWING TITLE
LANDSCAPE MASTER PLAN

JOB No.	DRAWING No	REVISION
77355	77355-LMP-01	M

DATE 22 SEPTEMBER 2023
SCALE 1:600 @ A0

	SIGNATURE	DATE
DESIGNED TD / CAT		
DRAWN TD / CAT		
CHECKED AW		
APPROVED AW		

CLIENT SIGNATURA

PLANNING PARTNERS

N

GEORGE

Water and Sewer Reticulation

2021-08-18 13:57

0 100m

Scale 1:3164

N

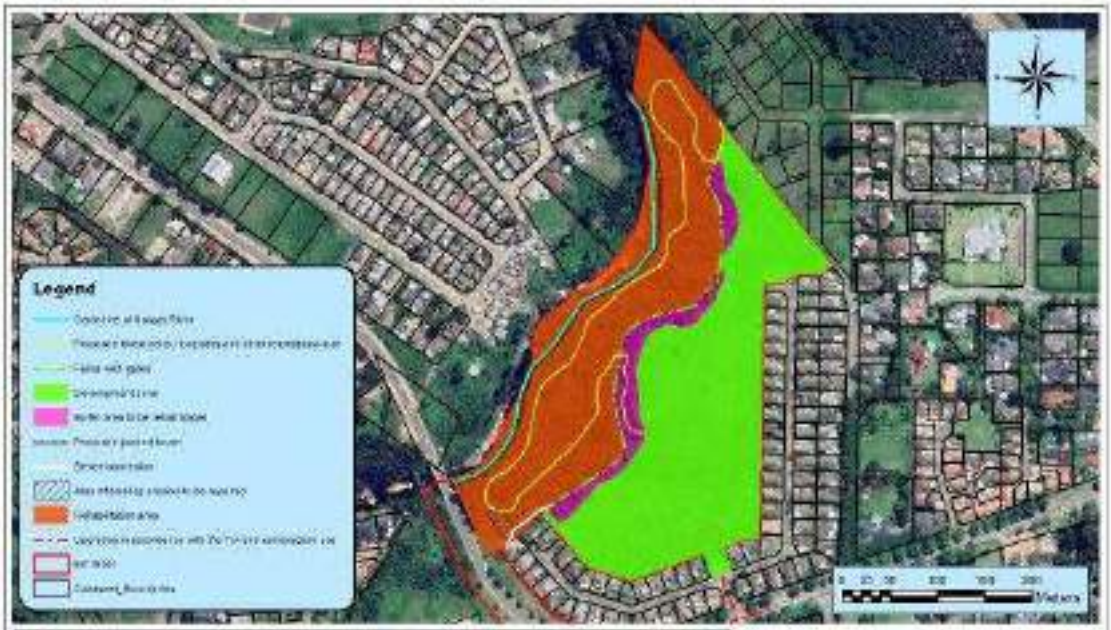
Water and Sewer Reticulation

2021-08-18 14:00

0 50m

Scale 1:1582

ANNEXURE C
"No-Go" Map



Indicative schematic representation of the development and rehabilitation areas

Projected Coordinate System : GS_1984_UTM_Zone_34S
Scale: 1:4 000

HillLand Environmental

ANNEXURE D

Environmental Induction Sheet and Register

HilLand Environmental
Environmental Assessment Practitioners
166 Mount View, Victoria Heights
P.O. Box 590, GEORGE, 6530
Western Cape, South Africa
Tel: +27(0)44 889 0229
Fax: +27 (0) 86 542 5248
Mobile: + 27 (0) 82 5586 589
E-mail: info@hilland.co.za
www.hilland.co.za

BASIC RULES OF CONDUCT WITH REGARD TO ENVIRONMENTAL MANAGEMENT

The following list represents the basic Do's and Don'ts towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks. These are not exhaustive and serve as a quick reference aid.

DO:

- Use the toilet facility provided
- Clear your work area of litter:
  - After every lunch or tea break;
  - At the end of the week;
  - Store litter in the bins provided for this purpose
- Confine work and storage of equipment to within the immediate work area.
- Use all safety equipment and comply with all safety procedures and regulations.
- Prevent contamination or pollution of streams and water channels.
- Report any injury of an animal.
- Prevent excessive dust and noise.
- Ensure that signage and other safety measures are in place and monitored.
- Dispose of your cigarette butt at the appropriate litter or cigarette butt bins – **NO** flicking or disposal of cigarette butts allowed anywhere on site

DO NOT:

- Remove or damage vegetation without direct instruction.
- **MAKE ANY FIRES –** no open flames or naked flames for heating or cooking shall be allowed unless at designated braai areas.
- Burn waste on any part of the site.
- Injure, trap, feed or harm any animals – this includes birds, frogs, snakes, lizards etc.
- Enter any fenced off or demarcated area.
- Speed or drive recklessly.
- Allow waste, litter, oils or foreign materials anywhere on site.
- Litter or leave food lying around.
- **ENTER NO-GO AREAS**

Notes:

1. **Should any animals such as tortoises or snakes be encountered do not harm them. They will move away by themselves.** The harming of any animal will result in disciplinary action. If there is a snake that poses a threat to humans, CapeNature must be contacted for the safe capture and removal of the snake.
2. Ensure that vehicles and machinery do not leak fuel or oils. Refuelling or maintenance must be done within the site camp area only.

IMPORTANT CONTACT NUMBERS:

CapeNature (Garden Route):	044 802 5300
HilLand Environmental:	044 889 0229 / 082 305 5097

HilLand Environmental
Environmental Assessment Practitioners
165 Mount View, Victoria Heights
P.O. Box 590, GEORGE, 6530
Western Cape, South Africa
Tel:+27(0)44 889 0229
Fax: +27 (0) 86 542 5248
Mobile: + 27 (0) 82 5586 589
E-mail: info@hilland.co.za
www.hilland.co.za

ENVIRONMENTAL INDUCTION FOR:

_____

DATE:

NAME & SURNAME	SIGNATURE

NAME & SURNAME	SIGNATURE

Workers & equipment must stay inside the site boundaries at all times

Do not swim in or drink from streams
Do not throw oil, petrol, diesel, concrete or rubbish in the stream
Do not work in the stream without direct instruction
Do not damage the banks or vegetation of the stream

Protect animals on the site
Ask your supervisor or Contract's Manager to remove animals found on site

Do not damage or cut down any trees or plants without permission
Do not pick flowers

Put cigarette butts in a rubbish bin
Do not smoke near gas, paints or petrol
Do not light any fires without permission
Know the positions of fire fighting equipment
Report all fires
Do not burn rubbish or vegetation without permission

Work with petrol, oil & diesel in areas marked for this
Report any petrol, oil & diesel leaks or spills
Use a drip tray under vehicles & machinery
Empty drip trays after rain & do not throw this water into a river

Try to avoid producing dust - wet dry ground & soil

Do not make loud noises around the site, especially near schools and homes
Report or repair noisy vehicles

Use the toilets provided
Report full or leaking toilets

Only eat in demarcated eating areas
Never eat near a river or stream
Put packaging & leftover food into rubbish bins

Do not litter - put all rubbish (especially cement bags) into the bins provided
Report full bins to your supervisor
The responsible person should empty bins regularly

Always keep to the speed limit
Drivers - check & report leaks
Ensure loads are secure & do not spill

Know all the emergency phone numbers

Spot fines of between R20 and R2000
Fines will be deducted from wages
Removal from site
Construction may be stopped

Report any breaks, floods, fires, leaks and injuries to your supervisor
Ask questions!

	CONSTRUCTION PERSONNEL INFORMATION BOARDS: DO'S AND DON'T'S	

ANNEXURE E

Method Statement Form

METHOD STATEMENT

CONTRACT: ..... **DATE**: .....

PROPOSED ACTIVITY (give brief description and reference number from CEMP)

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of the works)

WHERE ARE THE WORKS TO BE UNDERTAKEN? (where possible, provide an annotated plan and a full description of the extent of works)

START AND END DATE OF WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED

Start Date:	End Date:

HOW ARE THE WORKS TO BE UNDERTAKEN? (provide enough detail, including annotated sketches and plans where possible)

ANNEXURE F
Register of Rescued Indigenous Vegetation

HillLand Environmental
Environmental Assessment Practitioners
166 Mount View, Victoria Heights
P.O. Box 590, GEORGE, 6530
Western Cape, South Africa
Tel:+27(0)44 889 0229
Fax: +27 (0) 86 542 5248
Mobile: + 27 (0) 82 5586 589
E-mail: info@hilland.co.za
www.hilland.co.za

REGISTER OF RESCUED PLANT MATERIAL

Number	Date Bagged	Plant Name (If known)	Description of Plant (Size and Health)	Established in Nursery	Signed
Eg 2017/01	Eg 2017/01/26	Eg Bitou	Eg Seedling, Sparse growth	Eg Yes / ✓	

ANNEXURE G

Landscape Philosophy, landscape- and rehabilitation plan

PLANNING PARTNERS

TOWN AND REGIONAL PLANNING • PROJECT PLANNING • LANDSCAPE ARCHITECTURE • MASTER PLANNING

Suite F03, 1st Floor, 97 Durham Avenue, Salt River, 7925
PO Box 4866, Cape Town 8000, South Africa
Tel: +27 (0) 21 418 0510
E-mail: admin@planpart.co.za
Website: www.planpart.co.za

Our ref: 77355
01 September 2022

GEORGE HOUSING ESTATE - LANDSCAPE DESIGN AND RESILIENCE STATEMENT

The components of landscapes, namely trees, plants, and soils, offer an opportunity for landscape architecture to participate as an agent of climate mitigation. Mitigation and adaptation measures for the project proposals are as follows:

1. The inclusion in the projects of green infrastructure, defined as the network of spaces and natural elements that are present in and interconnect our landscapes. It represents a holistic approach to the natural and built environment which recognises the important, multifunctional role the landscape plays in providing benefits for the economy, biodiversity, wider communities, and individuals as well as playing an important part in climate change adaptation. Components of green infrastructure included are street trees, pocket parks and the protection and enhancement of existing natural habitat. Green spaces and corridors help to cool our urban environments, improve air quality, and ameliorate surface run-off.

2. The creation of urban carbon sinks via the provision of green space which removes carbon from the atmosphere via storage in biomass and the release of oxygen.

3. Protection and enhancement of existing natural habitat to promote biodiversity.

4. Topsoil from site will be harvested for reuse on site.

5. Plant species selection – locally indigenous and waterwise trees and plants to promote resilience.

6. Removal of invasive alien plants.

7. Sustainable urban drainage - infiltration and ground water recharge.

8. Limited use of slow-release fertiliser, preferably organic fertiliser.

9. Responsibility for compliance with these items pass on to the HOA following completion of the construction of the development.

Anthony Wain
Professional Landscape Architect
PLANNING PARTNERS

Trevor Dix
Landscape Designer
PLANNING PARTNERS

PLANNING PARTNERS

TOWN AND REGIONAL PLANNING · PROJECT PLANNING · LANDSCAPE ARCHITECTURE · MASTER PLANNING

Suite F03, 1st Floor, 97 Durham Avenue, Salt River, 7925
PO Box 4866, Cape Town 8000, South Africa
Tel: +27 (0) 21 418 0510
E-mail: admin@planpart.co.za
Website: www.planpart.co.za

Our ref: 77355

26 November 2022

ARBOUR ESTATE, GEORGE: LANDSCAPE PHILOSOPHY, Revision 1

The landscape can be divided into two main components, namely the residential development on the existing gently sloping grassy meadow area of the site, and the densely wooded steeply sloped riverine embankment.

The Residential Development

The residential development is envisaged as a "forest estate" with substantial tree planting on the road verges. The proposed tree species will be mixed indigenous medium sized forest edge trees to create a continuous tree canopy along the roads. Trees will provide shade to the "shared" road for cars, bicycles, and pedestrians. The trees and proposed mixed indigenous understory planting will also provide habitat for birds, butterflies, insects and other small reptiles and mammals. Lawn areas should be minimised in the common landscape areas to reduce relentless mowing and increase plant cover, diversity, and wildlife habitat. The proposed children's playground area and communal clubhouse facilities include lawn areas for recreation purposes. The private home gardens will contribute significantly to the quality of the environment and indigenous planting will be promoted and managed through development guidelines and will be an extension of the rehabilitated riverine forest across not only the common areas, but the entire site.

Topsoil and a few existing plants will be harvested for later reuse, prior to the start of construction activities. Phasing of the development will limit the extent of exposing erodible soil and will limit the extent of potential destructive soil erosion and site damage. Careful construction activity programming and management is required on this site, particularly as it includes an extensive steep riverine slope of the Malgas River. The topsoil (minimum 300mm layer) will be stripped from site and stored in windrows maximum 2m high. Storage times to be as short as possible. Ongoing protection of the riverine slope from stormwater erosion is necessary, and stormwater detention areas and swales in the shared landscape areas and verges is included in the proposal. Irrigation to the planted landscape will be required, both 2-year establishment irrigation and reduced long-term irrigation, and a borehole water source is proposed.

Malgas River Forest Edge

The site includes the riverine corridor down to and along the river, varying in width between 60m to 120m wide with an approximate 30m height difference. A security fence line is proposed at the top of the slope, set back 1m from the top of bank. Large gums trees and black wattle are the predominant trees in the corridor, and it is proposed that some selected gum trees would remain in the medium term to provide a treed backdrop to the development, and all black wattle trees (Acacia mearnsii) will be removed in the short term. A riparian corridor and riparian buffer revegetation programme to establish an indigenous riverine forest over an approximate 15-year period is proposed. Initial clearing will include the removal of all exotic invasive plants within the riparian corridor, and all black wattle 3m in height and below together with understorey invasives such as lantana in the riparian buffer. Replanting of indigenous trees, shrubs and groundcovers will be established in the riparian corridor and riparian buffer, including below existing gum trees selected to remain. Security trails along the fence line and recreational and maintenance paths on the slopes are included to negotiate the steep slopes with care. Localised stormwater flows over the top bank will be dissipated and spread by the inclusion of a stone gabion wall at the base of the fence line, while most of the stormwater will be directed towards the detention areas and swales in the shared landscape areas and verges.

The proposed indigenous riverine forest will extend beyond the riparian buffer to include the entire steeply sloped portion of the site. The proposed indigenous riverine forest will also extend beyond the top of the bank onto the gently sloping ground and open space around buildings, structures, infrastructure, and stormwater ponds, and even into the home gardens. The site in its entirety will be transformed from a degraded invaded river forest and kikuyu field to a vibrant local indigenous habitat for people and wildlife alike and aims to set the standard for responsible resilient development and be an example to what needs to be done up, down and across the river.

Anthony Wain
Professional Landscape Architect

Trevor Dix
Landscape Designer

NOTES

NO	DATE	REVISION	DRAWN
J	28/07/23	UPDATED TO REV 21 SITE LAYOUT	TD
J	23/08/23	"ENTRANCE TROAT" LAYOUT	CAT
K	31/08/23	"ENTRANCE TROAT", PATH AMMENDMENTS, ADDITION OF BRIDGES, DOG PARK RELOCATION	CAT
L	13/09/23	"ENTRANCE TROAT", ADDITIONAL PVG PLANTING	CAT
M	22/09/23	"ENTRANCE TROAT", ADDITIONAL PVG PLANTING	CAT

LEGEND

- MIXED INDIGENOUS TREES
- PALM-LIKE SPECIMEN
- SHRUBS & GROUNDCOVERS
- VERGE LANDSCAPE AREA TO ACCOMMODATE BIO-RETENTION DEPRESSIONS / PONDS
- LAWN
- PEDESTRIAN FOOTPATH Cabrico Brick, Wheatstone Piazzas, 50mm x 70mm x 200mm
- PEDESTRIAN ROAD CROSSINGS Cabrico Brick, Wheatstone, 73mm x 106mm x 222mm
- ROADS Cabrico Brick, Rustic Blend Variation, 73mm x 106mm x 222mm
- ROAD INTERSECTIONS C.E.L. Exposed Aggregate Interlocking Paver, Brownstone Coarse, 70mm x 100mm x 200mm
- GRASS-BLOCK PAVING C.E.L. Grassblock, 100mm x 570mm x 380mm
- PLAY EQUIPMENT
- HOUSE GARDENS TO HOA DESIGN GUIDELINES. MINIMUM STABILISING LAWN AND 1 TREE PER HOUSE BY DEVELOPER.
- HOUSE FRONT GARDENS BY DEVELOPER, INCLUDING ONGOING MAINTENANCE, AND HEDGE BETWEEN SHARED DRIVEWAYS.
- STORMWATER SWALE / CHANNEL INCLUDING GABION WEIRS WHERE REQUIRED
- GABION WALLS / WEIRS TO SPREAD WATER AND REDUCE EROSION TO SLOPE CHANNEL
- SELECTED GUM TREES TO REMAIN UNTIL NEW INDIGENOUS TREES ARE ESTABLISHED
- PROPOSED FENCE OFFSET 2.5m FROM TOP BANK WITH GATED ACCESS TO RIPARIAN CORRIDOR
- SECURITY FOOTPATH ALONG FENCE LINE ON BOTH SIDES
- INDICATIVE FOREST FOOTPATH
- RIPARIAN CORRIDOR REHABILITATION TO INDIGENOUS FOREST FOLLOWING ALIEN CLEARANCE
- MALGAS RIVER
- PACKED ROCK CROSSING

INDIGENOUS PLANT LIST

Trees
~~Afrocarpus falcatus~~
Afrocarpus latifolius
~~Allophylus decipiens~~
Apodytes dimidiata
Brachylaena neriifolia
Burchellia bubalina
Buddleja saligna
Buddleja salviifolia
Cassine aethiopica
Canthium inerme
Canthium mundianum
Cassine pappilosa
Celtis Africana
Celtis africana
Chionanthus foveolatus
Calodendrum capense
Cunonia capensis
Curtisia dentate
~~Cussonia spicata~~
Diospyros dichrophylla
Diospyros lycoides
~~Diospyros whyteana~~
~~Ekebergia capensis~~
Ficus sur
~~Grewia occidentalis~~
~~Harpephyllum caffrum~~
~~Halleria lucida~~
Ilex mitis
Kiggelaria Africana
Maytenus heterophylla
~~Nuxia floribunda~~
Ochna serrulata
~~Olea europea subsp Africana~~
Pittosporum viridiflorum
Platylophus trifoliatus
Psoralea pinnata
Pterocelastrus tricuspidatus
Rapanea melanophloeos
Rhamnus prinoides
~~Salix mucronata~~
Schotia afra
Scutia myrtina
Searsia chirindensis
Searsia crenata
Searsia lucida
Sideroxylon inerme
~~Sparrmannia Africana~~
Syzygium cordatum
Tarchonanthus camphoratus
Tarchonanthus littoralis
Trimeria grandifora
Vepris lanceolata
Virgilia divaricata
~~Vachellia karoo~~
Vachellia xanthophloea

INDIGENOUS PLANT LIST

Shrubs & Small trees
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Carissa bispinosa
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Chrysanthemoides monilifera
Eriocephalus africanus
Euryops virgineus
Felicia echinata
Felicia filifolia
Freylinia lanceolata
Gnidia tomentosa
Gnidia squarrosa
Grewia occidentalis
Hermannia hyssopifolia
Hibiscus pedunculatus
Hypoestes aristata
Leonotus leonorus
Leonotus ocymifolia
Lobostemon fruticosus
Leucadendron spp
Melianthus comosus
Melianthus major
Metalasia muricata
Myrica cordifolia
Myrica quercifolia
Orphium frutescens
Passerina rigida
Pelargonium cordifolium
Pelargonium quercifolium
Podalyria sericea
Polygala fruticosa
Polygala myrtifolia
Polygala virgata
Protea spp
Psoralea pinnata
Relhania pungens
Rhus crenata
Salvia africana_lutea
Salvia chamelaeagna
Stoebe plumose
Sutherlandia frutescens
Tephrosia capensis
Zygophyllum morgsana

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Groundcovers & Perennials
Asparagus densiflorus
Carpobrotus deliciosus
Carpobrotus edulis
Chaetacanthus setiger
Chascanum dehiscens
Chlorophytum comosum
Chrysocoma tenuifolia
Drosanthemum floribundus
Falkia repens Oortjies
Felicia aethiopica
Felicia ammeloides
Felicia erigeroides
Felicia echinata
Gazania krebsiana
Gazania rigens var rigens
Gazania rigens var uniflora Gazania
Geranium incanum
Helichrysum cymosum
Helichrysum petiolare
Helichrysum teretifolium
Hermannia saccifera
Hydrocotyle bonariensis
Justicia capensis
Knowltonia vesicatoria
Linum africanum
Lobelia alata
Lobelia cuneifolia
Lobelia sp. Sky Blue
Monopsis unidentata
Oedera imbricata
Osteospermum fruticosum
Otholobium decumbens
Pelargonium betulinum
Pelargonium capitatum
Pelargonium fragrans
Pelargonium fruticosum
Pelargonium peltatum
Pelargonium odoratissimum
Plecostachys serpyllifolia
Salvia muirii
Selago corymbosa
Selago glomerata
Selagao thunbergii
Solanum quadrangulare
Stachys aethiopica
Sutera cordata
Vernonia capensis
Walafrida nitida

INDIGENOUS PLANT LIST

Bulbs
Agapanthus africanus
Amaryllis belladonna
Aristea ensifolia
Aristea major
Babiana angustifolia
Babiana villosa
Bobartia aphylla
Boophane disticha
Brunsvigia marginata
Brunsvigia orientalis
Chasmanthe aethiopica
Chasmanthe floribunda
Cyrtanthus elatus
Dierama pulcherrimum
Dietes bicolor
Dietes grandiflora
Dietes iridoides
Freesia alba
Haemanthus coccineus
Hypoxis setosa
Ixia campanulata
Kniphofie uvaria
Moraea spathulata
Ornithogalum suaveolens
Oxalis hirta
Oxalis purpurea
Scadoxis puniceus
Sparaxia grandiflora
Tritonia crocata
Tulbaghia violacea
Wachendorfia thyrsifolia
Watsonia galpinii
Watsonia pillansii
Watsonia sp
Zantedeschia aethiopica

Ferns & Fernlike
Blechnum punctulatum
Blechnum tabulare
Rumohra adiantiformis
Streptocarpus rexii
Todea barbata

INDIGENOUS PLANT LIST

Wetland Species
Berzelia lanuginosa
Calopsis paniculata
Carex clavata
Carpha glomerata
Cliffortia ericifolia
Cliffortia ferruginea
Cliffortia strobilifera
Cotula vulgaris
Cyperus longus
Cyperus sphaerospermus
Cyperus textilis
Elegia tectorum
Falkia repens
Ficinia hirsuta
Ficinia indica
Geranium incanum
Grammatotheca bergiana
Halleria elliptica
Helictotrichon turgidulum
Imperata cylindrica
Isolepis ludwigii
Isolepis prolifer
Isolepis rubicunda
Juncus capensis
Juncus effusus
Juncus kraussii
Kniphofia uvaria
Leonotis leonurus
Leucadendron levisanus
Mariscus congestus
Mentha aquatica
Mentha longifolia
Merxmuellera cincta
Monopsis lutea
Morella serrata
Nidorella foetida
Orpheum frutescens
Otholobium virgatum
Passerina paludosa
Phragmites australis
Plecostachys serpyllifolia
Prionium serratum
Psoralea aphylla
Psoralea repens
Pteridium aquilinum
Restio quadratus
Restio tetragonus
Salix mucronata
Scirpoides nodosus
Searsia angustifolia
Senecio halimifolius
Virgilia oroboides
Wachendorfia thyrsiflora
Watsonia meriana
Zantedeschia aethiopica

NON-LOCAL TROPICAL-LIKE INDIGENOUS PLANT LIST

Trees
Dombeya burgessiae
Ensete ventricosum
Erythrina caffra
Euphorbia ingens
Euphorbia triangularis
Phoenix reclinata
Strelitzia nicolai

Shrubs
Strelitzia reginae
Strelitzia juncea

Groundcovers
Asystasia gangetica
Chlorophytum comosum 'Variegatum'
Chlorophytum saundersiae
Clivia miniata
Eucomis autumnalis
Pelargonium spp.
Plectranthus spp.
Setaria megaphylla

NON-INVASIVE EXOTIC PLANT LIST

Trees
Dracaena draco
Macadamia tetraphylla
Pandanus utilis
Plumeria rubra
Ravenala madagascariensis
Schefflera actinophylla

Shrubs
Acanthus mollis
Camellia japonica
Fatsia japonica
Hibiscus spp
Monstera deliciosa
Philodendron selloum
Raphiolepis indica
Schefflera arboricola

Groundcovers / Creepers
Bougainvillea spp.
Philodendron xanadu
Pyrostegia venusta
Sansevieria trifasciata
Syngonium podophyllum

Strike-through indicates tree species omitted due to PSHB beatle.

LANDSCAPE MASTER PLAN NOTES:

A. IMPLEMENTATION AND MAINTENANCE

1. The developer is responsible for the phased implementation of the landscape, with each phase completed prior to Occupancy Certificate being issued per phase.
2. Implementation of landscape within the property boundary shall be to the satisfaction of the Director: Environmental Management.
3. The cost of implementation of all landscaping shall be for the account of the developer.
4. The managing body will be responsible for the on-going landscape maintenance and associated costs.
5. No protected trees may be lopped, topped or felled.

B. WATER SOURCE

1. Water will be supplied from boreholes. Ideally landscaping should be implemented during the rainy season.

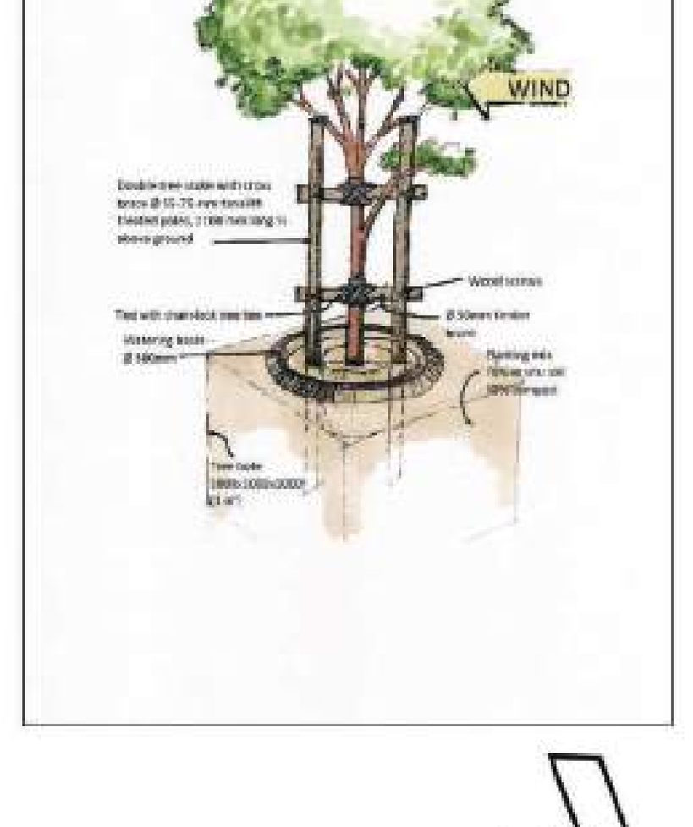
C. IRRIGATION

1. A fully automatic irrigation system will be installed to all landscape areas.

D. PLANTING SPECIFICATIONS

1. All planting to be indigenous, as per the approved plant species list, and water-wise.
2. Trees to be a minimum height of 1.8m.
3. Average plant density to be 4 plants per square meter

ANTHONY WAIN
PLANNING PARTNERS LANDSCAPE ARCHITECTS
90047



ANNEXURE G

arbour NATURE ESTATE

0 10 20 50 100m

PROJECT: ARBOUR ESTATE

DRAWING TITLE: LANDSCAPE MASTER PLAN

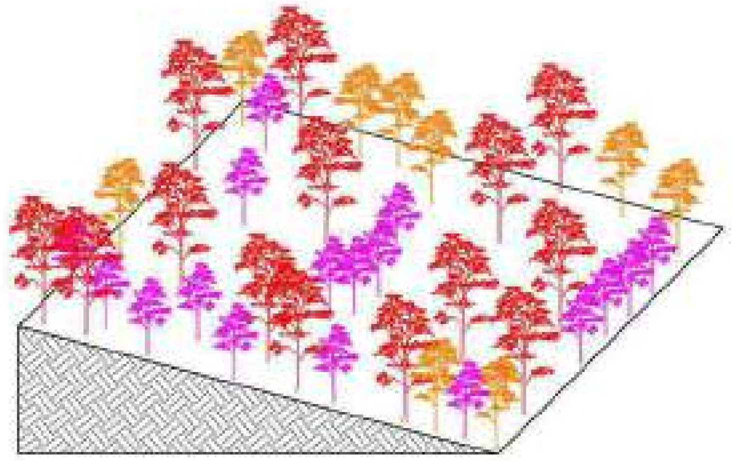
JOB No	DRAWING No	REVISION
77355	77355-LMP-01	M

DATE: 22 SEPTEMBER 2023
SCALE: 1:600 @ A0

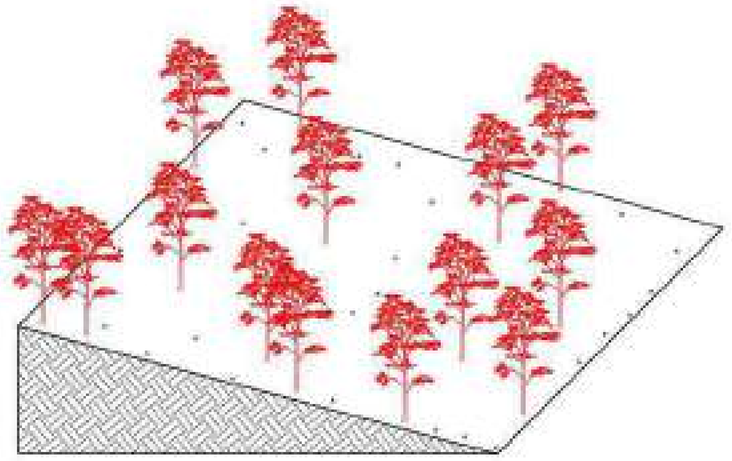
DESIGNED: TD / CAT
DRAWN: TD / CAT
CHECKED: AW
APPROVED: AW

CLIENT: SIGNATURA

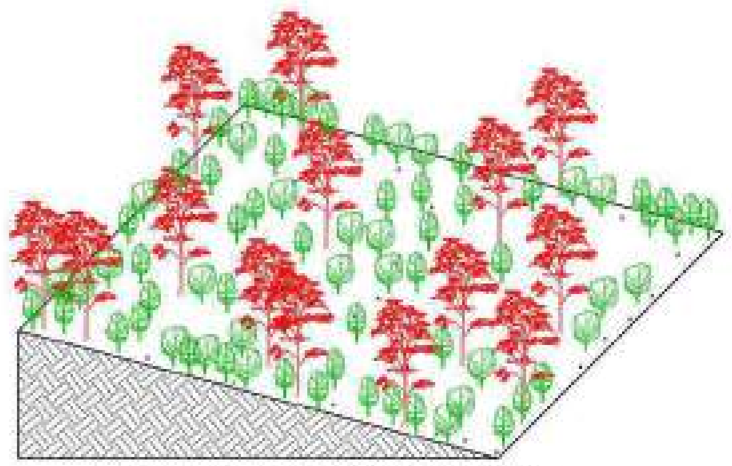
PLANNING PARTNERS



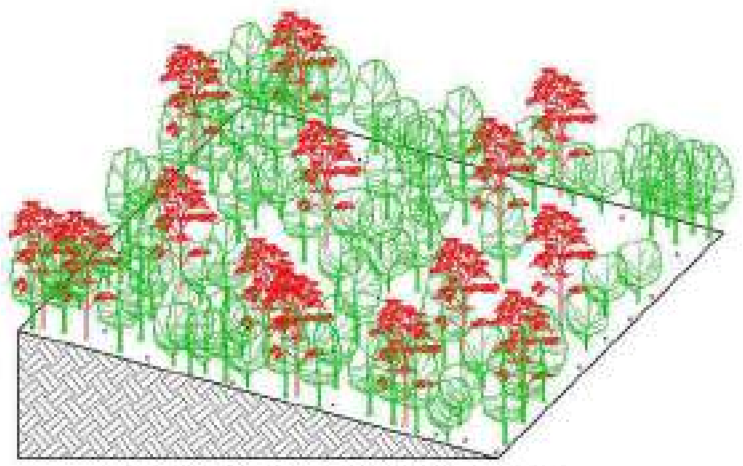
1) EXISTING ALIEN VEGETATION



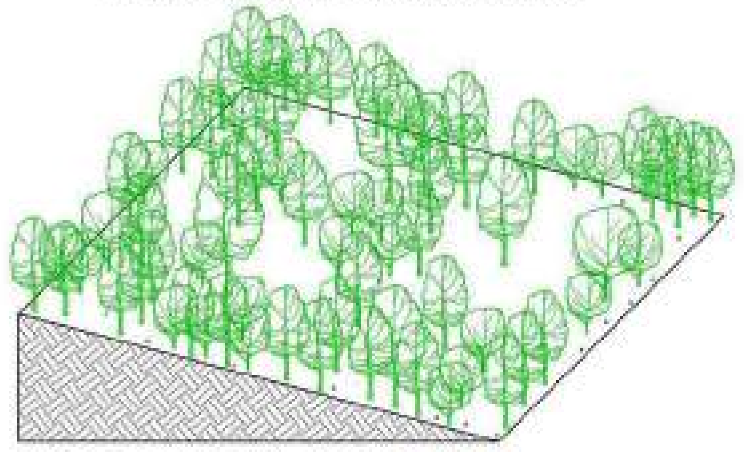
2) INVASIVE ALIEN VEGETATION CLEARING. TREE STUMPS AND SELECTED LARGE GUM TREES TO REMAIN



3) PLANTING OF MIX INDIGENOUS TREES, SHRUBS & GROUNDCOVERS

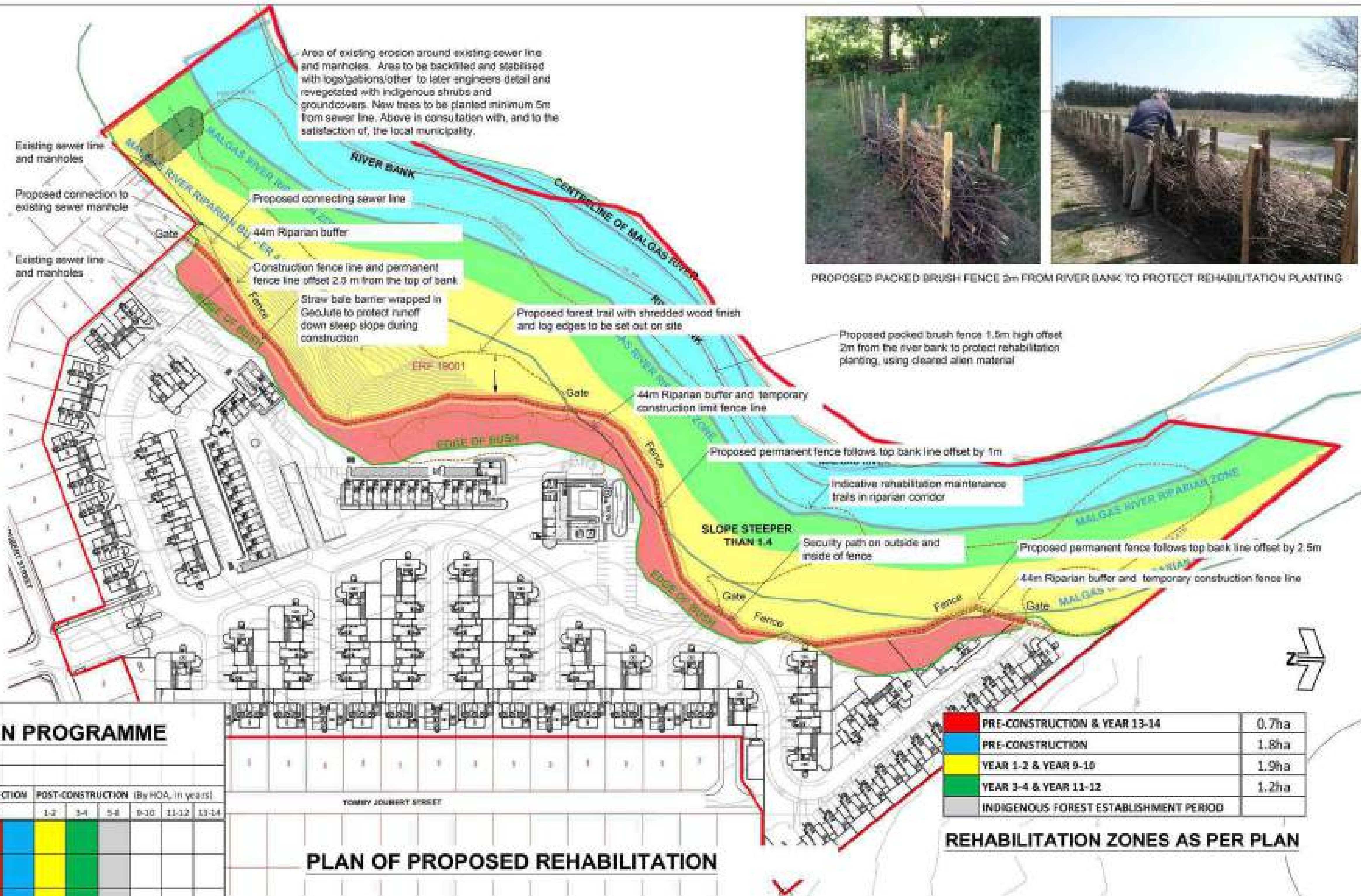


4) ONCE INDIGENOUS TREES HAVE ESTABLISHED, REMOVE ALL LARGE GUM TREES



5) ESTABLISHED REHABILITATED INDIGENOUS FOREST

RIPARIAN CORRIDOR REHABILITATION



PLAN OF PROPOSED REHABILITATION

PROPOSED PACKED BRUSH FENCE 2m FROM RIVER BANK TO PROTECT REHABILITATION PLANTING

LEGEND

- PRE-CONSTRUCTION CLEARING OF INVASIVE SPECIES WITH LATER FELLING OF *Eucalyptus grandis*
- PRE-CONSTRUCTION CLEARING OF INVASIVE SPECIES INCLUDING *Eucalyptus grandis*
- PHASED CLEARING OF INVASIVES WITH LATER FELLING OF *Eucalyptus grandis*
- PHASED CLEARING OF INVASIVES WITH LATER FELLING OF *Eucalyptus grandis*

NOTES:

1. ALIEN CLEARING WILL BE DONE IN ACCORDANCE WITH AN APPROVED ALIEN CONTROL PLAN (ACP), APPROVED BY DFFE BIOSECURITY INSPECTORS IN ACCORDANCE WITH NEMBA ALIEN SPECIES REGULATIONS.

2. TREE ROOTS WILL NOT BE REMOVED FROM THE SOIL.

3. TREES WILL HAVE HERBICIDE APPLIED TO THE STUMPS AND STUMPS WILL BE LEFT IN THE SOIL AND NOT REMOVED WHICH WOULD DESTABILISE THE SOIL AND RESULT IN ADDITIONAL EROSION RISK.

Zone	Area
PRE-CONSTRUCTION & YEAR 13-14	0.7ha
PRE-CONSTRUCTION	1.8ha
YEAR 1-2 & YEAR 9-10	1.9ha
YEAR 3-4 & YEAR 11-12	1.2ha
INDIGENOUS FOREST ESTABLISHMENT PERIOD	

REHABILITATION ZONES AS PER PLAN

George, Townhouses Erf 19001: REHABILITATION PROGRAMME

	ACTION	PRE-CONSTRUCTION (By Developer)		POST-CONSTRUCTION (By HOA, in years) 1-2	3-4	5-8	9-10	11-12	13-14
1)	Conservation worthy plant rescue and protection	red	blue	yellow	green	grey			
2)	Invasive alien vegetation clearing (excluding roots)	red	blue	yellow	green	grey			
3)	Actively replanting of indigenous plants	red	blue	yellow	green	grey			
4)	Soil stabilisation on steep slope	red	blue	yellow	green	grey			
5)	Removal of Eucalyptus trees (excluding gum stump removal)		blue			grey	yellow	green	red
6)	Establishing Fire Breaks (to fire specialist input)	red				grey			
7)	Monitoring and follow up clearing of alien regrowth and seedlings	ON-GOING PROCESS							

INDIGENOUS PLANT LIST

Trees

INDIGENOUS PLANT LIST

Shrubs & Small trees

INDIGENOUS PLANT LIST

Groundcovers & Perennials

INDIGENOUS PLANT LIST

Bulbs

Ferns & Fernlike

INVASIVE PLANT LIST

Alien invasive

ACM	Acacia mearnsii (NEMBA Category 2)
ACMe	Acacia melanoxylon (NEMBA Category 2)
CIV	Cirsium vulgare (NEMBA Category 1b)
DAS	Datura stramonium (NEMBA Category 1b)
EUG	Eucalyptus grandis (NEMBA Category 1b)
HEC	Hedychium coronarium (NEMBA Category 1b)
LAC	Lantana camara (NEMBA Category 1b)
SOM	Solanum mauritianum (NEMBA Category 1b)

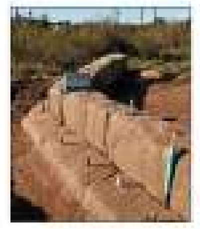
NOTES:

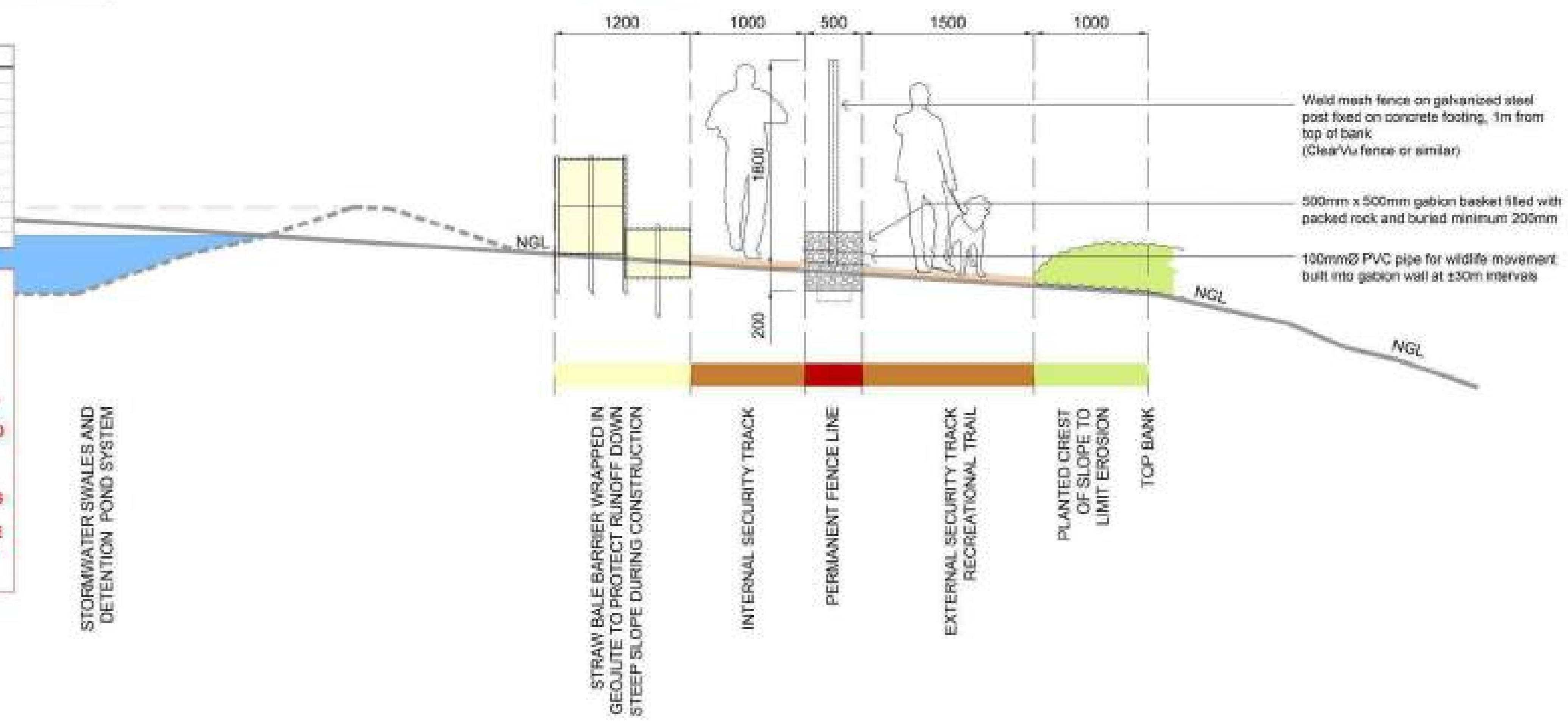
1. ALIEN CLEARING WILL BE DONE IN ACCORDANCE WITH AN APPROVED ALIEN CONTROL PLAN (ACP), APPROVED BY DFFE BIOSECURITY INSPECTORS IN ACCORDANCE WITH NEMBA ALIEN SPECIES REGULATIONS.

2. TREE ROOTS WILL NOT BE REMOVED FROM THE SOIL.

3. TREES WILL HAVE HERBICIDE APPLIED TO THE STUMPS AND STUMPS WILL BE LEFT IN THE SOIL AND NOT REMOVED WHICH WOULD DESTABILISE THE SOIL AND RESULT IN ADDITIONAL EROSION RISK.

PROPOSED INDIGENOUS PLANT LIST





PROPOSED BOUNDARY FENCE TYPICAL DETAIL

SCALE 1:25

ARBOUR ESTATE

REHABILITATION PLAN

77355 | 77355 RP 01

27 February 2025

1:1000@A0

SIGNATURA

PLANNING PARTNERS

ANNEXURE H
Stormwater Management Plan
(Draft)

URBAN ENGINEERING
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

STORMWATER MANAGEMENT PLAN

PROPOSED NEW RESIDENTIAL DEVELOPMENT ON ERF 19001, GEORGE

Report Number 21-101_SW

Date: February 2023 Revision 2

QUALITY ASSURANCE DATA

Report Title:	PROPOSED NEW RESIDENTIAL DEVELOPMENT ON ERF 19001, GEORGE
Client:	Cedardale Investments (Pty) Ltd
Report Number:	21-101_SW
Revision Number	Revision 2

Revision History

Date	Rev	Written By	Issued to		Distribution	Format
			Name	Institution		
June 2022	Draft	Errol Witbooi	Christiaan Bester	Signatura	Email	.pdf
August 2022	0	Errol Witbooi	Christiaan Bester	Signatura	Email	.pdf
Sept 2022	1	Errol Witbooi	Christiaan Bester	Signatura	Email	.pdf
24 Feb 2023	2	Frans v Aardt	Christiaan Bester	Signatura	Email	.pdf
			Cathy Avierinos	HilLand Environmental	Email	.pdf

Written by:

Frans van Aardt (B.Ing, M.Ing, Pr. Eng)
on behalf of Urban Engineering (Pty) Ltd

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

msl	Mean Sea Level
WCG	Western Cape Government
WGS	World Geodetic System
HDPE	High Density Polyethylene
uPVC	Unplasticised Polyvinyl Chloride
SDP	Site Development Plan
Mℓ	Mega Litre (1,000,000 litres)
NPDG	The Neighbourhood Planning and Design Guide
FAR	Floor Area Ratio
GIZSBL	George Integrated Zoning Scheme by-law
Mℓ	Mega Litre (1,000,000 litres)
GHPSD	Guidelines for Human Planning and Settlement Design

1 INTRODUCTION

1.1 BACKGROUND

Urban Engineering (Pty) Ltd was appointed by Cedardale Investments (Pty) Ltd to prepare a Stormwater Management Plan pertaining to the proposed development of erf 19001 in George. The site is located in the residential area known as Heather Park. It is located north of Witfontein Road and the existing Homewood Residential Estate. The western site boundary follows the Malgas River. The approximate site centre has WGS 84 coordinates of 33°57'00" S and 22°25'34.7" E. Access to the site is via Tommy Joubert Avenue as per the SDP.

A basic locality plan has been included as Figure 1-1below.

Figure 1-1 Basic Locality Plan

1.2 OBJECTIVE OF THIS REPORT

This report aims to provide a strategy for the management of stormwater for the proposed development. The objectives of these strategies are, inter alia to:

- Attenuate the peak flow to pre-development levels
- Ensure that the extent of the flooding does not increase
- To reduce the instream litter load
- Protect the biodiversity within the catchment.
- Provide methods for removing, reducing, or retarding runoff flows, and preventing targeted stormwater runoff constituents, pollutants and contaminants from reaching receiving waters

It is important to note that this strategy document provides a range of principles and initial concepts based on site inspections (by various specialist) as well as consultation with the relevant stakeholders. While a conventional stormwater design has historically been a rather linear process (i.e you design a piped network), a stormwater system that attenuates flow and

improves the runoff quality requires an interactive approach. This has had a significant impact on the environment through the erosion of natural channels, siltation of water bodies and pollution resulting in environmental degradation. It is clear that an alternative approach is required, which Sustainable Urban Drainage Systems (SUDS) provides.

SUDS aims to mimic the natural hydrological cycles. The key objective of the SUDS approach is the effective management of stormwater runoff quantity, quality, associated amenity, and biodiversity of the Urban Drainage System. The relationship has historically been described using a Venn diagram. This approach has a number of problems including the joining of amenity and biodiversity which are not mutually dependent. Additionally, it implies that it would be possible to have a design which compromised or did not fully consider quantity. Therefore, the key objectives of SuDS are more correctly described as a hierarchy (Figure 1-2) where each level accomplished results in an improved and more sustainable drainage system. Simply put, there is no point focusing on biodiversity, if life and property has not been protected.

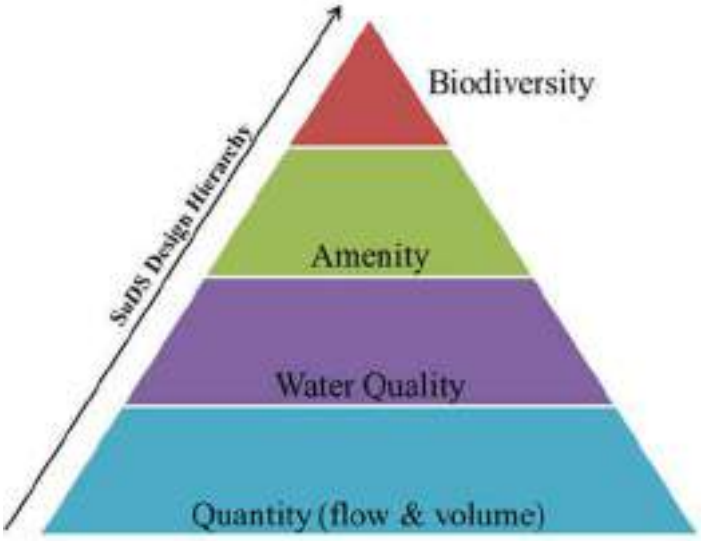


Figure 1-2 Relationship between the different SuDS Elements

1.3 STORMWATER MANAGEMENT PRINCIPLES

The underlying principle regarding Stormwater Management is that the peak runoff from the post-development site should not exceed that of the pre-developed site for the full range of storm periods (1:2 to 1:50). Mitigation measures must therefore be incorporated into the Site Development Plan to reduce and/or attenuate the post development flows to pre-development rates.

The stormwater network should be designed to accommodate the minor storm event (1:2 year) in open channels. The major storm event (1:50 year) must be managed through controlled overland flows and above ground attenuation storage in the form of grassed swales.

Where piped networks are required to transport collected runoff, special attention must be given to the design of the outlet point to ensure controlled discharge will take place. The difference between a responsible and irresponsible approach to Stormwater Management is indicated schematically in the three figures below.

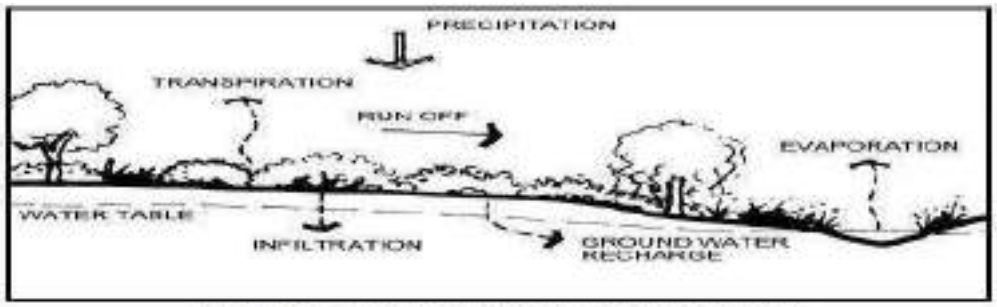


Figure 1: Natural hydrological system

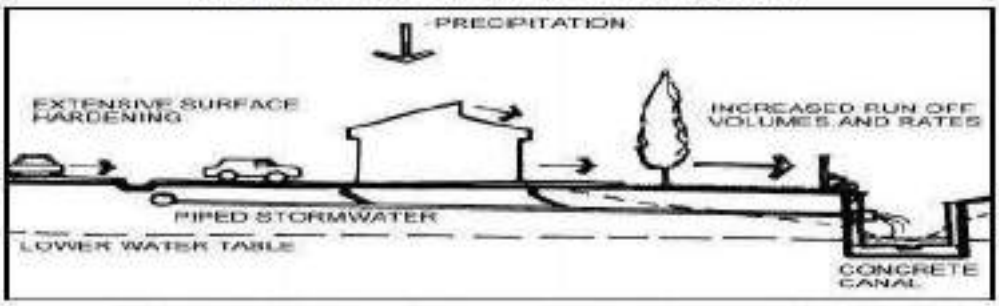


Figure 2: Stormwater management approach with little concern for the natural environment

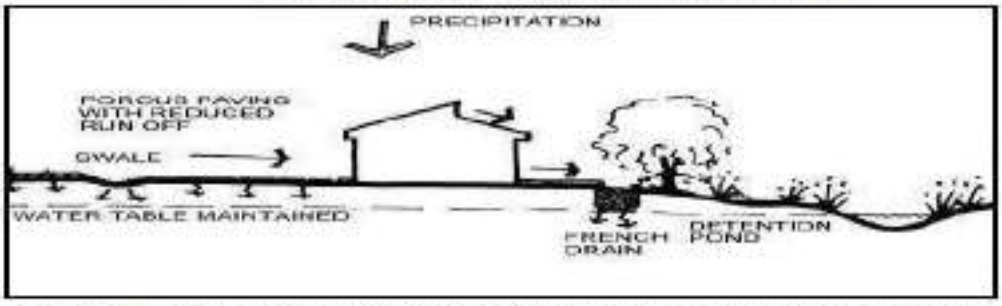


Figure 3 : Responsible approach to stormwater management

Through implementation of a Stormwater Management Plan, the impact of the new development on the natural discharge of stormwater should be mitigated and managed.

2 STORMWATER MANAGEMENT

2.1 SUSTAINABLE URBAN DRAINAGE SYSTEM (SUDS)

It is important to understand that SUDS generally embraces a number of options that are arranged in a treatment train. This helps to improve the efficiency and resilience of the system. In other words, stormwater is managed through a series of unit processes, collectively known as treatment trains. There are three key stages in the treatment train, each having slightly different combinations of SUDS options to control the stormwater:

I. ”**Source Controls**” manage stormwater runoff as close to its source as possible, typically on site. Typical SUDS options include green roofs, rainwater harvesting, permeable pavements and soak-aways.

II. ”**Local Controls**” manage stormwater runoff in the local area, typically within the road reserves. Typical SUDS options include bio-retention areas, filter strips, infiltration trenches, sand filters and swales.

III. ”**Regional Controls**” manage the combined stormwater runoff from several developments. Typical SUDS options include constructed wetlands, detention ponds and retention ponds.

2.2 RAINWATER HARVESTING

Rainwater harvesting entails collecting stormwater (during minor storms) from the roof of the buildings. Harvested water can be reused for general purposes such as irrigation of landscaped gardens as well as washing (clothes and vehicles) and general maintenance of facilities. A typical setup for harvesting rainwater from a domestic roof has been indicated below.

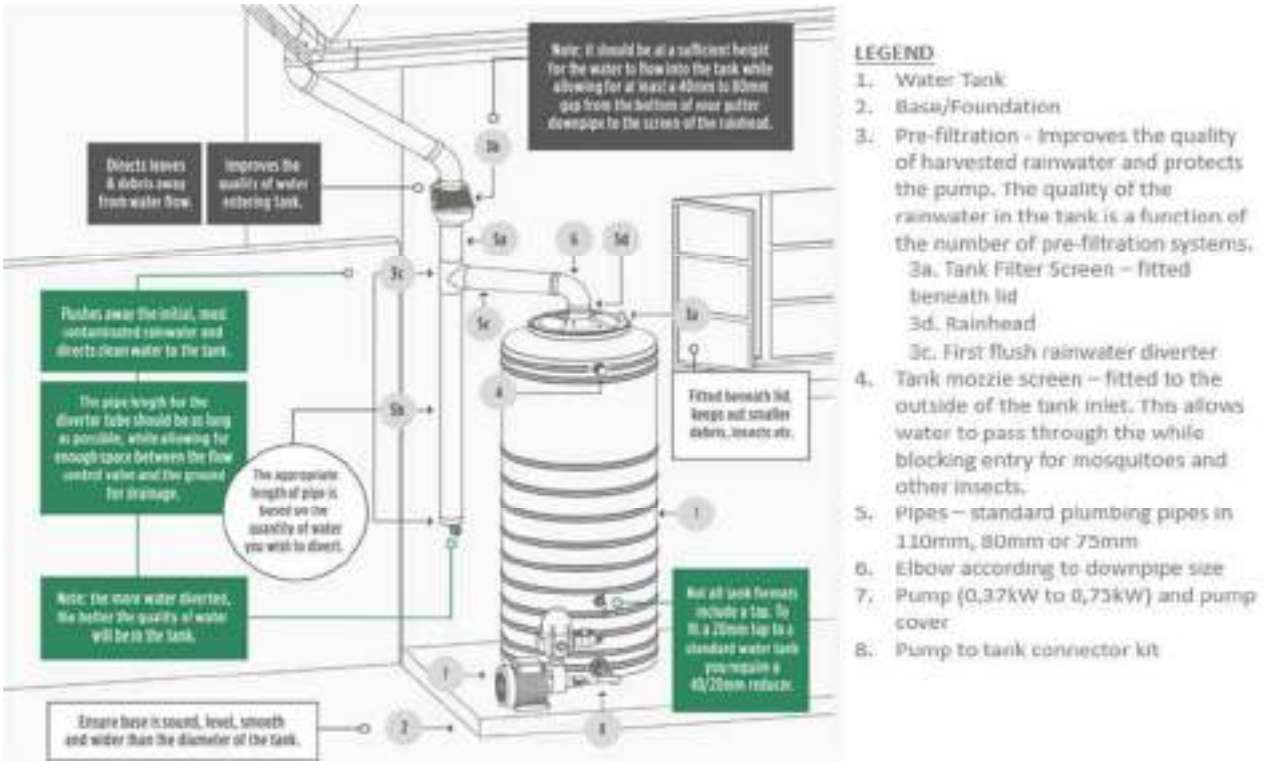


Figure 2-1 - Rainwater Harvesting

2.3 VEGETATED SWALES

A stormwater buffer strip should be created along the low side of the road and parking development. Within this buffer strip, allowance should be made for vegetated swales into which stormwater can be discharged. Vegetated swales are shallow channels that slows the stormwater run-off and directs it to an area where it can infiltrate. The swales will receive drainage from the roads, sidewalks, parking areas and all hardened surfaces. The use of plants within the swale will help to trap sediment, remove pollutants and prevent erosion. A typical detail of a swale with a subsoil drainage pipe is indicated schematically below.

Figure 2-2 - Schematic Representation of Vegetated Swale

Stepped energy dissipaters can be further incorporated into the grassed swales to help reduce stormwater velocities and increase aquafer replenishment.

Figure 2-3 Examples of Stepped Energy Dissipaters

In consideration of the site topography, parking lots may need more energy dissipation measures. A bioretention system is proposed so that stormwater runoff can be spread throughout the site to prevent erosion and encourage infiltration. Figure 3-4 shows a typical example of a bioretention structure. Bioretention structures have the following advantages:

- Treats the stormwater and helps reduction of total suspended solids.
- Beneficial for oil and grease treatment.
- Provide groundwater recharge by infiltration of treated stormwater.

2.4 ENERGY DISSIPATION

Energy dissipation blocks must be installed at all stormwater outlets. These structures assist in reducing the velocity of stormwater discharged at the outlet point. These structures can take the form of formal concrete block or more natural stone pitching. The application of grassed blocks could also be investigated as part of the design stage.

The installation of Reno Mattresses, Gabion Box Berms and Permeable Berms at down slope outlets, act as energy dissipaters and stilling basins. These structures are also used as silt traps to prevent the loss of silt to the natural water courses. Silt that gets trapped on the Reno Mattresses acts as a growing medium for vegetation which thereby accelerates the re-establishment of natural vegetation. This rehabilitated vegetation also acts as a dissipation medium, resulting in attenuated run-off.

Figure 2-4 Energy Dissipaters

2.5 ATTENUATION PONDS WITH OVERFLOW MEASURES

Attenuation ponds serve as flood protection and flood alleviation mechanisms by slowing down the high flow rate during rainfall periods. Depending on the position and capacity of the pond, inlet structures could be constructed within the pond to allow accumulated stormwater to flow into the subterranean stormwater system and be piped away. Typical inlet structures constructed in ponds and at swale termination points are indicated in Figure 3-6. These structures allow water levels to rise up to an acceptable level, before water starts flowing into the structure from where it is diverted via a piped system to a controlled discharge point

Figure 2-5 Ponds and Overflow Inlet Structures

2.6 LANDSCAPING

Numerous areas will require landscaping, especially open spaces between parking lots, to help control stormwater and provide infiltration. See Figure 3-7

Figure 2-6 Soft Landscaping

3 DEVELOPMENT PARTICULARS

The site development plan (SDP) was prepared by Robert Silke & Partners Architects and has been attached as **ANNEXURE A** to this report.

4 SITE DESCRIPTION

At the time of the report the site was covered mainly by short to medium length grass, medium sized bushes and some large trees, mainly along the western boundary. The topography can be described as very gentle but becoming steep towards the western boundary, which slopes downward towards the Malgas River, flowing in a southerly direction along the property boundary.

4.1 CURRENT STORMWATER SCENARIO

Most stormwater run-off simply flows overland towards the Malgas river along the western site boundary. Along the way stormwater is trapped in small, shallow isolated depressions from where it slowly infiltrates the soil or evaporates with time. The clayey nature of the topsoil layers leads to slow ground surface infiltration and aquifer replenishment.

4.2 FUTURE STORMWATER SCENARIO

The general drainage philosophy is that roof water will be harvested and reused by individual dwelling units for gardening purposes. Overflow from rainwater harvesting tanks as well as runoff from hardstands, roads and parking areas will be handled based on the SuDS approach and will be diverted and collected in various swales, depressions and attenuation ponds scattered across the site. Planting of indigenous trees and bushes help improve density of vegetation which in turn increases roughness and helps stabilise the swales. The deep root system of trees further help increase water uptake and indigenous trees (with a non-aggressive root system) such as Rooiels, Wittels and Halleria lucida are recommended.

5 GEOTECHNICAL INVESTIGATION

A geotechnical investigation of the site was prepared by Iain Paton of Outeniqua Geotechnical Services in a report dated 1 Augusts 2022 (rev 0). A brief summary of the report follows below:

5.1 THE METHOD OF INVESTIGATION

In order to compile the report, an initial site walk-over of the site was conducted to assess the site terrain, any remarkable topographic features and any obvious geotechnical issues. This was followed by a subsurface investigation consisting of eight test pits, excavated at randomly spaced positions around the site with a TLB/backactor, in order to observe and record the general soil profile of the site.

Representative samples of different soil types were collected from test pits for index type tests including Foundation Indicator, Modified AASHTO density, CBR & Road Indicator. The tests were performed at a SANAS-Accredited laboratory (Outeniqua Lab), in accordance with the SANS 3001 and ASTM methods. Insitu dynamic cone penetrometer (DCP) tests were conducted at each test pit position to investigate soil consistency and bearing capacity.

An assessment of the data was then performed by a qualified and experienced geotechnical professional. The outcome of the investigation was a formal factual and interpretive report.

5.2 LOCAL SOIL AND ROCK TYPES

Based on the geotechnical report, the test pits revealed a variable soil profile but was generally described as a fairly thick assemblage of fine- and coarse-grained transported soils. The profile included an upper dark brown/black colluvial clayey silty sand/sandy silt (topsoil), underlain by a light brown slightly silty sand, followed downward by a sporadic dark red orange pedogenic gravel horizon (ferricrete nodules in clayey sandy matrix), which was then underlain by alluvial soil composed of dark red orange clayey sand with sporadic gravel, cobbles and small boulders. The cobbles and boulders were typically decomposed and friable, and probably derived from proximal upstream feldspathic sandstone or hornfels. Surficial fill was encountered in two test pits (TP4&TP5) along the western edge of the site. The underlying rock of the Kaaimans Group was not encountered in any of the pits.

The general soil profile is summarised in Figure 5-1 below:

Figure 5-1 - General Soil Profile

Layers A and B (0mm to 1000mm depth) consists mainly of moist, loose to dense clayey silty soil. This combination of silt and clay creates a relatively dense layer with very low permeability.

Layer C (1000mm to 1500mm) is a gravel (ferricrete) layer which is made up of medium dense gravel in a voided structure. The relatively high void ratio of this layer results in a layer which acts as a natural subterranean drainage layer.

Layers D and E are made up of a combination of gravelly silty clayey sand and cobbles in a sandy matrix. These layers generally have a much higher permeability rate than layers A and B.

The above was further confirmed by the presence of groundwater seepage in test pits (TP1 & TP2). According to the geotechnical report the origin of the groundwater could have been a leaking main sewer, which resulted in significant groundwater seepage all along the ferricrete horizon (approximately 1500mm below ground level) towards the test pits situated on the lower portion of the site.

The low permeability of the two upper layers results in a relatively high run-off potential for the current (pre-development) phase.

6 PROPOSED STORMWATER CONTROL MEASURES

A multi-tiered approach to sustainable stormwater management is proposed for erf 19001.

The **first tier** is to reduce run-off from roofs by installing rainwater harvesting tanks for each dwelling unit. These tanks will collect rainwater from roofs and gutters for re-use on lawns and gardens.

The **second tier** is to design road cross sections against the general site slope. This approach helps prevent uncontrolled stormwater discharge and the formation of natural swales next to the road.

The **third tier** will be the construction of swales and attenuation ponds where run-off can collect for infiltration and evaporation. (Refer to Planning Partners' landscape plan, attached as **ANNEXURE B**)

The **last tier** is to improve groundwater recharge by replacing dense clayey material at the bottom of the swales with granular material with a low plasticity index.

Introduction of engineered solutions such as Kaytech's infiltration chamber can also be used to create storage space below ground level and improve stormwater flow through the dense top layer into the voided ferricrete layer below.

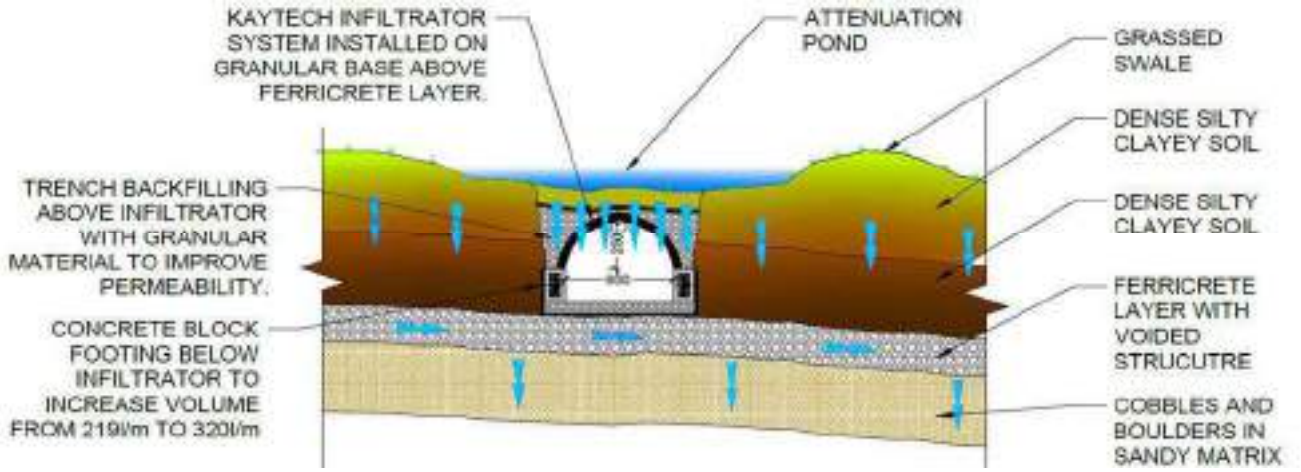


Figure 6-1 - Kaytech Infiltration Chamber

This approach has also been indicated schematically in the site section included as **ANNEXURE C** to this report

7 FLOOD ESTIMATION BY RATIONAL METHOD

Due to the relatively small catchment area (>10km2), the Rational Method of Flood Estimation can be used to estimate pre- and post-development stormwater run-off volumes. This method was first introduced in 1889 and is still used in many Engineering offices across the world. Even though it has frequently come under criticism for its simplistic approach, no other drainage design method has received such widespread use.

One of the identifying characteristics of the Rational Method is that the runoff resulting from any rainfall intensity, is a maximum when the rainfall intensity lasts as long or longer than the time of

concentration. Which means, the entire drainage area does not contribute to the peak discharge until the time of concentration has elapsed.

The formula for estimating the stormwater discharge based on the Rational Method of Flood Estimation is indicated below.

$$Q = C \times i \times A$$

where: C = Runoff Coefficient
i = Rainfall Intensity
A = Size of Catchment Area (m^2)

The run-off coefficient for the pre and post development scenarios were calculated based on the final land use as indicated in **ANNEXURE D.**

The pre- and post-development stormwater peak flow calculations have been attached as **ANNEXURE E**, but a summary of the results have been included below:

Pre-Development Peak Flow:

Location (I)nland or (C)oastal?		C					
Return Period	2	5	10	20	50	100	200
Point rainfall (mm)	15.3	20.2	24.8	30.6	40.2	49.5	61.0
Point Intensity (mm/hour)	46.9	61.7	76.0	93.6	123.2	151.6	186.7
Area reduction factor	1	1	1	1	1	1	1
Average Intensity (mm/hour)	46.9	61.7	76.0	93.6	123.2	151.6	186.7
Peak Flow (m^3/s)	0.1106	0.1602	0.2151	0.2958	0.4823	0.7154	0.8807

Table 7-1 - Pre-Development Run-off

Post Development Peak Flow

Location (I)nland or (C)oastal?		C					
Return Period	2	5	10	20	50	100	200
Point rainfall (mm)	21.4	28.2	34.7	42.7	56.2	69.2	85.1
Point Intensity (mm/hour)	32.5	42.8	52.7	64.9	85.5	105.2	129.6
Area reduction factor	1	1	1	1	1	1	1
Average Intensity (mm/hour)	32.5	42.8	52.7	64.9	85.5	105.2	129.6
Peak Flow (m^3/s)	0.116	0.163	0.214	0.279	0.387	0.502	0.618

Table 7-2 - Post Development Run-off

Comparing the two tables above, it follows that with the introduction of 2,827m^2 of ponds and swales, combined with rainwater harvesting tanks (at 50% efficiency) for each dwelling unit, the pre- and post-development run-off is deemed to be equal for the 2-, 5- and 10-year return periods. With the introduction of a new paved road running mainly along the general site contours, the length of the longest water course has effectively increase substantially, resulting in an improvement in the in pre- and post-development run-off for the 20 and 50 year return period.

8 RUN-OFF QUALITY

The possible sources of pollutants in stormwater fall into three main categories:

- Atmospheric fall-out, both wet and dry, including dust particles and transported soils.
- Erosion of catchment materials from buildings and pavements.
- Transported materials from spills and littering.

The grass and vegetation growing within the grassed swales, reduce the speed of the discharged stormwater and allow any suspended soils to be deposited in the vegetation. These swales are also capable of absorbing pollutants within certain limits. They are of value in attenuating floods and have the added advantage of producing a unique ecosystem. Exposure to UV-rays from the sun allows further disinfection of any biological pollutants that might be present in the stormwater, while the constant vegetation cover provides shade to limit any increase in water temperature. Swales should be designed and constructed with high infiltration rates in mind, to allow the stormwater to seep into the ground. Street cleaning and manual removal of litter must take place on a regular basis.

9 STANDARDS AND SPECIFICATIONS

All material specifications must comply with the applicable SANS specifications. All construction work must comply with at least the SANS 1200 specifications or better.

10 SUMMARY

The planning of stormwater design elements must always be seen as a holistic process which incorporates much more than the infrastructural elements required in adequately dealing with stormwater. It affects a range of environmental goals and management principles and aims not only to mitigate negative impacts, but actively promote positive modifications in its application.

The multi-tiered design approach to be adopted for the proposed development can be summarised as follows:

The **first tier** is to reduce run-off from roofs by installing rainwater harvesting tanks for each dwelling unit. These tanks will collect rainwater from roofs and gutters for re-use on lawns and gardens.

The **second tier** is to design road cross sections against the general site slope. This approach helps prevent uncontrolled stormwater discharge and the formation of natural swales next to the road. (refer to **ANNEXURE C**)

The **third tier** will be the construction of swales and attenuation ponds where run-off can collect for infiltration and evaporation. (Refer to Planning Partners' landscape plan, attached as **ANNEXURE B**)

The **last tier** is to improve groundwater recharge by replacing dense clayey material at the bottom of the swales with granular material with a low plasticity index and high void ratio.

By implementing the principles highlighted in this report, it is estimated (refer to **ANNEXURE E** for detailed calculations) that the post development peak flow run-off will either remain unchnaged (2-, 5- and 10 year return period) or improve drastically (20- and 50- year return period.)

11 REFERENCES

1) Guidelines for Human Settlement Planning and Design, *Department of Housing*, 2000 CSIR
2) Drainage Manual 5th Edition, *The South African National Roads Agency Limited*, 2006
3) Guidelines for Urban Stormwater Management UTG 4, *Committee of Urban Transport Authorities*, 1999.
4) Introduction to Flood Hydrology, *J Haarhoff and AM Cassa*, 2009.
5) City of Cape Town Management of Urban Stormwater Impacts Policy – Version 1.1, 2009.
6) South African Guidelines for Sustainable Drainage Systems (Armitage et al., 2013) which was based on a review of international guidelines and includes typical design

ANNEXURE A
SITE DEVELOPMENT PLAN

Masterplan Layout (Scale 1:500 @ A0)

HOUSE TYPES:
- TYPE A : 108m² 3-BEDROOM, 2 BATHROOM SIMPLEX + 42m² DOUBLE GARAGE (AVERAGE 350m² PLOTS) - x24
- TYPE B : 107m² 3-BEDROOM, 2 BATHROOM DUPLEX + 39m² DOUBLE GARAGE (AVERAGE 220m² PLOTS) - x41
- TYPE C : 134m² 3-BEDROOM, 2 BATHROOM DUPLEX + 41m² DOUBLE GARAGE (AVERAGE 380m² PLOTS) - x17
- TYPE D : 140m² 3-BEDROOM, 2 BATHROOM SIMPLEX + 41m² DOUBLE GARAGE (PLOT SIZE - 325m²) - x1
- TYPE E : 240m² 4-BEDROOM, 4 BATHROOM DUPLEX + 60m² TRIPLE GARAGE (PLOT SIZE - 1006m²) - x1

} 84x HOUSES

APARTMENTS:
- BLOCK 1 : 2 BEDROOM FLAT = 41 FLATS
- BLOCK 2 : 2 BEDROOM FLATS = 36 FLATS
- BLOCK 3: 2 BEDROOM FLATS = 18 FLATS

} 95 FLATS

PARKING BAYS = 168 BAYS

VISITORS PARKING:
138 TANDEM APRON BAYS IN FRONT OF GARAGES
19 BAYS AT CLUBHOUSE
4 PARALLEL BAYS + 10 BAYS AT SOUTH ELBOW LANE
2 PARALLEL BAYS AT HOUSE TYPE E

Scale Bar 1:500
0 10 50 100

This drawing to be read in conjunction with drawing No's:

FOR INFORMATION

Rev.	Description	Date	Drawn
21	REVISED AND UPDATED LAYOUT	2023.07.27	AG&wm
20	REVISED AND UPDATED LAYOUT	2023.07.06	AG&wm
19	REVISED AND UPDATED LAYOUT	2023.06.15	AG&wm
18	REVISED AND UPDATED LAYOUT	2023.06.14	AG&wm
17	REVISED AND UPDATED LAYOUT	2023.06.06	AG&wm
16	REVISED AND UPDATED LAYOUT	2023.02.24	AG&wm
15	REVISED AND UPDATED LAYOUT	2023.02.20	AG&wm
14	REVISED AND UPDATED LAYOUT	2023.02.16	AG&wm
13	REVISED AND UPDATED LAYOUT	2023.02.16	AG&wm
12	REVISED AND UPDATED LAYOUT	2023.02.14	AG&wm
11	REVISED AND UPDATED LAYOUT	2022.11.18	AG&wm
10	REVISED AND UPDATED LAYOUT	2022.11.17	AG&wm
09	REVISED AND UPDATED LAYOUT	2022.11.15	AG&wm
08	REVISED AND UPDATED LAYOUT	2022.08.25	AG&wm
07	REVISED AND UPDATED LAYOUT	2022.08.18	AG&wm
06	REVISED AND UPDATED LAYOUT	2022.08.11	AG&wm
05	REVISED AND UPDATED LAYOUT	2022.08.08	AG&wm
04	FINAL DRAFT	2022.07.29	AG&wm
03	ZONE LINES ADDED TO LAYOUT	2022.07.07	AG&wm
02	REVISED AND UPDATED LAYOUT	2022.06.24	AG&wm
01	ISSUE FOR INFORMATION	2022.03.17	AG&wm

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Robert McGiven is a registered PrArch with SACAP - Reg. No. 6934

Project Title: ARBOUR ESTATE

Client: Signatura

Site Location:
ERF 19001
Witfontein Road
Heather Park, George

Drawing Title: Detailed Masterplan

Drawn: AG&wm
Checked: RLS
Date of Print: 2023 07 27
Date of Copy:

Drawing No: 202203 SKE 200
Revision No: 21

2023/09/28 G:\.shortcut-targets-by-id\1qqxoBTkl9PVA7t3r9bg2Bv3dUOXE7HWx\202203 Arbour Estate\202203_SKE_200_Rev21.dwg

ANNEXURE B
LANDSCAPE PLAN

NO.	DATE	REVISION	DRAWN
J	28/07/23	UPDATED TO REV 21 SITE LAYOUT	TD
J	23/08/23	"ENTRANCE TROAT" LAYOUT	CAT
K	31/08/23	"ENTRANCE TROAT", PATH AMMENDMENTS, ADDITION OF BRIDGES, DOG PARK RELOCATION	CAT
L	13/09/23	"ENTRANCE TROAT", ADDITIONAL PVG PLANTING	CAT
M	22/09/23	"ENTRANCE TROAT", ADDITIONAL PVG PLANTING	CAT

LEGEND

- MIXED INDIGENOUS TREES
- PALM-LIKE SPECIMEN
- SHRUBS & GROUNDCOVERS
- VERGE LANDSCAPE AREA TO ACCOMMODATE BIO-RETENTION DEPRESSIONS / PONDS
- LAWN
- PEDESTRIAN FOOTPATH Cabrico Brick, Wheatstone Piazzas, 50mm x 70mm x 200mm
- PEDESTRIAN ROAD CROSSINGS Cabrico Brick, Wheatstone, 73mm x 106mm x 222mm
- ROADS Cabrico Brick, Rustic Blend Variation, 73mm x 106mm x 222mm
- ROAD INTERSECTIONS C.E.L. Exposed Aggregate Interlocking Paver, Brownstone Coarse, 70mm x 100mm x 200mm
- GRASS-BLOCK PAVING C.E.L. Grassblock, 100mm x 570mm x 380mm
- PLAY EQUIPMENT
- HOUSE GARDENS TO HOA DESIGN GUIDELINES. MINIMUM STABILISING LAWN AND 1 TREE PER HOUSE BY DEVELOPER.
- HOUSE FRONT GARDENS BY DEVELOPER, INCLUDING ONGOING MAINTENANCE, AND HEDGE BETWEEN SHARED DRIVEWAYS.
- STORMWATER SWALE / CHANNEL INCLUDING GABION WEIRS WHERE REQUIRED
- GABION WALLS / WEIRS TO SPREAD WATER AND REDUCE EROSION TO SLOPE CHANNEL
- SELECTED GUM TREES TO REMAIN UNTIL NEW INDIGENOUS TREES ARE ESTABLISHED
- PROPOSED FENCE OFFSET 2.5m FROM TOP BANK WITH GATED ACCESS TO RIPARIAN CORRIDOR
- SECURITY FOOTPATH ALONG FENCE LINE ON BOTH SIDES
- INDICATIVE FOREST FOOTPATH
- RIPARIAN CORRIDOR REHABILITATION TO INDIGENOUS FOREST FOLLOWING ALIEN CLEARANCE
- MALGAS RIVER
- PACKED ROCK CROSSING

INDIGENOUS PLANT LIST

Trees
~~Afrocarpus falcatus~~
Afrocarpus latifolius
~~Allophylus decipiens~~
Apodytes dimidiata
Brachylaena neriifolia
Burchellia bubalina
Buddleja saligna
Buddleja salviifolia
Cassine aethiopica
Canthium inerme
Canthium mundianum
Cassine papillosa
Celtis Africana
Celtis africana
Chionanthus foveolatus
Calodendrum capense
Cunonia capensis
Curtisia dentate
~~Cussonia spicata~~
Diospyros dichrophylla
Diospyros lycoides
~~Diospyros whyteana~~
~~Ekebergia capensis~~
Ficus sur
~~Grewia occidentalis~~
~~Harpephyllum caffrum~~
~~Halleria lucida~~
Ilex mitis
Kiggelaria Africana
Maytenus heterophylla
~~Nuxia floribunda~~
Ochna serrulata
~~Olea europea subsp Africana~~
Pittosporum viridiflorum
Platylophus trifoliatus
Psoralea pinnata
Pterocelastrus tricuspidatus
Rapanea melanophloeos
Rhamnus prinoides
~~Salix mucronata~~
Schotia afra
Scutia myrtina
Searsia chirindensis
Searsia crenata
Searsia lucida
Sideroxylon inerme
~~Spermannia Africana~~
Syzygium cordatum
Tarchonanthus camphoratus
Tarchonanthus littoralis
Trimeria grandifora
Vepris lanceolata
Virgilia divaricata
~~Vachellia karoo~~
Vachellia xanthophloea

INDIGENOUS PLANT LIST

Shrubs & Small trees
Anisodontea scabrosa
Aspalathus florifera
Buddleja salviifolia
Burchella bubalina
Carissa bispinosa
Chrysanthemoides incana
Chrysanthemoides monilifera
Eriocephalus africanus
Euryops virgineus
Felicia echinata
Felicia filifolia
Freylinia lanceolata
Gnidia tomentosa
Gnidia squarrosa
Grewia occidentalis
Hermannia hyssopifolia
Hibiscus pedunculatus
Hypoestes aristata
Leonotus leonorus
Leonotus ocymifolia
Lobostemon fruticosus
Leucadendron spp
Melianthus comosus
Melianthus major
Metalasia muricata
Myrica cordifolia
Myrica quercifolia
Orphium frutescens
Passerina rigida
Pelargonium cordifolium
Pelargonium quercifolium
Podalyria sericea
Polygala fruticosa
Polygala myrtifolia
Polygala virgata
Protea spp
Psoralea pinnata
Relhania punjgens
Rhus crenata
Salvia africana_lutea
Salvia chamelaeagna
Stoebe plumose
Sutherlandia frutescens
Tephrosia capensis
Zygophyllum morgsana

INDIGENOUS PLANT LIST

Groundcovers & Perennials
Asparagus densiflorus
Carpobrotus deliciosus
Carpobrotus edulis
Chaetacanthus setiger
Chascanum dehiscens
Chlorophytum comosum
Chrysocoma tenuifolia
Drosanthemum floribundus
Falkia repens Oortjies
Felicia aethiopica
Felicia ammeloides
Felicia erigeroides
Felicia echinata
Gazania krebsiana
Gazania rigens var rigens
Gazania rigens var uniflora Gazania
Geranium incanum
Helichrysum cymosum
Helichrysum petiolare
Helichrysum teretifolium
Hermannia saccifera
Hydrocotyle bonariensis
Justicia capensis
Knowltonia vesicatoria
Linum africanum
Lobelia alata
Lobelia cuneifolia
Lobelia sp. Sky Blue
Monopsis unidentata
Oedera imbricata
Osteospermum fruticosum
Otholobium decumbens
Pelargonium betulinum
Pelargonium capitatum
Pelargonium fragrans
Pelargonium fruticosum
Pelargonium peltatum
Pelargonium odoratissimum
Plecostachys serpyllifolia
Salvia murii
Selago corymbosa
Selago glomerata
Selagao thunbergii
Solanum quadrangulare
Stachys aethiopica
Sutera cordata
Vernonia capensis
Walafrida nitida

INDIGENOUS PLANT LIST

Bulbs
Agapanthus africanus
Amaryllis belladonna
Aristea ensifolia
Aristea major
Babiana angustifolia
Babiana villosa
Bobartia aphylla
Boophane disticha
Brunsvigia marginata
Brunsvigia orientalis
Chasmanthe aethiopica
Chasmanthe floribunda
Cyrtanthus elatus
Dierama pulcherrimum
Dietes bicolor
Dietes grandiflora
Dietes iridoides
Freesia alba
Haemanthus coccineus
Hypoxis setosa
Ixia campanulata
Kniphofie uvaria
Moraea spathulata
Ornithogalum suaveolens
Oxalis hirta
Oxalis purpurea
Scadoxis puniceus
Sparaxia grandiflora
Tritonia crocata
Tulbaghia violacea
Wachendorfia thyrsifolia
Watsonia galpinii
Watsonia pillansii
Watsonia sp
Zantedeschia aethiopica

Ferns & Fernlike
Blechnum punctulatum
Blechnum tabulare
Rumohra adiantiformis
Streptocarpus rexii
Todea barbata

INDIGENOUS PLANT LIST

Wetland Species
Berzelia lanuginosa
Calopsis paniculata
Carex clavata
Carpha glomerata
Cliffortia ericifolia
Cliffortia ferruginea
Cliffortia strobilifera
Cotula vulgaris
Cyperus longus
Cyperus sphaerospermus
Cyperus textilis
Elegia tectorum
Falkia repens
Ficinia hirsuta
Ficinia indica
Geranium incanum
Grammatotheca bergiana
Halleria elliptica
Helictotrichon turgidulum
Imperata cylindrica
Isolepis ludwigii
Isolepis prolifer
Isolepis rubicunda
Juncus capensis
Juncus effusus
Juncus kraussii
Kniphofia uvaria
Leonotis leonurus
Leucadendron levisanus
Mariscus congestus
Mentha aquatica
Mentha longifolia
Merxmuellera cincta
Monopsis lutea
Morella serrata
Nidorella foetida
Orpheum frutescens
Otholobium virgatum
Passerina paludosa
Phragmites australis
Plecostachys serpyllifolia
Prionium serratum
Psoralea aphylla
Psoralea repens
Pteridium aquilinum
Restio quadratus
Restio tetragonus
Salix mucronata
Scirpoides nodosus
Searsia angustifolia
Senecio halimifolius
Virgilia oroboides
Wachendorfia thyrsiflora
Watsonia meriana
Zantedeschia aethiopica

NON-LOCAL TROPICAL-LIKE INDIGENOUS PLANT LIST

Trees
Dombeya burgessiae
Ensete ventricosum
Erythrina caffra
Euphorbia ingens
Euphorbia triangularis
Phoenix reclinata
Strelitzia nicolai

Shrubs
Strelitzia reginae
Strelitzia juncea

Groundcovers
Asystasia gangetica
Chlorophytum comosum 'Variegatum'
Chlorophytum saundersiae
Clivia miniata
Eucomis autumnalis
Pelargonium spp.
Plectranthus spp.
Setaria megaphylla

NON-INVASIVE EXOTIC PLANT LIST

Trees
Dracaena draco
Macadamia tetraphylla
Pandanus utilis
Plumeria rubra
Ravenala madagascariensis
Schefflera actinophylla

Shrubs
Acanthus mollis
Camellia japonica
Fatsia japonica
Hibiscus spp
Monstera deliciosa
Philodendron selloum
Raphiolepis indica
Schefflera arboricola

Groundcovers / Creepers
Bougainvillea spp.
Philodendron xanadu
Pyrostegia venusta
Sansevieria trifasciata
Syngonium podophyllum

Strike-through indicates tree species omitted due to PSHB beatle.

LANDSCAPE MASTER PLAN NOTES:

A. IMPLEMENTATION AND MAINTENANCE

1. The developer is responsible for the phased implementation of the landscape, with each phase completed prior to Occupancy Certificate being issued per phase.
2. Implementation of landscape within the property boundary shall be to the satisfaction of the Director: Environmental Management.
3. The cost of implementation of all landscaping shall be for the account of the developer.
4. The managing body will be responsible for the on-going landscape maintenance and associated costs.
5. No protected trees may be lopped, topped or felled.

B. WATER SOURCE

1. Water will be supplied from boreholes. Ideally landscaping should be implemented during the rainy season.

C. IRRIGATION

1. A fully automatic irrigation system will be installed to all landscape areas.

D. PLANTING SPECIFICATIONS

1. All planting to be indigenous, as per the approved plant species list, and water-wise.
2. Trees to be a minimum height of 1.8m.
3. Average plant density to be 4 plants per square meter

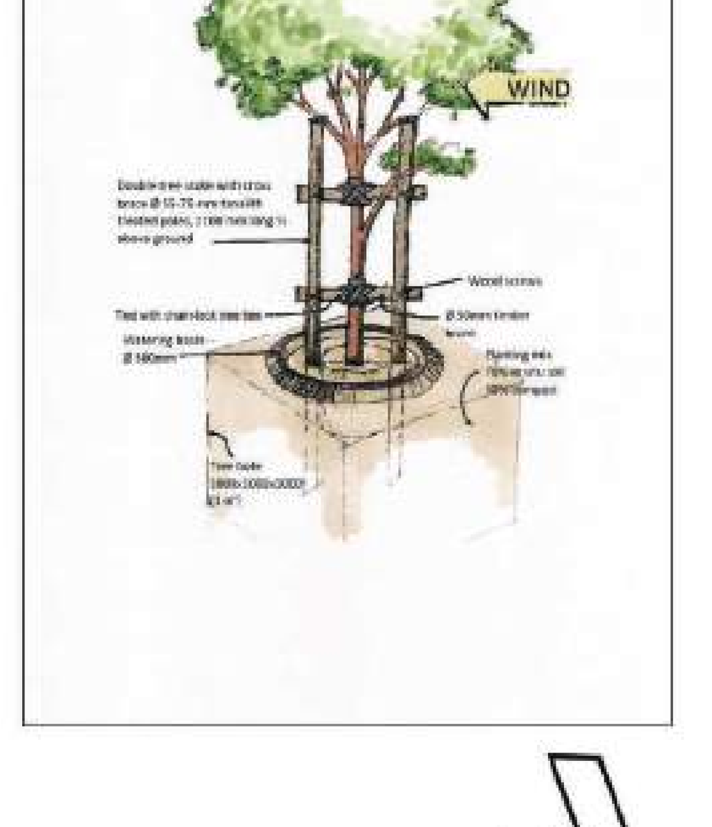
ANNEXURE G

arbour NATURE ESTATE

0 10 20 50 100m

ANTHONY WAIN

PLANNING PARTNERS



PROJECT: ARBOUR ESTATE

DRAWING TITLE: LANDSCAPE MASTER PLAN

JOB No.	DRAWING No.	REVISION
77355	77355-LMP-01	M

DATE: 22 SEPTEMBER 2023

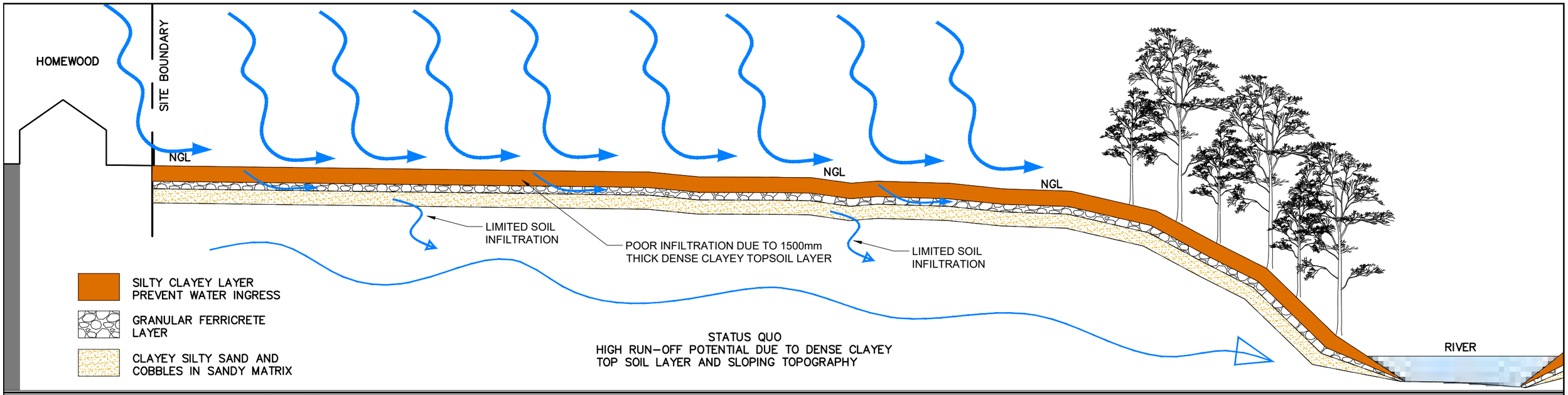
SCALE: 1:600 @ A0

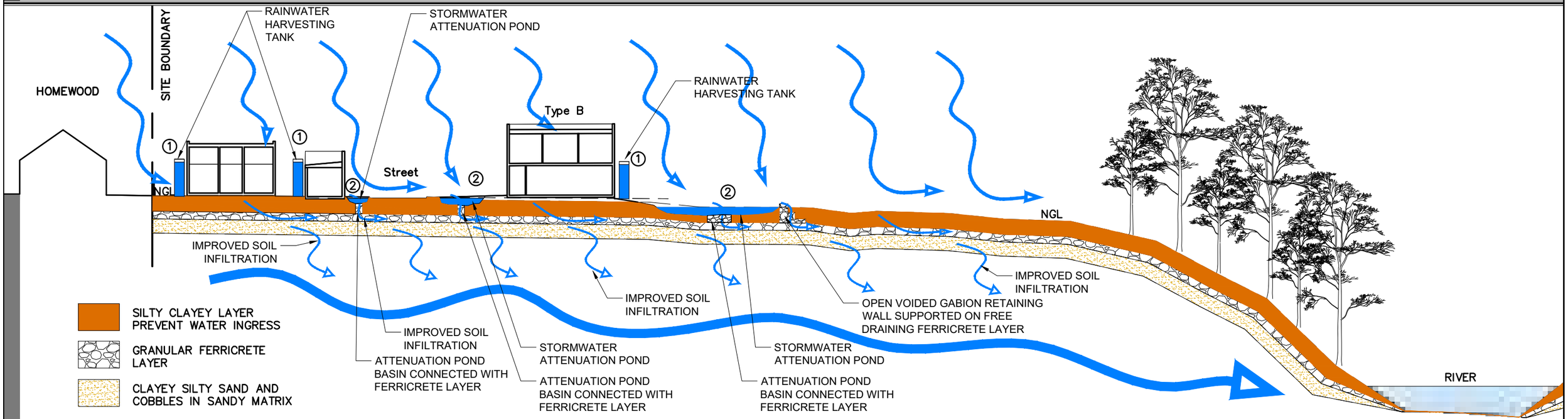
DESIGNED	TD / CAT	
DRAWN	TD / CAT	
CHECKED	AW	
APPROVED	AW	

CLIENT: SIGNATURA

PLANNING PARTNERS

ANNEXURE C
SITE SECTION





PROPOSED STORMWATER MANAGEMENT PRINCIPLE
1. SOURCE CONTROLS: RAINWATER HARVESTING TANKS.
2. LOCAL CONTROLS: BERMS AND SWALES WITH DIRECT INFILTRATION INTO UNDERLYING POROUS FERRICRETE LAYER.

Revisions

No.	Date	Description	Initial

Designed	F van AARDT (Pr Eng)
Checked	F van AARDT (Pr Eng)
Drawn	F van AARDT (Pr Eng)
Checked	F van AARDT (Pr Eng)

URBAN ENGINEERING
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

DEVELOPMENT OF ERF 19001

STATUS QUO VS PROPOSED STORMWATER MANAGEMENT

A3 | Scale NTS

Drawing No. 21-101

Rev No. 00

ANNEXURE D
RUN-OFF COEFFICIENT

Revisions

No.	Date	Description	Initial
1	Feb 2023	Revised according to SDP Rev 15	

Designed	F van AARDT (Pr Eng)
Checked	F van AARDT (Pr Eng)
Drawn	F van AARDT (Pr Eng)
Checked	F van AARDT (Pr Eng)

URBAN ENGINEERING
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

DEVELOPMENT OF ERF 19001

CALCULATION OF PRE– AND POST DEVELOPMENT RUN–OFF COEFFICIENT

A3 | Scale NTS

Drawing No. 21–101

Rev No. 01

ANNEXURE E
PEAK FLOW CALCULATIONS

URBAN ENGINEERING
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

Job no.	21-101	Page no	1
Project	Erf 19001	Calculated by	Frans van Aardt
Subject	RASIONELE METODE (Alexander 1990)	Date	2023-02-23

Description of catchment:	Erf 19001
Area:	Pre-Development

Physical characteristics

Catchment area (km²)					
Total area included within watershed	56246	m²			ha
Non-contributing areas in catchment area e.g. pans, artificial ponds	0	m²		0.000	ha
Effective catchment area	0.0562	Km²			

		Overland	Watercourse	Urban	Flow in channel or pipe		m/s
Length of longest water course (km)		0.150	0.000	0.000	Link 1		
Contour height (msl):	Level @ highest point	231.500	n.v.t	0.000	Velocity V =		
	Level @ outlet	224.000	n.v.t	0.000	Length (m) =		0.000
	H0.85L	n.v.t	0.000	n.v.t	Link 2		
	H0.10L	n.v.t	0.000	n.v.t	Velocity V =		
Elevation difference along 10-85 slope		n.v.t	0.000		Length (m) =		0.000
Average slope (m/m)		0.05000	0.00000	n.v.t	Link 3		
Roughness C		0.400	n.v.t	n.v.t	Velocity V =		
Individual Time of Concentration (hours)		0.327	0.000	0.000	Length (m) =		0.000
Provision for filling of cavities Yes (Y) or No (N)?		N	0.000	minutes	Addisional Tc		0.000
Total Time of Concentration (hours)			0.327	of 19.6 min.	Check	0.128	Realistic!
					0.1<V>4 m/s		

Recommended values for roughness coefficient	
Paved Areas	0.02
Clean compacted soil, no stones	0.1
Sparse grass over fairly rough surface	0.3
Medium grass cover	0.4
Thick grass cover	0.8

Mean Annual Precipitationl (mm)	876

Area distribution factors (%)		
Rural	50	
Urban	50	
Lakes	0	
Sum	100	Ok!!

Adjustment for Dolomitic areas (%)	0

Physical characteristics as a percentage of the total area of the catchment:

RURAL			Mean annual rainfall (mm)			Runoff coeff.	Weighted
Surface slope		%	< 600	600 - 900	> 900	Ch	Runoff coeff.
Wetlands and pans	< 3%	0	0.01	0.03	0.05	0.03	0.000
Flat areas	3 - 10%	70	0.06	0.08	0.11	0.08	0.056
Hilly	10 - 30%	30	0.12	0.16	0.2	0.12	0.036
Steep areas	30 - 50%	0	0.22	0.26	0.3	0.22	0.000
Very steep ares	> 50%	0	0.26	0.3	0.34	0.3	0.000
Total		100	Ok!!				0.092

RURAL		Mean annual rainfall (mm)			Runoff coeff.	Weighted
Permeability	%	< 600	600 - 900	> 900	Ch	Runoff coeff.
Very permeable	0	0.03	0.04	0.05	0.03	0.000
Moderately permeable	0	0.06	0.08	0.1	0.08	0.000
Semi-permeable	80	0.12	0.15	0.2	0.15	0.120
Non-permeable	20	0.21	0.26	0.3	0.21	0.042
Total	100	Ok!!				0.162

RURAL		Mean annual rainfall (mm)			Runoff coeff.	Weighted
Vegetation	%	< 600	600 - 900	> 900	Ch	Runoff coeff.
Thick bush and plantation	0	0.03	0.04	0.05	0.04	0.000
Grasslands	100	0.17	0.21	0.25	0.17	0.170
No vegetation	0	0.26	0.28	0.3	0.26	0.000
Total	100	Ok!!				0.170

continued to page 2

URBAN ENGINEERING
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

Job no.	21-101	Page no	2
Project	Erf 19001	Calculated by	Frans van Aardt
Subject	RASIONELE METODE (Alexander 1990)	Date	2023-02-23

continued from page 1

URBAN			Coefficient	Runoff coeff.	Weighted
Use	%	Characteristics	interval	Cs	Runoff coeff.
Lawns	0	Sandy, flat (<2%)	0.05 - 0.10	0.1	0.000
	0	Sandy, steep (>7%)	0.15 - 0.20	0.2	0.000
	80	Heavy soil, flat (<2%)	0.13 - 0.17	0.15	0.120
	20	Heavy soil, steep (>7%)	0.25 - 0.35	0.3	0.060
Residential areas	0	Houses	0.30 - 0.50	0.5	0.000
	0	Flats	0.50 - 0.70	0.7	0.000
Industrial	0	Light Industry	0.50 - 0.80	0.65	0.000
	0	Heavy Industry	0.50 - 0.90	0.7	0.000
Commercial	0	City Centre	0.70 - 0.95	0.88	0.000
	0	Subburban	0.50 - 0.70	0.6	0.000
Streets	0	Streets	0.70 - 0.95	0.95	0.000
Total	100	Ok!!			0.180

Area Weighted Runoff Coefficients	
Rural	0.212
Urban	0.090
∑	0.302

Return period adjustment factor for run-off coefficients(Ft)							
Return Period	2	5	10	20	50	100	200
Ft (rural)	0.5	0.55	0.6	0.67	0.83	1	1
Ft (urban)	0.5	0.55	0.6	0.67	0.83	1	1

Location (I)nland or (C)oastal)?		C					
Return Period	2	5	10	20	50	100	200
Point rainfall (mm)	15.3	20.2	24.8	30.6	40.2	49.5	61.0
Point Intensity (mm/hour)	46.9	61.7	76.0	93.6	123.2	151.6	186.7
Area reduction factor	1	1	1	1	1	1	1
Average Intensity (mm/hour)	46.9	61.7	76.0	93.6	123.2	151.6	186.7
Peak Flow (m^3/s)	0.1106	0.1602	0.2151	0.2958	0.4823	0.7154	0.8807

URBAN ENGINEERING
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

Job no.	21-101	Page no	3
Project	Erf 19001	Calculated by	Frans van Aardt
Subject	RASIONELE METODE (Alexander 1990)	Date	2023-02-23

Description of catchment:	Erf 19001
Area:	Post-Development

Physical characteristics

Catchment area (km²)					
Total area included within watershed	56246	m²			ha
Non-contributing areas in catchment area e.g. pans, artificial ponds	2827	m²		0.000	ha
Effective catchment area	0.0534	Km²			

		Overland	Watercourse	Urban	Flow in channel or pipe		m/s
Length of longest water course (km)		0.350	0.000	0.000	Link 1		
Contour height (msl):	Level @ highest point	233.020	n.v.t	0.000	Velocity V =		
	Level @ outlet	228.240	n.v.t	0.000	Length (m) =		0.000
	H0.85L	n.v.t	0.000	n.v.t	Link 2		
	H0.10L	n.v.t	0.000	n.v.t	Velocity V =		
Elevation difference along 10-85 slope		n.v.t	0.000		Length (m) =		0.000
Average slope (m/m)		0.01366	0.00000	n.v.t	Link 3		
Roughness C		0.400	n.v.t	n.v.t	Velocity V =		
Individual Time of Concentration (hours)		0.657	0.000	0.000	Length (m) =		0.000
Provision for filling of cavities Yes (Y) or No (N)?		N	0.000	minutes	Addisional Tc		0.000
Total Time of Concentration (hours)			0.657	of 39.4 min.	Check	0.148	Realistic!
					0.1<V>4 m/s		

Recommended values for roughness coefficient	
Paved Areas	0.02
Clean compacted soil, no stones	0.1
Sparse grass over fairly rough surface	0.3
Medium grass cover	0.4
Thick grass cover	0.8

Mean Annual Precipitationl (mm)	876

Area distribution factors (%)		
Rural	33	
Urban	65	
Lakes	2	
Sum	100	Ok!!

Adjustment for Dolomitic areas (%)	0

Physical characteristics as a percentage of the total area of the catchment:

RURAL			Mean annual rainfall (mm)			Runoff coeff.	Weighted
Surface slope		%	< 600	600 - 900	> 900	Ch	Runoff coeff.
Wetlands and pans	< 3%	5	0.01	0.03	0.05	0.03	0.002
Flat areas	3 - 10%	75	0.06	0.08	0.11	0.08	0.060
Hilly	10 - 30%	20	0.12	0.16	0.2	0.12	0.024
Steep areas	30 - 50%	0	0.22	0.26	0.3	0.22	0.000
Very steep ares	> 50%	0	0.26	0.3	0.34	0.3	0.000
Total		100	Ok!!				0.086

RURAL		Mean annual rainfall (mm)			Runoff coeff.	Weighted
Permeability	%	< 600	600 - 900	> 900	Ch	Runoff coeff.
Very permeable	5	0.03	0.04	0.05	0.03	0.002
Moderately permeable	45	0.06	0.08	0.1	0.08	0.036
Semi-permeable	30	0.12	0.15	0.2	0.15	0.045
Non-permeable	20	0.21	0.26	0.3	0.21	0.042
Total	100	Ok!!				0.125

RURAL		Mean annual rainfall (mm)			Runoff coeff.	Weighted
Vegetation	%	< 600	600 - 900	> 900	Ch	Runoff coeff.
Thick bush and plantation	0	0.03	0.04	0.05	0.04	0.000
Grasslands	0	0.17	0.21	0.25	0.17	0.000
No vegetation	0	0.26	0.28	0.3	0.26	0.000
Total	0	Not applicable				0.000

continued to page 4

URBAN ENGINEERING
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

Job no.	21-101	Page no	4
Project	Erf 19001	Calculated by	Frans van Aardt
Subject	RASIONELE METODE (Alexander 1990)	Date	2023-02-23

continued from page 3

URBAN			Coefficient	Runoff coeff.	Weighted
Use	%	Characteristics	interval	Cs	Runoff coeff.
Lawns	5	Sandy, flat (<2%)	0.05 - 0.10	0.1	0.005
	10	Sandy, steep (>7%)	0.15 - 0.20	0.2	0.020
	41	Heavy soil, flat (<2%)	0.13 - 0.17	0.15	0.062
	5	Heavy soil, steep (>7%)	0.25 - 0.35	0.3	0.015
Residential areas	24	Houses	0.30 - 0.50	0.6	0.144
	0	Flats	0.50 - 0.70	0.7	0.000
Industrial	0	Light Industry	0.50 - 0.80	0.65	0.000
	0	Heavy Industry	0.50 - 0.90	0.7	0.000
Commercial	0	City Centre	0.70 - 0.95	0.88	0.000
	0	Subburban	0.50 - 0.70	0.6	0.000
Streets	15	Streets	0.70 - 0.95	0.95	0.143
Total	100	Ok!!			0.388

Area Weighted Runoff Coefficients	
Rural	0.069
Urban	0.252
∑	0.322

Return period adjustment factor for run-off coefficients(Ft)							
Return Period	2	5	10	20	50	100	200
Ft (rural)	0.75	0.8	0.85	0.9	0.95	1	1
Ft (urban)	0.75	0.8	0.85	0.9	0.95	1	1

Location (I)nland or (C)oastal)?		C					
Return Period	2	5	10	20	50	100	200
Point rainfall (mm)	21.4	28.2	34.7	42.7	56.2	69.2	85.1
Point Intensity (mm/hour)	32.5	42.8	52.7	64.9	85.5	105.2	129.6
Area reduction factor	1	1	1	1	1	1	1
Average Intensity (mm/hour)	32.5	42.8	52.7	64.9	85.5	105.2	129.6
Peak Flow (m^3/s)	0.116	0.163	0.214	0.279	0.387	0.502	0.618

ANNEXURE I

CV of EAPs

HilLand Environmental
Environmental Assessment Practitioners
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STEFAN DELPORT
1992/09/02
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CURRICULUM VITAE (Abbreviated)

Qualifications:

2015 Bachelor of Science (BSc) Conservation Ecology and Entomology, Stellenbosch University
2021 Environmental Assessment Practitioners Association of South Africa (EAPASA) – 2019/1123

Career:

February 2018 – present:	Junior Environmental Consultant at HilLand Environmental Consultants, George
November 2016 – June 2017:	Guide and animal handler at The Ann van Dyk Cheetah Centre, Hartbeespoort.
December 2015 – September 2016:	Assistant Reserve and Day Centre Manager at Fathala Wildlife Reserve, Senegal, West Africa

Publication:

Several reports commissioned as part of Environmental Impact Assessment Processes, Public Participation and Environmental Management.

Fields of Expertise:

4 years' experience in Vegetation Sensitivity Mapping, Biodiversity Assessments, Environmental Impact Assessments, Environmental Impact Reports, Environmental Planning and Management, Rehabilitation, Environmental Management Plans & Frameworks, GIS Mapping, Visual Assessment and interpretation (Viewshed), Water Use Applications, Outeniqua Sensitive Coastal Area Applications, Environmental compliance monitoring and auditing, Public participation and facilitation.

Projects:

Leading and participating in projects in terms of NEMA on a variety of Development Projects within the Western Cape.

- Upgrading of the George Airport Precinct Access Road
- Expansion of Dagbreek Eiers Facility
- Closure and Capping of Unlawful Disposal site Concordia
- Construction of Reservoir and Pipeline for Uniondale
- Construction of Sewer line for Robberg Nature Reserve

ECO: Various projects including (but not limited to):

- ECO for installation of water pipeline between Hartenbos and Klein Brak WTW;
- ECO for Outeniqua Waste Water Treatment Works, previous phases;
- ECO for New Reservoir at George Water Treatment Works
- ECO for the Vaale Vallei Reservoir
- ECO for the construction and operational phase of residential developments in George, Hartenbos and Mossel Bay
- ECO for Routine Maintenance Projects between Mossel Bay, George, Plettenberg Bay and Oudtshoorn
- ECO for the construction of the New Vintage BP Filling Station, Hartenbos
- ECO for the operation of Doornfontein Sandmine
- ECO for the Modderrug River Rehabilitation

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CATHERINE AVIERINOS

1970/06/19
BSc(Hons) Rhodes University
cathy@hilland.co.za

CURRICULUM VITAE 2022

Qualifications:

1991 Bachelor of Science (BSc.) Botany & Zoology, Rhodes University
1992 Bachelor of Science Honours (BSc Hons) Botany, Rhodes University
Various LLB courses (Unisa)

Career:

1992 – present	Founder member of HilLand Associates cc and HilLand Environmental cc, Environmental Management Consultants
1993 – 1995	Part time Lecturer in Conservation Development, Saasveld Campus of the Port Elizabeth Technicon (now NMU).

Publications:

Over 1100 projects with all the associated documents commissioned as part of Environmental Impact Assessment Processes, Public Participation, Scoping, Environmental Management and specialist botanical reports.

Popular articles on Environmental Management.

Fields of Expertise:

30 years' experience in Vegetation Surveys, Vegetation Sensitivity Mapping, Biodiversity Assessments, Specialist Botanical Assessments, Environmental Impact Assessments, Basic Assessments, Environmental Impact Reports, Environmental Planning and Management, Rehabilitation, Environmental Management Plans & Frameworks, Strategic Conservation Planning with Multi Spectrum Participation, Environmental compliance monitoring and auditing, Public participation and facilitation, Water Use Applications, CARA applications, Environmental Rectification Assessments for S24G processes and Outeniqua Sensitive Coastal Area Applications.

Projects:

Leading and participating in over 1100 projects in terms of ECA and NEMA on a variety of Development Projects within Southern Africa.

Various Research Projects focusing on environmental management, planning, rehabilitation and GIS Mapping and interpretation (Viewshed and Visual Assessments)

Key projects –

- Golf Estate Impact Assessments – Oubaai, Kingswood, Pezula (Sparrebosch)
- Resorts – Phantom Forest Eco Reserve, Cairnbrogie Camps, Botlierskop Reserve expansion, Orange River Rafting expansion.
- Nautilus Bay Coastal Reserve (Visual Impact Assessment)

- Residential developments – Outeniquasbosch Wildlife Village, Kraaibosch Estates, Welgelegen Estate, Pezula, Fernwood, Paradise Coast Eco Estate

Conferences & Associations:

- Participant in various National Conferences.
- Member of the International Association of Impact Assessors South Africa (IAIAsa).
- Founder chairperson of the Southern Cape branch of IAIAsa.
- Botanical Society of South Africa.
- South African Association of Botanists.
- Registration with EPASA (pending)
- PrSciNat (Re-registration pending as membership lapsed)

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CURRICULUM VITAE (Abbreviated)

Qualifications:

2014 Bachelor of Science (BSc.) Biodiversity & Ecology, Stellenbosch University
2015 Bachelor of Science Honours (BSc Hons) Biodiversity & Ecology, Stellenbosch University
2021 Environmental Assessment Practitioners Association of South Africa (EAPASA) – 2019/1689

Career:

June 2018 – present:	Junior Environmental Consultant at HilLand Environmental Consultants, George
November 2016 – June 2017:	Guide, animal handler and assistant reservationist at The Ann van Dyk Cheetah Centre, Hartbeespoort.
December 2015 – September 2016:	Assistant Lodge and Reserve Manager at Fathala Wildlife Reserve, Senegal, West Africa

Publication:

Several reports commissioned as part of Environmental Impact Assessment Processes, Public Participation and Environmental Management.

Fields of Expertise:

4 years' experience in Vegetation Sensitivity Mapping, Biodiversity Assessments, Environmental Impact Assessments, Environmental Impact Reports, Environmental Planning and Management, Rehabilitation, Environmental Management Plans & Frameworks, Environmental compliance monitoring and auditing, Public participation and facilitation. Additionally, experience in several OSCAE permit-, NFA licence-, ORV application.

Projects:

Leading and participating in projects in terms of NEMA on a variety of Development Projects within the Southern Cape.

ANNEXURE J

List of Plant Species Surveyed by Specialist

APPENDICES:

Appendix 1: Plant species recorded on site.

Acacia mearnsii* (NEMBA Category 2)
Acacia melanoxylon* (NEMBA Category 2)
Arctotheca prostrata
Canthium inerme
Cenchrus clandestinus*
Centella asiatica
Cirsium vulgare* (NEMBA Category 1b)
Crepis sancta*
Cyperus polystachyos
Datura stramonium* (NEMBA Category 1b)
Delairea odorata
Eragrostis curvula
Erica sparsa
Eucalyptus grandis* (NEMBA Category 1b)
Oxalis species
Watsonia species
Gymnosporia nemorosa
Hedychium coronarium* (NEMBA Category 1b)
Helichrysum patulum
Hypoxis villosa
Lantana camara* (NEMBA Category 1b)
Lobelia flaccida
Paspalum urvillei*
Physalis peruviana*
Plantago lanceolata
Pteridium aquilinum
Raphanus raphanistrum*
Richardia brasiliensis*
Rubus bergii × pinnatus*
Rubus bergii × rigidus*
Senecio erubescens
Setaria megaphylla
Solanum mauritianum* (NEMBA Category 1b)
Sporobolus africanus
Stenotaphrum secundatum*
Tephrosia capensis
Trifolium repens*
Vicia hirsuta*
Vicia sativa*

ANNEXURE K

Protected Plant and Tree Species
as adopted from the Acts

—	—	*Poecilmitis rileyi* Dickson
Dickson's Thestor	Dickson se skollie	*Thestor dicksoni dicksoni* Riley
Kaplan's Thestor	Kaplan se skollie	*Thestor kaplani* Dickson and/en Stephen
Wallengren's Copper	Wallengren se kopervlerkie	*Trimenia wallengrenii* (Trimen)
	Family/Familie: HESPERIIDAE	
Bamboo Sylph	Bamboeswaksertjie	*Metisella syrinx* (Trimen)
Dickson's Sylph	Dickson se waksertjie	*Tsitana dicksoni* Evans
	Family/Familie: NYMPHALIDAE	
(Western) Forest Emperor, Forest King Charaxes	Boskoningdubbelstert	*Charaxes xiphares xiphares f. occidentalis* van Son
	Family/Familie: SATYRIDAE	
Dickson's Brown	Dickson se bruintjie	*Stygionympha dicksoni* (Riley)
	Family/Familie: HEPIALIDAE	
Silver-spotted Ghost Moth	Keurboomspookmot	*Leto venus* Stoll

SCHEDULE 3/BYLAE 3

ENDANGERED FLORA/BEDREIGDE FLORA

(The scientific names shown in the third column are the species of the family under which they appear./Die wetenskaplike name in die derde kolom aangedui is die spesies van die familie waaronder hulle voorkom.)

Common name (Where known)	***Volksnaam (Waar bekend)***	***Scientific name/ Wetenskaplike naam***
	Family/Familie: APOCYNACEAE	
	Halfmens	*Pachypodium namaquanum*
	Family/Familie: GESNERIACEAE	
	Cape Gloxinia	*Charadrophila capensis*
	Family/Familie: LILIACEAE	
		Aloe pillansii
		Aloe buhrii
		Aloe erinacea
	Family/Familie: PROTEACEAE	
		Mimetes capitulatus
		Mimetes hottentoticus
		Mimetes stokoei
Mountain Rose	Vleiroos	*Orothamnus zeyheri*
		Protea odorata
	Family/Familie: STANGERIACEAE	
Bobbejaankos		*Stangeria eriopus*
	Family/Familie: ZAMIACEAE	
Cycad	Broodboom	*Encephalartos* spp.

SCHEDULE 4/BYLAE 4

PROTECTED FLORA/BESKERMDE FLORA

(The scientific names shown in the third column are the species of the family under which they appear./Die wetenskaplike name in die derde kolom aangedui is die spesies van die familie waaronder hulle voorkom.)

Common name ***(Where known)***	***Volksnaam*** ***(Waar bekend)***	***Scientific name/*** ***Wetenskaplike naam***
	Family/Familie: AMARYLLIDACEAE All species/Alle spesies	
All species except those specified in Schedule 3.	Family/Familie: APOCYNACEAE Alle spesies behalwe dié in Bylae 3 bepaal.	*Pachypodium* spp.
Cape Holly	Family/Familie: AQUIFOLIACEAE Waterhout	*Ilex mitis*
Yellow Arum Lily	Family/Familie: ARACEAE Geelvarkblom	*Zantedeschia elliotiana*
	Family/Familie: ASCLEPIADACEAE All species/Alle spesies	
	Family/Familie: BORAGINACEAE	*Echiostachys spicatus*
	Family/Familie: BRUNIACEAE All species/Alle spesies	
	Family/Familie: COMPOSITAE	*Senecio coleophyllus* *Cotula duckitteae*
Red Crassula Pointed-leaf Crassula	Family/Familie: CRASSULACEAE Koesnaatjie	*Crassula columnaris* *Crassula falcata* *Crassula perfoliata* *Crassula pyramidalis* *Kalanchoe thyrsiflora*
Red Crassula	Klipblom, ook bekend Keiserskroon.	*Rochea coccineaas*
	Family/Familie: CUNONIACEAE Rooi-els	*Cunonia capensis* *Platylophus trifoliatus*
Elephant's Foot	Family/Familie: DIOSCOREACEAE Skilpad Olifantsvoet	*Testudinaria sylvatica* *Testudinaria elephantipes*
	Family/Familie: ERICACEAE All species/Alle spesies	
[Kaffir Hut] Vetmensie	Family/Familie: EUPHORBIACEAE Eselkos of Pol **[Kafferhut]** Vetmensie	*Euphorbia bupleurtfolia* *Emphorbia fasciculata* *Euphorbia globosa* *Euphorbia horrida* *Euphorbia meloformis* *Emphorbia obesa* *Euphorbia schoenlandii*

[Kaffir Hut] Vetmensie	**[Kafferhut]** Vetmensie	*Euphorbia symmetrica* *Euphorbia valida*
	Family/Familie: GEISSOLOMACEAE All species/Alle spesies	
	Family/Familie: GESNERIACEAE	
Cape Primrose, also known as Rexia, Nodding Bells, Twin Sisters or Wild Gloxinia.		Alle spesies van die genus *Streptocarpus* All species of the genus *Streptocarpus*
	Family/Familie: GRAMINEAE	
Mountain Bamboo	Bergbamboes	*Arundinaria tessellata*
Wild Rye Grass	Wilde Rog	*Secale africanum*
	Family/Familie: GRUBBIACEAE All species/Alle spesies	
	Family/Familie: IRIDACEAE All species/Alle spesies	
	Family/Familie: LEGUMINOSAE	
Tambookie Thorn	Tamboekiedoring	*Erythrina acanthocarpa* *Erythrina humeana*
	Klipblom	*Liparia comantha*
Orange Nodding Head, also known as Mountain Dahlia.	Geelkoppie	*Liparia sphaerica* *Liparia splendens*
Wild Sweet Pea	Keurtjie	*Podalyria calyptrata* *Priestleya vestita*
Silver Pea	Silwerertjie	*Priestleya tomentosa*
	Family/Familie: LILIACEAE	

All species of the genus ALOE except those specified in Schedule 3 and the species *Aloe ferox*./Alle spesies van die genus ALOE behalwe dié in Bylae 3 bepaal en die spesie *Aloe ferox*.

		Gasteria beckeri
Gloriosa Lily, also known as Turk's Cap.		*Gloriosa superba*
Haworthia, also known as Window Plant.		Alle spesies van die genus *Haworthia* All species of the genus *Haworthia*
Red-hot Poker	Vuurpyl	Alle spesies van die genus *Kniphofia* All species of the genus *Kniphofia*
	Viooltjies	Alle spesies van die genus *Lachenalia* All species of the genus *Lachenalia*
Climbing Bells	Geelklokkie	*Littonia modesta*
Christmas Bells		*Sandersonia aurantiaca*
Forest Lily		Alle spesies van die genus *Veltheimia* All species of the genus *Veltheimia*
		Agapanthus walshii
		Daubenya aurea

	Family/Familie: MELIACEAE	
Chinese Lantern	Klapperbos	*Nymania capensis*
	Family/Familie: MESEMBRYANTHEMACEAE	
	All species/Alle spesies	
	Family/Familie: MUSACEAE	
		Alle spesies van die genus *Strelitzia* All species of the genus *Strelitzia*
	Family/Familie: NYMPHAEACEAE	
Blue Water-lily	Blou Waterlelie, ook bekend as Kaaimanblom.	*Nymphaea capensis*
	Family/Familie: ORCHIDACEAE	
	All species/Alle spesies	
	Family/Familie: OXALIDACEAE	
	Watersuring	*Oxalis nutans*
	Family/Familie: PEDALIACEAE	
	Kloudoring (Duiwelsklou)	*Harpagophytum procumbens*
	Family/Familie: PENAEACEAE	
	All species/Alle spesies	
	Family/Familie: POLYGALACEAE	
		Muraltia minuta
	Family/Familie: POLYPODIACEAE	
Maidenhair Fern	Vrouehaar	Alle spesies van die genus *Adiantum* All species of the genus *Adiantum*
Tree Ferns	Boomvarings	*Hemitelia capensis*
Seven Weeks Fern	Seweweeksvaring	*Polystichum adiantiforme*
	Family/Familie: PORTULACACEAE	
Love-plant	Hasieskos	Alle spesies van die genus *Anacampseros* All species of the genus *Anacampseros*
	Family/Familie: PROTEACEAE	

All species except those specified in Schedule 3./Alle spesies behalwe dié in Bylae 3 bepaal.

	Family/Familie: RANUNCULACEAE	
Anemone	Anemoon	*Anemone capensis*
	Family/Familie: RESTIONACEAE	
		Alle spesies van die genus *Chondropetalum* All species of the genus *Chondropetalum* *Acockii pillans* *Elegia fenestrata* *Restio acockii* *Restio micans* *Restio sabulosus*

	Family/Familie: RETZIACEAE	
		Retzia capensis
	Family/Familie: RHAMNACEAE	
		Phylica pubescens
	Family/Familie: RORIDULACEAE All species/Alle spesies	
	Family/Familie: RUTACEAE All species/Alle spesies	
	Family/Familie: SCROPHULARIACEAE	
		Alle spesies van die genus *Diascia* All species of the genus *Diascia*
Harveya	Inkblom	Alle spesies van die genus *Harveya* All species of the genus *Harveya*
Nemesia	Rooileeubekkie	*Nemesia strumosa*
		Alle spesies van die genus *Halleria* All species of the genus *Halleria*
	Family/Familie: THYMELAEACEAE	
		Lachnaea aurea

SCHEDULE 5/BYLAE 5

NOXIOUS AQUATIC GROWTHS/SKADELIKE WATERGEWASSE

Common name (Where known)	***Volksnaam (Waar bekend)***	***Scientific name/ Wetenskaplike naam***
Water Hyacinth	***Waterhiasint***	*Eichhornia* spp.
Parrot's Feather	Duisendblaar	*Myriophyllum* spp.
Water Fern	Watervaring	*Salvinia* spp.

SCHEDULE 6/BYLAE 6

ORDINANCES REPEALED

No. and Year	***Short Title***
26 of 1965	Nature Conservation Ordinance, 1965.
16 of 1967	Nature Conservation Amendment Ordinance, 1967.
30 of 1968	Nature Conservation Amendment Ordinance, 1968.
32 of 1970	Nature Conservation Amendment Ordinance, 1970.

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NO. 1602 **23 DECEMBER 2016**

NOTICE OF THE LIST OF PROTECTED TREE SPECIES UNDER THE NATIONAL FORESTS ACT, 1998 (ACT NO. 84 OF 1998)

By virtue of powers vested in me under section 15(3) of the National Forests Act, 1998, I, Senzeni Zokwana, Minister of Agriculture, Forestry and Fisheries hereby publish a list of all protected trees belonging to a particular species under section 12(1) (d) set out in the schedule below.

The effect of this declaration is that in terms of section 15(1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated.

Contravention of this declaration is regarded as a first category offence that may result in a person who is found guilty being sentenced to a fine or imprisonment for a period up to three years, or to both a fine and imprisonment.

SCHEDULE A

Botanical name	**English common names**	**Other common names** **Afrikaans (A), Sepedi (P), Sesotho (S), Setswana (T), Tshivenda (V), isiXhosa (X), isiZulu (Z)**	**National tree number**
Vachellia erioloba	Camel thorn	Kameeldoring (A)/Mogohlo (NS)/Mogôtlhô (T)	168
Vachellia haematoxylon	Grey camel thorn	Vaalkameeldoring (A)/Mokholo (T)	169
Adansonia digitata	Baobab	Kremetart (A)/Seboi (NS)/Mowana (T)	467
Afzelia quanzensis	Pod mahogany	Peulmahonie (A)/Mutokota (V)/Inkehli (Z)	207
Balanites subsp. *maughamii*	Torchwood	Groendoring (A)/Ugobandlovu (Z)	251
Barringtonia racemosa	Powder-puff tree	Poeierkwasboom (A)/Iboqo (Z)	524

Boscia albitrunca	Shepherd's tree	Witgat (A)/Mohlôpi (NS)/Motlhôpi (T)/ Muvhombwe (V)/Umgqomogqomo (X)/Umvithi (Z)	122
Brachystegia spiciformis	Msasa	Msasa (A)	198.1
Breonadia salicina	Matumi	Mingerhout (A)/Mohlomê (NS)/Mutu-lume (V)/Umfomfo (Z)	684
Bruguiera gymnorrhiza	Black mangrove	Swartwortelboom (A)/isiKhangati (X)/IsiHlobane (Z)	527
Cassipourea swaziensis	Swazi onionwood	Swazi-uiehout (A)	531.1
Catha edulis	Bushman's tea	Boesmanstee (A)/Mohlatse (NS)/Igqwaka (X)/Umhlwazi (Z)	404
Ceriops tagal	Indian mangrove	Indiese wortelboom (A)/isinkaha (Z)	525
Cleistanthus schlechteri var. *schlechteri*	False tamboti	Bastertambotie (A)/Umzithi (Z)	320
Colubrina nicholsonii	Pondo weeping thorn	Pondo-treurdoring (A)	453.8
Combretum imberbe	Leadwood	Hardekool (A)/Mohwelere-tšhipi (NS)/Motswiri (T)/Impondondlovu (Z)	539
Curtisia dentata	Assegai	Assegaai (A)/Umgxina (X)/Umagunda (Z)	570
Elaeodendron transvaalensis	Bushveld saffron	Bosveld-saffraan (A)/Monomane (T)/Ingwavuma (Z)	416
Erythrophysa transvaalensis	Bushveld red balloon	Bosveld-rooiklapperbos (A)/Mofalatsane (T)	436.2
Euclea pseudebenus	Ebony guarri	Ebbeboom-ghwarrie (A)	598
Ficus trichopoda	Swamp fig	Moerasvy (A)/Umvubu (Z)	54
Leucadendron argenteum	Silver tree	Silwerboom (A)	77
Lumnitzera racemosa var. *racemosa*	Tonga mangrove	Tonga-wortelboom (A)/isiKhaha-esibomvu (Z)	552
Lydenburgia abbottii	Pondo bushman's tea	Pondo-boesmanstee (A)	407
Lydenburgia cassinoides	Sekhukhuni bushman's tea	Sekhukhuni-boesmanstee (A)	406
Mimusops caffra	Coastal red milkwood	Kusrooimelkhout (A)/Umthunzi (X)/Umkhakhayi (Z)	583
Newtonia hildebrandtii var. *hildebrandtii*	Lebombo wattle	Lebombo-wattel (A)/Umfomothi (Z)	191
Ocotea bullata	Stinkwood	Stinkhout (A)/Umhlungulu (X)/Umnukane (Z)	118
Ozoroa namaquensis	Gariep resin tree	Gariep-harpuisboom (A)	373.2
Philenoptera violacea	Apple-leaf	Appelblaar (A)/Mphata (NS)/Mohata (T)/isiHomohomo (Z)	238
Pittosporum viridiflorum	Cheesewood	Kasuur (A)/Kgalagangwe (NS)/Umkhwenkwe (X)/Umfusamvu (Z)	139
Podocarpus elongatus	Breede River yellowwood	Breëriviergeelhout (A)	15

Podocarpus falcatus (Afrocarpus falcatus)	Outeniqua yellowwood	Outniekwageelhout (A)/Mogôbagôba (NS)/Umkhoba (X)/Umsonti (Z)	16
Podocarpus henkelii	Henkel's yellowwood	Henkel se geelhout (A)/Umsonti (X)/Umsonti (Z)	17
Podocarpus latifolius	Real yellowwood	Regte-geelhout (A)/Mogôbagôba (NS)/Umcheya (X)/Umkhoba (Z)	18
Protea comptonii	Saddleback sugarbush	Barberton-suikerbos (A)	88
Protea curvata	Serpentine sugarbush	Serpentynsuikerbos (A)	88.1
Prunus africana	Red stinkwood	Rooistinkhout (A)/Umkhakhase (X)/Umdumezulu (Z)	147
Pterocarpus angolensis	Wild teak	Kiaat (A)/Morôtô (NS)/Mokwa (T)/Mutondo (V)/Umvangazi (Z)	236
Rhizophora mucronata	Red mangrove	Rooiwortelboom (A)/isiKhangathi (X)/Umhlume (Z)	526
Sclerocarya birrea subsp. *caffra*	Marula	Maroela (A)/Morula (NS)/Morula (T)/Umganu (Z)	360
Securidaca longepedunculata	Violet tree	Krinkhout (A)/Mmaba (T)	303
Sideroxylon inerme subsp. *inerme*	White milkwood	Witmelkhout (A)/Ximafana (X)/Umakhwelafingqane (Z)	579
Tephrosia pondoensis	Pondo poison pea	Pondo-gifertjie (A)	226.1
Warburgia salutaris	Pepper-bark tree	Peperbasboom (A)/Molaka (NS)/Mulanga (V)/isiBaha (Z)	488
Widdringtonia cedarbergensis	Clanwilliam cedar	Clanwilliamseder (A)	19
Widdringtonia schwarzii	Willowmore cedar	Baviaanskloofseder (A)	21

MR SENZENI ZOKWANA
MINISTER OF AGRICULTURE, FORESTRY AND FISHERIES

agriculture, forestry & fisheries
Department
REPUBLIC OF SOUTH AFRICA

ANNEXURE L

Alien Control Plan (ACP), approval and permit to retain Gum trees

environment, forestry
& fisheries

Department:
Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Private Bag x447, Pretoria, 0001. 14 Loop Street, Cape Town, 8000. Tel: (+27 21) 441 2816 - Fax: 021 441 2751

Ref: Erf 19001, George, AIS Control Management Plan Approval
Enquiries: Mr Stiaan Kotze
Tel: (021) 441 2816 Email: SKotze@dffe.gov.za

HILL and Environmental
Environmental Management Consultants
Victoria Heights
P.O. Box 590
George, 6530

Attention: Inge Delport
Environmental Management Consultants
Tel: 044 889 0229
Email: cathy@hilland.co.za / environmental2@hilland.co.za

ALIEN INVASIVE SPECIES CONTROL, MANAGEMENT AND ERADICATION PLAN OF ERF 19001, GEORGE, WESTERN CAPE

1. I refer to the following:

   1.1. Alien Invasive Species Control Management and Eradication Plan of Erf 19001,George, submitted to the Department of Forestry, Fisheries and Environment (DFFE) on the 08 December 2022, compiled by, Cathy Avierinos.

2. Having reviewed the Alien Invasive Species Control, Management and Eradication Plan of CDC, I have noted the following:

   2.1. The plan includes the entire property.
   2.2. The listed invasive plant species present on your property and their categories.
   2.3. The combined integrated control methods (mechanical, chemical and biological) will be used to control listed invasive plant species on your property.

2.4. The Alien Invasive Species Control and eradication Plan will be implemented for **fourteen (14) years** and all invasive plant species will be under control **by end 2037**; and there after annual follow up is recommended to keep the portion clean.

3. In view of the above background, the department is satisfied that the recommended clearing control methods will prevent further invasion by listed invasive species on the property. The submitted Alien Invasive Species Control and Eradication Plan with specified timeframe is therefore approved. The clearing methods must be implemented as set out in the approved control plan; however, any changes in the plan must be submitted to DEFF for approval prior such changes could be affected.

4. A progress report must be submitted at least every year (at the completion of each management unit) to the DFFE outline the progress that has been made. Moreover, a close out report must be submitted to the department after clearing have been completed.

   The close out report must, among other things include:

   a. The description of the control methods implemented and the manner in which they were implemented
   b. Assessments (which include photographs) of the cleared areas; and
   c. Option used for the handling of the plant materials (biomass) after clearing.

5. Should you have any queries in relation to this matter, please do not hesitate to contact Mr Stiaan Kotze at the above-mentioned telephone number or e-mail address.

Yours sincerely

STIAAN KOTZE
CONTROL BIODIVERISTY OFFICER: COMPETENT AUTHORITY
MINISTERIAL DELEGATION ENVIRONMENTAL MANAGEMENT INSPECTOR: HEAD
DEPARTMENT OF ENVIRONMENTAL AFFAIRS FORESTRT

APPROVED

Full Name: STIAAN KOTZE
Control Biodiversity Officer
Competent Authority
Directorate: Oceans, Coast & Biosecurity Compliance
Department of Forestry, Fisheries & The Environment
14 Loop Street, Cape Town
Date: 26/04/2023

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E-mail: info@hilland.co.za
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INVASIVE ALIEN PLANT CONTROL (ACP) FOR ERF 19001, GEORGE

ARBOUR ESTATE

In terms of the National Environmental Management: Biodiversity Act (NEM:BA Act No 10 of 2004, Amended October 2014) and Invasive Species Regulations (October 2014)

PLAN OF PROPOSED REHABILITATION

Compiled by	HilLand Environmental
HilLand Reference	GEO22/1176/13
Date	08 December 2022

08 Decemeber 2022
GEO22/1176/13

ISSUED BY:
HilLand Environmental (Pty) Ltd
Environmental Management Consultants
Victoria Heights
P.O. Box 590
George, 6530

Tel: 044 889 0229
Fax: 086 542 5248
E-mail: cathy@hilland.co.za / environmental2@hilland.co.za
Website: www.hilland.co.za

Invasive Alien Plant Control Plan (ACP) – Erf 19001, George
Arbour Estate

Submitted to:
DEA - Biosecurity Compliance
Stiaan Kotze

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Table of Contents

Client details:

Name of Applicant/Proponent:	**Cedardale Investments (Pty) Ltd represented by Amit Joseph Katz**	
Name of contact person for Applicant/Proponent (if other):	**Amit Joseph Katz**	
Company/ Trading name/State Department/Organ of State:	**Cedardale Investments (Pty) Ltd**	
Company Registration Number:	**2012/092329/07**	
Postal address:	**4 Liddle Street,**	
	Cape Town	Postal code: **8001**
Telephone:	**0214192808**	Cell: **082 773 4567**
E-mail:	**amjkatz@gmail.com**	Fax: **0214192808**

EXECUTIVE SUMMARY

HilLand Environmental has been appointed by **Cedardale Investments (Pty) Ltd represented by Amit Joseph Katz**, owner of Erf 19001, as Independent Environmental Assessment Practitioners (EAPs), to facilitate an Invasive Alien Plant Control Plan (ACP) in terms of the National Environmental Management: Biodiversity Act (NEM:BA, Act 10 of 2014) for the property.

Erf 19001 (here after referred to as 'the property') is a 11.69ha erf zoned for residential development in the urban edge of George. An application in terms of NEMA is made for a residential development on a section of the property.

The habitat on-site as described by the specialist, Dr David Hoare (survey undertaken 12 March 2021):

Based on a detailed field survey to verify conditions on site, a detailed landcover and habitat mapping exercise was undertaken for the site. This identified two main habitats occurring on site, shown in the figure above. These are mapped as **Eucalyptus Forest** and **secondary grassland**. There are also transformed areas associated with George Road / Witfontein Road. The habitat assessment is important for understanding the suitability of habitat on site for various plant and animal species of concern, which usually have very specific habitat requirements.

Eucalyptus forest

The steep-sided valley associated with the Malgas River is almost entirely dominated by alien invasive species including the Gum, *Eucalyptus grandis**, which is a NEMBA Category 1b alien

invasive species. Other alien species include Black Wattle, Lantana, Bugweed and others (see list below). There are a small number of indigenous woody plants within the *Eucalyptus* grove, including *Canthium inerme* and *Gymnosporia nemerosa*. The physical conditions, location and general attributes of this area suggest that it was probably originally a form of forest in its natural state that extended as a finger down the valley from the Afromontane forests that occur in a band along the southern base of the Outeniqua Mountains. It is, however, highly degraded, and there is little to nothing remaining of this possible original vegetation.

Secondary grassland

- This area mostly forms part of the area proposed for development zone – alien clearing will therefore be actively implemented in the mostly *Eucalyptus* Forest with periodic clearing in the residential estate as disturbance of topsoil will result in stimulation of the seedbank. Follow-up control will therefore be required in open space areas, road verges, gardens etc.

The entire upland part of the site is covered with secondary grassland. This is dominated by various grass species, including *Cenchrus clandestinus**, *Eragrostis curvula*, *Sporobolus africanus* and *Stenotaphrum secundatum**, along with a variety of herbaceous weedy species, including *Arctotheca prostrata, Centella asiatica, Cirsium vulgare* (NEMBA Category 1b), Crepis sancta*, Cyperus polystachyos, Oxalis species, Watsonia species, Helichrysum patulum, Hypoxis villosa, Lobelia flaccida, Plantago lanceolata*, *Raphanus raphanistrum**, *Richardia brasiliensis**, *Senecio erubescens*, *Tephrosia capensis*, *Trifolium repens**, *Vicia hirsuta** and *Vicia sativa**. This species composition could occur on any unmanaged lawn in any garden in suburban George. The indigenous *Erica sparsa* occurs in patches, but is a common coloniser of previously disturbed localities. There are places that are dominated by a combination of bracken fern, *Pteridium aquilinum*, and the grass, *Paspalum urvillei** that may be indicators of slightly higher local soil moisture levels.

Drone footage over the property

To the left – secondary grassland; To the right – *Eucalyptus* forest

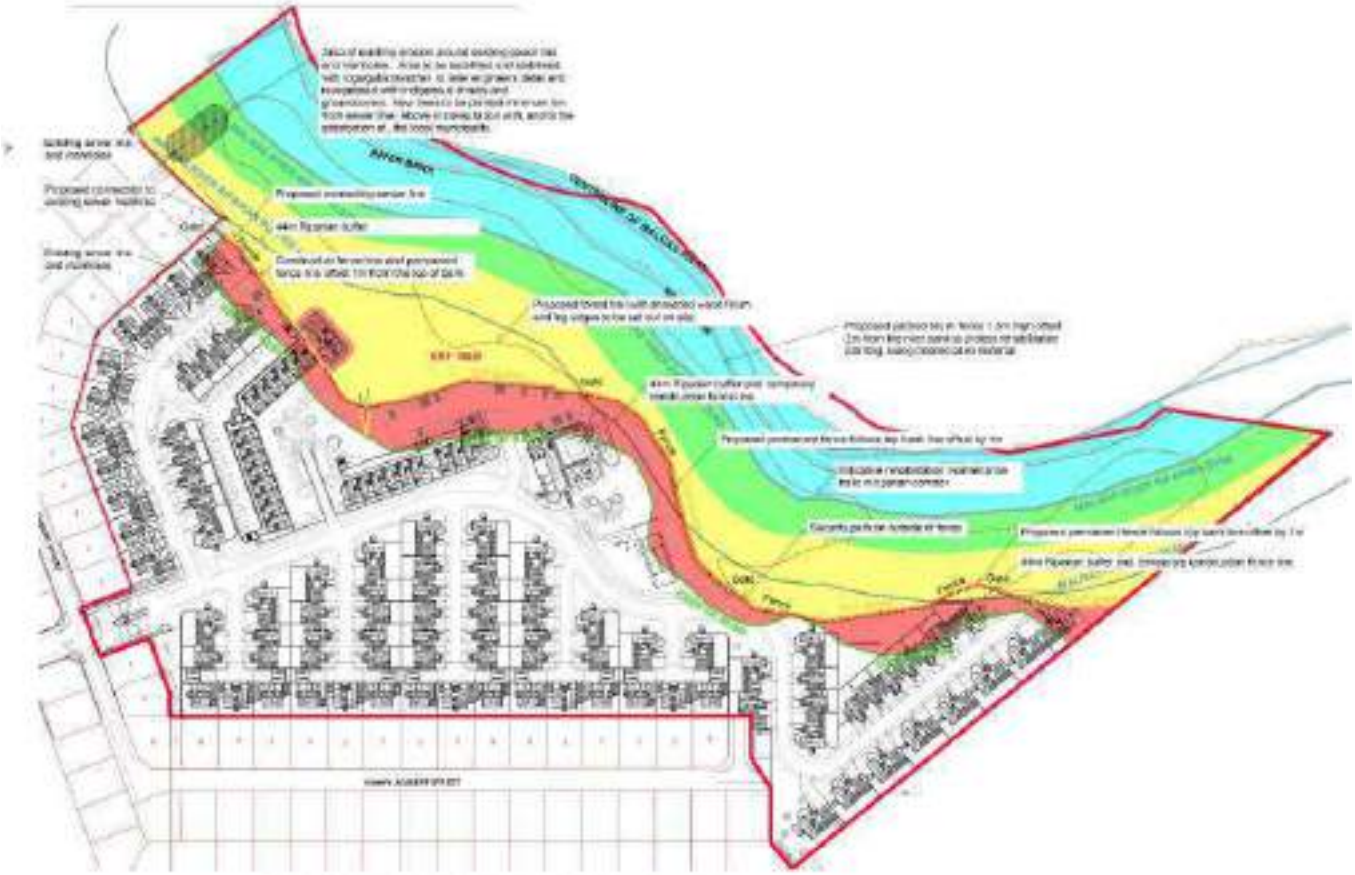
Development is proposed in the eastern side of the property. The western property boundary extends to the middle of the Malgas River, and the riparian zone and riparian buffer as designated by the aquatic specialist will be retained for rehabilitation purposes. The intent is to rehabilitate the riparian corridor over time to remove the alien vegetation and restore natural Afromontane riparian forest.

Proposed site plan

The rehabilitation area has been divided into three (3) management units for systematic alien clearing over the course of 14 years.

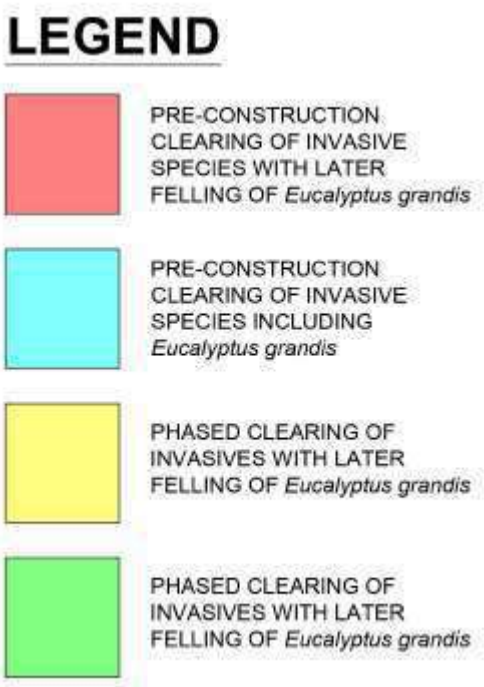
Certain of the large Gum trees will be retained under a NEMBA permit to act as canopy for the rehabilitation of the forest species and most importantly as they form part of the visual screen identified in the Visual Impact Assessment as being required to screen and soften the development area while the Afrotemperate forest is being rehabilitated. The indigenous forest will take over the screening role in the long term.

All alien species within the riparian zone will be cleared in the first phase as these cannot be retained under a NEMBA permit.



PLAN OF PROPOSED REHABILITATION

These units will be cleared as follow:



Timeline set out for clearing activities to be undertaken by the appointed team:

REHABILITATION ZONES AS PER PLAN

	PRE-CONSTRUCTION & YEAR 13-14	0.7ha
	PRE-CONSTRUCTION	1.8ha
	YEAR 1-2 & YEAR 9-10	1.9ha
	YEAR 3-4 & YEAR 11-12	1.2ha
	INDIGENOUS FOREST ESTABLISHMENT PERIOD	

George, Townhouses Erf 19001: Environmental Rehabilitation Programme

	ACTION	PRE-CONSTRUCTION (By Developer)		POST-CONSTRUCTION (By HOA, in years) 1-2	3-4	5-8	9-10	11-12	13-14
1)	Conservation worthy plant rescue and protection								
2)	Invasive alien vegetation clearing (excluding roots)								
3)	Actively replanting of Indigenous plants								
4)	Soil stabilisation on steep slope								
5)	Removal of Eucalyptus trees (excluding gum stump removal)								
6)	Establishing Fire Breaks (to fire specialist input)								
7)	Monitoring and follow up clearing of alien regrowth and seedlings	ON-GOING PROCESS							

REHABILITATION PROGRAMME

The aim is therefore to have the open space cleared and free of alien invasive vegetation within the 14-years.

Internal open space area, road verges, and gardens will be maintained free of any emerging alien seedlings as part of the maintenance and operation of the development.

INTRODUCTION AND BIODIVERSITY CONTEXT

The following control plan have been produced in terms of Section 76 of NEM:BA and monitoring, control and eradications plans guidelines (dated: 30 September 2015).

Erf 19001, 'the property' is located in the northwestern part of George – are formally known as Heather Park.

The site is accessed off Witfontein road via Tommy Joubert Street. The Malgas River forms the western boundary of the site. The entire wooded area shown in the aerial image below is a steep west-facing valley associated with this stream. The upper parts of the site are relatively flat and are located in the grassy areas, between the existing urban areas and the alien infested wooded valley.

Aerial image of the property

The property is approximately 11.69ha erf that is zoned for residential development in the urban edge of George. An application in terms of NEMA is made for a residential development on a section of the property.

Proposed site plan

Limited historic clearing has been undertaken on the property and ad hoc "illegal" wood collection is continually taking place.

In accordance with the Western Cape Biodiversity Spatial Plan (WCBSP, 2017), small areas of the development area have been mapped forming part of natural Critical Biodiversity Area (CBA 1), degraded CBA 2 and terrestrial Ecological Support Area (ESA 1).

In accordance with the 2021 Gazetted National Biodiversity Areas (NBA) the property forms part of critically endangered Garden Route Shale Fynbos.

The vegetation on the property has been assessed by the specialist as part of the environmental application process as described above.

Property details

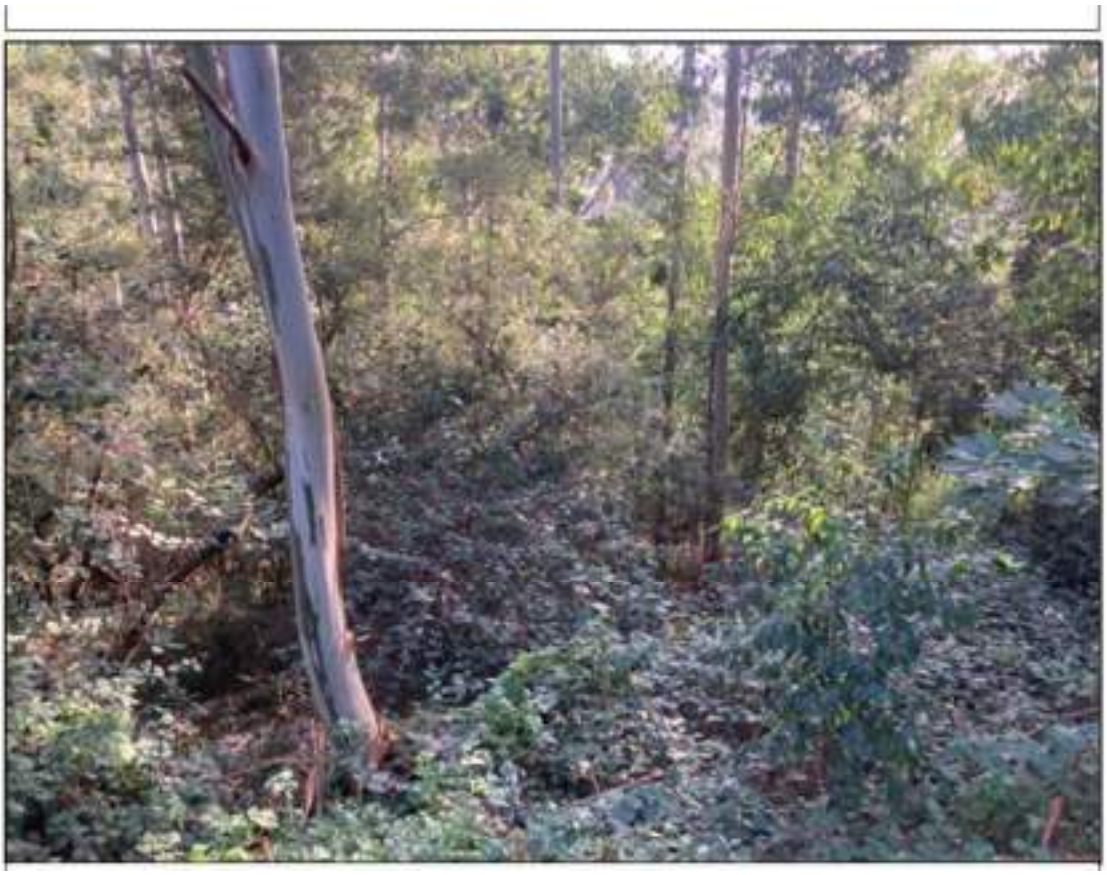
Property number	Erf 19001
Land use	Undeveloped residential zoned erf
Size	11.69Ha
Contact person	Cedardale Investments (Pty) Ltd represented by Amit Joseph Katz
GPS	33°56'58.43"S | 22°25'32.89"E

There is no remaining natural habitat on site. The Eucalyptus grove acts ecologically like a form of forest but is highly degraded. Nevertheless, there is a long-term option to restore indigenous forest to this area, which would restore greater ecological functionality and promote indigenous biodiversity.

It is currently designated as a combination of CBA1 and CBA2 which in terms of potential ecological function are, therefore, designated as sensitive (high), although they contain little

to no indigenous biodiversity and would otherwise be rated as low – they do form an important ecological linking corridor and with rehabilitation have the potential to restore some ecosystem services, pattern and process.

Eucalyptus forest



View of the valley from the top of the slope

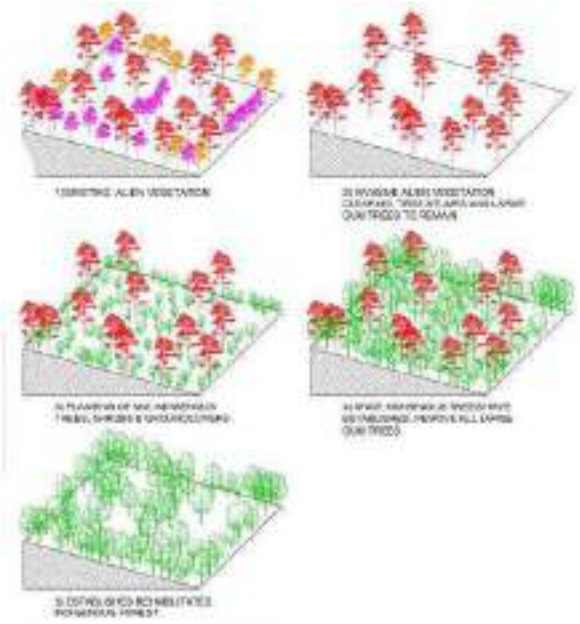
Eucalyptus forest

PURPOSE AND SCOPE OF THIS CONTROL PLAN

The purpose of this plan is to address the clearing and control of alien invasive plants and reduction of the fuel load in the rehabilitation zone and ongoing internal management as part of the operation of the development.

The rehabilitation area will be cleared over a course of 14 years as specified in the rehabilitation management plan done by Planning Partners, 2022 (as indicated above).

Large Gum trees will act as a canopy cover for forest rehabilitation and that will be thinned out over time as presented in the image below:



RIPARIAN CORRIDOR REHABILITATION

Once clearing has been undertaken within each management unit, clearing activities must start again. Follow-up control within each management unit must be implemented every 6months, this includes the removal of dead wood and moribund vegetation.

Brush stacking in windrows along the contours using the smaller branches will take place in order to protect the slope from erosion while waiting for vegetative cover to return. The bulk of the alien material will be commercially harvested to offset the costs of alien clearing. Smaller timber will be used for firewood. All remaining branches will be stacked in the grassy section for chipping to be retained and composted and used as a mulch. No burning is envisioned due to the proximity to the residential areas that surround the site.

It should be noted that in the event of a wildfire, there will be mass alien seedling germination as they are stimulated by fire and more regular follow-up control will be required after the fire to control the mass emergence.

ALIEN INVASIVE PLANT SPECIES PRESENT ON THE PROPERTY

The National Environmental Management: Biodiversity Act (NEM: BA) listed invasive alien plant (IAP) species present on the property were recorded (table below) according to scientific-, common-names and the category listed in the NEM: BA Alien and Invasive Species list (October 2014). These species can be prioritized in accordance with the category (1a, 1b, 2 & 3, described in more detail below) in which it is listed as and the potential risk of invasion.

Recommendations will be given (also refer to Annexure A) on the control of alien invasive vegetation present on the property and a monitoring programme will be implemented in order to detect new and/or secondary invasions.

The alien invasive species list will be updated frequently to include any new and/or secondary infestations as and when detected within these management units.

NEM:BA listed (October 2014) alien and invasive species present within the surveyed area, the category they fall into, estimated cover (%), level of prioritization (high-8/10, medium 4/10 and low 0/10) and the risk of invasion

Plant species	Common name	NEM:BA category
Acacia mearnsii	Black Wattle	2
Acacia melanoxylon	Blackwood	2
Cirsium vulgare	Spear thistle	1b
Datura stramonium	Thorn apple	1b
Eucalyptus grandis	Gum	1b
Hedychium coronarium	White ginger lily	1b
Lantana camara	Lantana	1b
Solanum mauritianum	Bugweed	1b
Cestrum laevigatum	Inkberry	1b
Pinus species	Pine sp	2

**Please note there may be other NEM:BA listed plant species present within the surveyed area. This table needs to be updated as new/different species are detected.*

Description of NEM:BA Categories: 1 (a and b), 2 and 3

NEM:BA Category	Description
Category 1 (a and b) **Immediate eradication required**	Invasive species falling under this category are prohibited plants, i.e. are illegal to grow or keep and must be controlled / eradiated. These plant species possess characteristics that can prove harmful to humans and/or have a detrimental impact on the environment, people or the economy. These plant species are only allowed in biological control reserves that are designed for the breeding of bio-control agents. Road reserves are not considered biological control reserves and as such these species need to be removed from such area unless specifically permitted to be there.
Category 2 **Permit required**	Invasive species falling under this category are planted with a commercial or utility value. These species have certain useful qualities, which include the commercial use of for timber, animal fodder, food, soil stabilisation etc. The species falling under this category are only permitted in demarcated areas, under controlled conditions and in bio-control reserved. **However, they are not permitted within 30 m of 1:50 year floodline or a watercourse or wetlands** unless it is authorised by the National Department of Water Affairs. Road reserves are not considered demarcated areas or control conditions and as such these species need to be removed from such area unless specifically permitted to be there.
Category 3 **Certain prohibitions applicable**	These species are primarily 'exotic' or ornamental horticultural plants that escaped from residential gardens. These species may not be planted and propagative material may not be traded (except where the appropriate permits are in place). Eradication of these species is not required- **except** within 30 m of 1:50 year floodline or a watercourse or wetlands **(i.e. category 3 plants in riparian areas are treated as Category 1b)**. The spread of these species must be prevented.

Various weedy species were also noted on site and they will be removed during the landscaping process.

Cenchrus clandestinus (*kikuyu) is the dominant grass in the field and is likely to remain and come up in the garden areas. It will be controlled and attempts to remove it will be made in the riparian zone.

ERADICATION METHODS

Various control methods can be applied to each listed alien invasive species, please refer to the below table and Annexure A.

The following is important to note:

- It is important to ensure that no **heavy machinery (bulldozer or excavators)** is allowed for the clearance of alien invasive vegetation. – exception to this will be the commercial tree harvesting equipment required to remove the gum trees which are in excess of 30m height with a girth of over a meter in places. Roots will however not be removed and all stumps will be treated with herbicide.
- Cut vegetation is to be used for brush-wood-fences, excess cut vegetation is to be removed by hand and stockpiled in the grassy field for chipping. Wood suitable for firewood will be stacked and removed.

PROPOSED PACKED BRUSH FENCE 2m FROM RIVER BANK TO PROTECT REHABILITATION PLANTING

- Seedlings pulled out can be left to decompose. Where seedling cover is in a blanket form, herbicide foliar application can be considered if the indigenous regrowth is less than 1%.
- Large gum trees in the riparian zone are to be removed / ring barked as no permit will be granted for these trees in the riparian area.
- Certain of the large gum trees in the remainder of the rehabilitation area (riparian buffer zone) are to be kept as a canopy cover for the forest rehabilitation and as a visual screen and they will be systematically removed over the 15-year period. To increase the effectiveness of the visual screen, the trees may be pruned so that they coppice and thicken out.
- Rehabilitation measure should be taken in order to avoid any erosion within all management units using the cut vegetation. This will be done by placing the brush packed windrows along the contours to prevent vertical movement up and down the slope.

Invasive species present on the property, the NEM:BA category they fall into and the method of clearing that must be implemented (WFW, 2012)

Plant species	Common name	NEMBA category	Clearing methods to implement
Acacia mearnsii	Black Wattle	2	Sprouting tree Seedling • Hand pull • Foliar spray Young • Lopping / pruning with herbicide application • Removal with tree-popper Adult • Bark strip with herbicide application • Cut stump/frill with herbicide application
Acacia melanoxylon	Blackwood	2	Sprouting tree Seedling • Hand pull • Foliar spray Young • Lopping / pruning with herbicide application Adult • Bark strip with herbicide application • Cut stump/frill with herbicide application
Cirsium vulgare	Spear thistle	1b	Herbaceous species All ages • Hand pull • Foliar spray
Datura stramonium	Thorn apple	1b	Herbaceous species All ages • Hand pull Foliar spray
Eucalyptus grandis	Gum	1b	Sprouting tree Seedling • Hand pull • Foliar spray Young • Lopping / pruning with herbicide application Adult • Cut stump/frill with herbicide application
Hedychium coronarium	White ginger lily	1b	Herbaceous species All ages • Cut and spray with herbicide
Lantana camara	Lantana	1b	Herbaceous species Young • Foliar spray Adult • Cut and spray with herbicide
Solanum mauritianum	Bugweed	1b	Herbaceous species Young • Foliar spray Adult • Cut and spray with herbicide
Cestrum laevigatum	Inkberry	1b	Seedling • Hand-pull Adult

			• Cut and spray
Pinus species	Pine species	1b	Seedlings • Hand pull Young • Hand-pull • Removal by tree popper Adult • Cut stump

**Please refer to Annexure A for the list of herbicides that should be used*

OBJECTIVES AND ACTIONS

OBJECTIVE 1: CONTROL INVASIVE PLANT INFESTATION

The main aim of this objective is to bring the plant infestation on the property under control within 14 years.

Desired state for invasive alien plants on the property

Category	Desired state by 2037
Category 1 b trees	- All mature trees to be ring barked or removed. - All the management units are in maintenance. - Overall infestation does not exceed **10%** of the property. (These will include seedlings and re-sprouting trees (mainly Gums). (*Acacia* species will be under control with the correct control methods while pine species will be under control as they do not re-sprout following correct clearing methods).
Category 1b herbaceous species	Less than 2% of the property
Category 1b annual species	Less than 2% of the property
Category 2 species	Permit application will be submitted for these species occurring on the property. This will allow the landowner to be in possession of the existing trees while alien clearing is being undertaken over the course of 14 years. Species subjected to the permit: - Black Wattle - Blackwood - Gum

To achieve this objective, the developer and HOA (responsibility for clearing indicated on rehabilitation plan) should have a budget secured and available to implement alien clearing on the property over a course of 14 years. Clearing activities should be undertaken in accordance with this ACP and timeframes set out for each management unit.

OBJECTIVE 2: PREVENTATIVE ACTION

The aim of this objective is to put measures in place to prevent the introduction of any new NEMBA listed alien invasive species onto the property, and from spreading from the property to neighbouring properties. As such, the following actions must be implemented by the landowner:

- **No** listed invasive and alien plant species shall be **planted**/introduced on the property (this includes in the development area);
- All invasive and alien plants MUST be monitored;
- Effective rehabilitation should take place in disturbed areas and prevent any unnecessary disturbances;
- Areas bordering onto neighbouring land will be prioritised for control to prevent existing invasive plants from spreading beyond the boundaries of these property and to prevent alien species on neighbouring land from re-infesting the site; &
- DFFE assistance will be required to pressure adjacent landowners to control their alien species;
- These prevention measures are known to the owner / developer and will be communicated to the respective buyers, manager / HOA of the estate.

OBJECTIVE 3: EARLY DETECTION AND RAPID RESPONSE (EDRR) AND ERADICATION

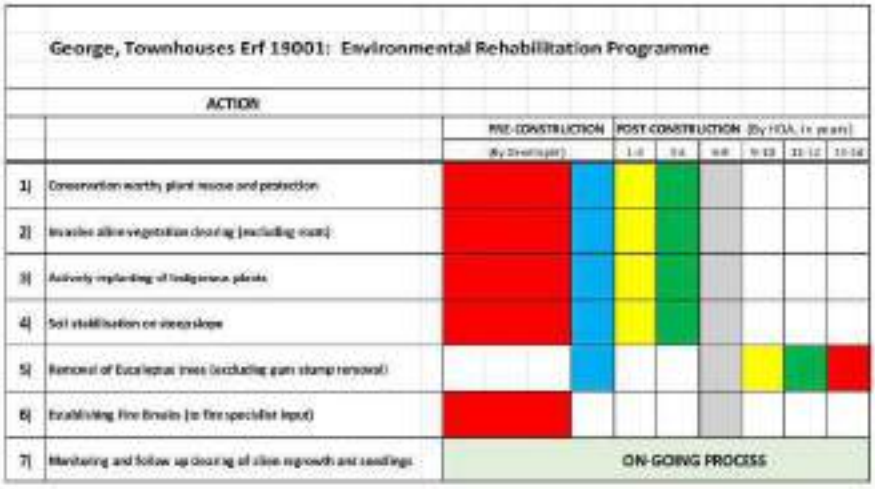
The aim of this objective is to put measures in place whereby new and secondary invasive species are detected early and removed before establishing sustainable populations and start spreading (Early Detection and Rapid Response).

EARLY DETECTION AND RAPID RESPONSE AND ERADICATION ACTIONS

- Regularly survey the property to detect any new or emerging listed invasive plant species;
- Learn more about the SANBI programmes and register as a spotter where applicable;
- Report category 1a species immediately to the Department of Environmental Affairs/Provincial Conservation Agency/Local Municipality/South African National Biodiversity Institute (SANBI) EDRR programme and ask for assistance with the control of the species;
- Do not allow emerging or new species to produce seeds or off-spring, or start growing vegetative, act immediately by removing them;
- Update the species list by including these species and indicate where on the property they were located; &
- Ensure bio-controls are in place where available to assist in the control efforts
- Increase surveillance in the areas after the species were controlled to quickly remove re-sprouting plants or seedlings.

TARGETS AND TIMELINE

Timeline as indicated in the rehabilitation plan:



REHABILITATION PROGRAMME

The property can also be guided by SMART goals (Specific, Measurable, Assignable, Realistic and Time-bound), which is summarised in the table below.

SMART goals for the control of listed invasive species in the management unit compartment

Group	Species	Specific goal	Measurable goal	Assignable goal	Realistic goal	Time-bound goal
Plants	All alien invasive species on the property	Reduce total area infested	Area completely cleared	Work will be done by the gardener	Budget secured to ensure that all invading species can be cleared on the property by 2037	Infestation down by 70% within a year (2032), 100% by 2037.

RESPONSIBILITIES AND REQUIREMENTS

The density of alien invasive plants that will be removed will depend on the work speed and effectiveness of the employee assigned to this project. It is anticipated that a contractor will be appointed to undertake the initial harvesting and clearing and thereafter it will be managed by the developer and then the HOA.

All clearing must be done in accordance with the approved methodology as indicated in this report and Annexure A. It is the responsibility of the developer or HOA (as the case may be) to ensure that the employees implement the correct methodology and that a record is kept on the progress of the alien clearing and use of herbicides.

MONITORING AND EVALUATION

It is of utmost importance that control efforts are monitored, a summary of the monitoring framework can be seen in the table below. It is important to note that other alien species and more weedy elements like castor oil, thorn apple, spear thistle etc. may become evident over time in the disturbed areas and will need to be controlled by hand puling. The continual evaluation will aid in identifying such species and adding them to the control plan.

Monitoring framework

WHAT	FREQUENCY	HOW	RESPONSE
How effective are the control methods?	4-6 months after every operation	Survey and look for re-growth in areas	Continue with suggested methodology and adapt as necessary
Do the infestation levels decrease?	Annually	Survey area, including records of densities and species. Photographic evidence should be taken	Continue with clearance and adapt intervals as needed
How much herbicides were used?	After every operation	Herbicide records should be kept, see Annexure A, Table in sections above	Keep track of the costs and ensure that the right amounts are being use to minimize waste
Does the indigenous vegetation recover in the cleared areas?	Annually	Survey area for indigenous vegetation, keeping track of the variety of species. Photographic evidence can be useful	An increase in indigenous vegetation (high recovery) - control methods are affective. If not - look at clearing methods, clearing intervals or consult an expert
How many jobs were created?	After every operation	Timesheets	Keep it on records
How many person days (PD) were spent per operations	After every operation	Timesheets	Keep track of cost and assist with planning and budgeting. Determine cost per person-day (PD)

REFERENCES

Invasive species of South Africa. 2018. *Invasive species of South Africa.* [ONLINE] Available at: http://www.invasives.org.za/ [Accessed 26 August 2019]

WFW. 2018. WFW Species Herbicide list v2.9. [ONLINE] Available at: http://www.dwaf.gov.za/wfw/Control/ [Accessed 27 August 2019]

DEADP. 2018. Guidelines for monitoring, control and eradication plans as required by Section 76 of the National Environmental Management: Biodiversity Act, 2004 (Act Ao. 10 of 2004) (NEMBA) for species listed as invasive in terms of Section 70 of this Act.

ANNEXURES

ANNEXURE A: CONTROL METHODS

The following Annexure deals with the initial clearance activities along with the proposed methodology. It assumes the following:

- That the recommended methodology that is proposed below are followed.
- That the funding allows for short- and long-term commencement of the tasks.
- No thorough provisions have been made for natural occurrences for instance wildfires, floods and droughts.
- That person(s) undertaking the task of clearance and control are suitably trained and experienced.

Depending on species, age/size of the plant and growth form, the following methods can be used for the initial clearance of the alien invasive plants:

Hand pulling

This method is the removal on alien invasive plants by hand; it is important to ensure that the roots are also removed. This method can be applied to areas that are sparsely invaded and seedlings present within each unit.

Foliar spraying

This method is the usage of spray equipment, such as a knapsack sprayer, to spray alien invasive plants one meter in height or that is still at a young age. The foliage/leaves of the plants should be sprayed by the herbicide-water mixture up until it starts to run off. This method is most effective early mornings on a wind-still day. It is important that the correct protective equipment (PPE) (refer to Annexure C) should be worn at all times and the proper methodology should be followed. For the use of the correct herbicides, refer to the below table.

Herbicide application to foliage of alien invasive plants (conservation contracts northwest, 2018)

The following Table should be completed to maintain usage record.

Herbicide control sheet to be filled in by the landowner

Herbicide Control Sheet							
Manageable Unit:						**Hectares:**	
Date	**Herbicide (name)**	**Herbicide (name)**	**Herbicide (name)**	**Herbicide (name)**	**Herbicide (name)**	**Actipron**	**Dye**

Mechanical control methods

Felling

Trees with a stem diameter of more than 200 mm can be felled with a chainsaw, the remaining stump should be treated with an herbicide application immediately after cutting. All felled tree stumps should be cut into manageable log sizes and be transported manually out of the area (store as firewood). Large stumps can be kept within the units for erosion control and natural decay.

Manual control methods

Trees with a stem diameter of less than 200 mm can be cut down with a chainsaw / bow saw / skill saw, whereas stems with a diameter of less than 100 mm can be cut down with a lopper or can be pulled out using a tree popper. These trees must be cut as low as possible to the ground, as low as 10 cm or lower.

Herbicide cut stump treatment

A two-litre spray marker can be used for small trees and knapsacks for larger trees. The herbicides should be applied to the stumps immediately after felling/cutting (see below figure).

Herbicide application to stump directly after felling / cutting (DEADP, 2018)

Frilling

This method uses a bush knife/axe to make angled cuts downwards into the trees' cambium layer (see below figure for an example of a frilled tree). Cuts should be made around the entire

stem. Herbicide is applied to the cutline with a marker dye to show where herbicide has been applied.

Frilled tree (DEADP, 2018)

Ring barking

For this method the bark of the tree is stripped from the bottom (below ground level) to a height of 0.75 - 1 m, by using bush knives or hatchets. If this method is not possible, due to exposed root systems or crevices in the stem, a combination of bark removal and stem treatments should be followed. Herbicide application should follow where the species is known to coppice.

Ring barking of tree (Invasive Species of South Africa, 2018)

Follow up clearing

The preferred method for follow up clearances is **hand-pulling** and **foliar spray**. Follow-up clearance should occur at different times/stages as stipulated in the plan. Large trees that are considered too big for hand-pulling, tree popping or foliar spray, can be cut down, slashed or ring barked – ring barking of larger trees is preferred in ofrested areas to reduce the damage caused by trying to remove the trees and in areas where they are left to increase the perching sites for raptors.

Potential herbicides that can be utilised on surveyed alien invasive species

Species name	Common name	Growth form	Method for clearing to implement	Herbicide to be applied	Common name of herbicide to be applied
Acacia mearnsii	Black wattle	Seedling	Hand pull	No herbicide needed	
		Seedling	Foliar spray	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
				Fluroxypyr 200 g/L EC	Tomahawk, Voloxypyr, Starane
				Glyphosate (as ammonium salt) 680 g/kg WG	Roundup max
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360, Mamba, Springbok, Ciplasate, Enviroglyphosate
				Glyphosate (as potassium salt) 450g/L SL	Roundup turbo
				Glyphosate (as isopropylamine salt) 480 g/L SL	Mamba max, Seismic
				Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
				Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
				Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super
				Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon, Viroaxe
				Triclopyr (as butoxy ethyl ester) 240 g/L + Aminopyralid 30 g/L	Garlon max
				Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
		Young	Lopping / Pruning	Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
				Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super
		Adult	Bark strip	No herbicide needed	
			Cut stump / Frill	Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
				Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super

				Cylindrobasidium laeve	Stumpout
			Frill	Picloram (as potassium salt) 240g/L SL	Access, Browser
			Basal stem	Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon, Viroaxe
Eucalyptus	Gum	Seedling	Hand pull	No herbicide needed	
		Seedling	Foliar spray	Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Metsulfuron methyl 500g/kg WP	Nikanor
				Metsulfuron methyl 600g/kg WP	Brushoff
				Picloram (as potassium salt) 240g/L SL	Access
				Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
				Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon
		Young	Lopping / Pruning	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
				Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Glyphosate (as ammonium salt) 680 g/kg WG	Roundup Max
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
				Glyphosate (as potassium salt) 450g/L SL	Roundup turbo
				Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
				Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Metsulfuron methyl 500g/kg WP	Nikanor
				Metsulfuron methyl 600g/kg WP	Climax, Brushoff
				Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
		Adult	Cut stump / Frill	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
				Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Glyphosate (as ammonium salt) 680 g/kg WG	Roundup Max

				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
				Glyphosate (as potassium salt) 450g/L SL	Roundup turbo
				Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
				Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Metsulfuron methyl 500g/kg WP	Nikanor
				Metsulfuron methyl 600g/kg WP	Climax, Brushoff
				Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
			Cut Stump	Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon
			Frill	Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack
Cirsium vulgare	Spear thistle	Young	Foliar spray	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
				Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Picloram (as potassium salt) 240g/L SL	Access, Browser
Datura stramonium	Thorn apple	Young	Foliar spray	2.4D (as dimethylamine salt) 480g/L SL	2.4-D amine
				Chlorimuron ethyl (as sulfonyl urea) 500g/kg WP	Extreme, Nikanor
				Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo, Muscle up
				Glyphosate (as isopropylamine salt) 180 g/l SL	Glyphosate 180
		Adult	Soil application	Tebuthiuron 250g/L + Bromacil 250g/L SC	Bundu
Eucalyptus grandis	Gum	Seedling	Hand pull	No herbicide needed	
		Seedling	Foliar spray	Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Metsulfuron methyl 500g/kg WP	Nikanor
				Metsulfuron methyl 600g/kg WP	Brushoff
				Picloram (as potassium salt) 240g/L SL	Access
				Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
				Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon

		Young	Lopping / Pruning	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
				Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Glyphosate (as ammonium salt) 680 g/kg WG	Roundup Max
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
				Glyphosate (as potassium salt) 450g/L SL	Roundup turbo
				Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
				Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Metsulfuron methyl 500g/kg WP	Nikanor
				Metsulfuron methyl 600g/kg WP	Climax, Brushoff
				Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
		Adult	Cut stump / Frill	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
				Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Glyphosate (as ammonium salt) 680 g/kg WG	Roundup Max
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
				Glyphosate (as potassium salt) 450g/L SL	Roundup turbo
				Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
				Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Metsulfuron methyl 500g/kg WP	Nikanor
				Metsulfuron methyl 600g/kg WP	Climax, Brushoff
				Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
			Cut Stump + diesel	Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon

			Frill	Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack
Hedychium coronarium	White ginger lily	Adult	Cut & Spray	Imazapyr 100 g/L SL	Chopper, Hatchet
Lantana camara	Lantana	Young	Foliar spray	Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Glyphosate (as ammonium salt) 680 g/kg WG	Roundup max
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
				Glyphosate (as potassium salt) 450g/L SL	Roundup turbo
				Glyphosate (as isopropylamine salt) 480 g/L SL	Seismic
				Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
				Glyphosate (as sodium salt) 500g/kg WG	Kilo
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Picloram (as potassium salt) 240g/L SL	Access, Browser
		Adult	Cut & Spray	Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Picloram (as potassium salt) 240g/L SL	Access, Browser
Solanum mauritianum	Bugweed	Young	Hand pull	No herbicide needed	
			Foliar spray	Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360, Springbok
				Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
				Fluroxypyr 200 g/L EC	Tomahawk, Voloxypyr, Starane
				Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
				Glyphosate (as ammonium salt) 680 g/kg WG	Roundup max
				Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360, Springbok
				Glyphosate (as potassium salt) 450g/L SL	Roundup turbo
				Glyphosate (as isopropylamine salt) 480 g/L SL	Seismic
				Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
				Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
				Glyphosate (as sodium salt) 700g/kg WG	Kilo Max
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger

				Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon
				Triclopyr (as butoxy ethyl ester) 240 g/L + Aminopyralid 30 g/L	Garlon max
		Adult	Cut & Spray	Glyphosate (as ammonium salt) 680 g/kg WG	Roundup max
				Picloram (as potassium salt) 54g/kg + Triclopyr (as triethylamine) 36g/kg	Kaput 100 Gel
				Glyphosate (as isopropylamine salt) 480 g/L SL	Seismic
				Imazapyr 100 g/L SL	Chopper, Hatchet
				Picloram (as potassium salt) 240g/L SL	Access, Browser
				Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
				Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
			Basal stem + diesel	Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon
				Fluroxypyr 200 g/L EC	Tomahawk, Voloxypyr, Starane
Cestrum laevigatum	Ink berry	Seedling	Hand pull	No herbicide needed	
		Adult	Cut & Spray	Imazapyr 100 g/L SL	Chopper, Hatchet
			Cut & Spray + Diesel	Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon, Viroaxe
			Basal stem + diesel	Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon, Viroaxe
Pinus species	Pine species	All	Hand pull, removal with tree popper NO HERBICIDE necessary		

ANNEXURE B: FIRE PREVENTION AND PREPAREDNESS (ADAPTED FROM INVASIVE SPECIES CONTROL PLAN GUIDELINES FOR PRIVATE LAND BY L. STAFFORD & DR. M. GEARTNER)

Implement measures to prevent the starting of wildfires, including spreading to neighbouring land and to be ready and able to combat fires on the farm should they occur.

Should landowners fail to adhere to the provisions of the **National Veld and Forest Fire Act, 1998 (Act 101 of 1998), (NVFFA)** e.g. preparing of a fire break, notifying about their intention to conduct a burn on their land, or meeting the standards, penalties are involved (NVFA, Sec 19).

In addition, NVFA Sec 19 (5) states that any owner, occupier of person in control of land on which a fire occurs who fails to take reasonable steps to extinguish the fire, or to confine it to that land, or to prevent it from causing damage to property on adjoining land, is guilty of an offence. Bringing alien plant infestations under control is an important step towards preventing fires from spreading to neighbouring land as these fires burn up to 10 times hotter than fynbos fires. Fires in alien invested land are very difficult to control, especially under windy and very hot conditions.

Prepare and maintain a fire break around the property, ensure

- it is wide enough and long enough to have a reasonable chance of preventing a veldfire from spreading to or from neighbouring land;
- it does not cause soil erosion; and
- it is reasonably free of inflammable material capable of carrying a veldfire across it
- Join the Fire Protection Association (FPA)
- Be ready to fight fires by acquiring equipment and having available personnel to fight fires
- In an emergency certain persons and officials will be given permission to enter land and fight fires
- Notify the FPA and neighbouring landowners about fires and take the necessary steps to stop the spread of fires should they occur (for more information see section 18 of The National Veld and Forest Act, 1998 (Act 101 of 1998)

ANNEXURE C: SAFETY, HEALTH AND ENVIRONMENT (SHE) (ADAPTED FROM INVASIVE SPECIES CONTROL PLAN GUIDELINES FOR PRIVATE LAND BY L. STAFFORD & DR. M. GEARTNER)

It is the landowner's responsibility to ensure a safe working environment and that the teams working on the property adhere to the minimum safety requirements. This can be achieved by sourcing appropriately trained and experienced teams. The principle of "leave no trace" applies.

The landowner should liaise with the contractor to ensure the following minimum SHE requirements are adhered to:

Toilet facilities

- The contractor is responsible for providing a mobile toilet on site for the duration of the work (it is not in all cases possible to provide a mobile toilet, where the field conditions are not suitable for a mobile toilet, human waste should be buried by digging a hole of at least 20 cm deep)
- Clean water must be made available in suitable containers for drinking and mixing herbicides

Team's skills requirements

- Chainsaw operators in possession of valid certificates
- Herbicide applicators certified

Work methods and equipment

- Equipment must be suitable for the work and in good working condition
- Adhere to work methods stipulated in the site specification

Vehicle and driver

- The driver must be in possession of a valid PrDP
- The vehicle must be roadworthy
- Tools must be transported in the trailer, separately from the workers

Safety precautions

- Certified SHE Rep on site
- Certified Safety Office on site
- The SHE Rep must conduct daily safety talks
- The first aid kit must be on site

COID

- The contractor must be in possession and present proof of a valid certificate of good standing with the Compensation Commissioner
- Any incidents must be reported to the landowner
- An indemnity form must be signed stating that the contractors excepts full liability for any COID related matters and that the landowner will not be held liable should the contractor not comply with minimum standards
- The contractor deals with COID cases and not the landowner
- Near misses, incidents and accident register must be kept

Insurance

- The contractor must be appropriately insured for the vehicle and equipment
- The contractor must provide proof of third party and liability insurance
- Sign an agreement whereby the contractor accepts liability for damages in case of negligence

Storage of fuel and herbicides

- Fuel and herbicides must be left in a shady area, away from the resting/eating area
- The area must be clearly marked with bunting
- The bunting must be removed on completion of the job
- Herbicide mixing and refuelling must be conducted on a spill blanket
- A spade must be on site to cover any accidental spillage
- A serviced and functional fire extinguisher must be kept at the fuel refilling area

Preventing fires

- No smoking while working, assign a designated smoking area
- Remove cigarette butts
- No smoking during windy conditions
- Keep 1 fire beater for every team member within reach of the workers
- No chainsaw work during Code Red days - Fire Danger Indices (FDIs) obtainable from FPA

Correct PPE that should be worn

Item	Supervisor	Machine operator	General workers SHE Rep; 1st Aid Rep; Driver	Specialized herbicide applicator
Sunhat (follow up operations)	✓	✓	✓	✓
Hard hat (when chainsaws are being used)	✓	✓	✓	✓
Hard hat with visor and certified earmuffs (SABS or EU),	x	✓	x	x
T-shirt	✓	✓	✓	✓
Conti suit	✓	✓	✓	✓
FESA approved chainsaw pants (eleven layers) with broad belt or braces	x	✓	x	x
Whistle	✓	✓	x	x
Safety boots	✓	✓	✓	✓
Gumboots (only when working in riverine/wetland areas)	✓	✓	✓	✓
Chainsaw safety boots	x	✓	x	x
Gloves	✓	✓	✓	✓
Chainsaw operators gloves	x	✓	x	x
Safety goggles	✓	✓	✓	✓
Cape (when using a knapsack)	x	x	x	✓
Mask (when applying herbicides)	x	x	x	✓
Rubber gloves (for mixing herbicides)	x	x	x	✓
Rubber apron (for mixing herbicides)	x	x	x	✓
Rain suit (during rainy conditions)	✓	✓	✓	✓

It is recommended that the requirements are stipulated in the work specifications and the contractor accept accountability in writing.

REPUBLIC OF SOUTH AFRICA

Department of Forestry, Fisheries & the Environment

Issuing Authority: Department of Forestry, Fisheries & the Environment · Directorate: Biodiversity Risk Management · Private Bag X 4390 · Cape Town 8000 · 14 Loop Street · Cape Town 8001 · Tel: 021 441 2746 · Email: AISpermits@dffe.gov.za

THIS PERMIT IS ISSUED IN TERMS OF CHAPTER 7 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT 10 OF 2004) (AS AMENDED) READ TOGETHER WITH THE ALIEN INVASIVE SPECIES REGULATIONS, 2020 (AS AMENDED)

PERMIT FOR RESTRICTED ACTIVITIES OF ALIEN SPECIES OR LISTED INVASIVE SPECIES

Permit Holder Details:

Name: Cedardale Investments (Pty) Ltd

Address: 4 Uddle street, Cape Town, 8001, Western Cape Province

I.D/ Company Registration number: 2012/092329/07

Permit number : 50696231003091957

Date issued: 13/10/2023

Expiry date: 12/10/2028

Amount Paid: R100.00

Exporter/Supplier/Seller/Trader details:

Name: N/A

Address: N/A

Premises where restricted activity will be carried out:

Physical Address: ERF 19001, George,6530 , Western Cape Province

Permission is hereby granted to the Permit Holder for the following: Possession under the attached permit conditions.

Species details

Scientific Name	Common Name	Quantity	Note
Eucalyptus grandis	Saligna Gum	+/- 4 ha	Plant Species

Permit issued by: Khathutshelo Nekhakho

Signature: .....

Place: Cape Town

Official stamp

DEPARTMENT OF FORESTRY, FISHERIES & THE ENVIRONMENT
REPUBLIC OF SOUTH AFRICA
DIRECTORATE: BIODIVERSITY RISK MANAGEMENT (COMPETENT AUTHORITY)
13 OCT 2023
PRIVATE BAG X4390 CAPE TOWN, 8000
ALIEN AND INVASIVE SPECIES PERMIT

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Issuing Authority · Department of Forestry, Fisheries & the Environment · Directorate: Biodiversity Risk Management · Private Bag X 4390 · Cape Town 8000 · 14 Loop Street · Cape Town 8001 · Tel · 021 441 2748 · Email: AISpermits@dffe.gov.za

1. **PERMIT CONDITIONS FOR *EUCALYPTUS GRANDIS* (SALIGNA GUM, ROSE GUM) ISSUED IN TERMS OF THE ALIEN INVASIVE SPECIES REGULATIONS, 2020 PUBLISHED IN GOVERNMENT GAZETTE 43735, DATED 25 SEPTEMBER 2020 (AS AMENDED) ("*THE REGULATIONS*"), ISSUED IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT NO.10 OF 2004) ("*NEMBA*")**

1.1. This Permit shall not absolve the Permit Holder from complying with any obligations that he/she may have in terms of any other law.

1.2. The Permit Holder is referred to Regulations 20-31 of the Regulations, the provisions of which are applicable to this Permit, irrespective of whether they are specifically set out herein or not.

1.3. This Permit is not transferable and relates only to the person to whom it is issued.

1.4 This Permit is valid only in its original form as issued by the Issuing Authority and any unauthorised alteration thereof and/or tampering therewith shall render it invalid unless subjected to condition 1.14 below.

1.5. This Permit is valid only for the period specified in the permit unless it is cancelled, revoked or amended by the Issuing Authority.

1.6. This Permit shall automatically lapse if the species to which it relates is subsequently listed as a prohibited invasive alien species in terms of Section 67(1) of NEMBA.

1.7. The Permit Holder must prevent the spread of the permitted species and must control any specimen that spreads

1.8. The Permit Holder must at all times have this Permit and permit conditions in his/her possession while performing any restricted activity.

1.9. The Permit Holder will be subject to the provisions of Chapter 7 of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA) in respect of the mandate and powers of Environmental Management Inspectors.

DEPARTMENT OF FORESTRY, FISHERIES & THE ENVIRONMENT
REPUBLIC OF SOUTH AFRICA
DIRECTORATE: BIODIVERSITY RISK MANAGEMENT (ISSUING AUTHORITY)
13 OCT 2023
PRIVATE BAG X4390 CAPE TOWN, 8000
ALIEN AND INVASIVE SPECIES: PERMIT

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Issuing Authority - Department of Forestry, Fisheries & the Environment Directorate Biodiversity Risk Management - Private Bag X 4390 Cape Town 8000 14 Loop Street - Cape Town 8001 Tel 021 441 2748 Email. AISpermits@dffe.gov.za

1.10. The permit and permit conditions must be made available upon request by any authorised official designated by the Minister of Forestry, Fisheries and the Environment.

1.11. The Permit Holder must allow the Issuing Authority or any other authorised official(s) unrestricted access to monitor compliance with permit conditions and for any inspection.

1.12. Any incidents related to the permitted activities that are actual or potential threats to the environment and/or the breach of any condition of this permit must be reported in writing to the relevant Authority or his/her designated representative within 24 hours of the incident.

1.13. The Issuing Authority may amend these permit conditions after consultation with the Permit Holder.

1.14. The Issuing Authority may suspend or cancel the permit or permit conditions after allowing the Permit Holder an opportunity to make written representations.

1.15. The specimens must be used solely for the purpose stated in the permit and must not be used for any other purpose.

1.16. The Permit Holder must immediately notify the Issuing Authority in writing before any change of address, premises and/or legal status takes place.

1.17. A permit that has been cancelled in terms of Section 93 of NEMBA must be returned to the Issuing Authority within 30 (thirty) calendar days of the date of cancellation.

1.18. The Permit Holder hereby agrees to indemnify and hold harmless the Department of Forestry, Fisheries and the Environment ("the Department"), including its authorised representatives for any loss and/or damage, which may be incurred or suffered by the Permit Holder as a result of the Department and any of its authorised officials, reasonably and lawfully carrying out any of its responsibilities and/or duties and/or functions under any relevant legislation, agreement and this permit.

DEPARTMENT OF FORESTRY FISHERIES & THE ENVIRONMENT
REPUBLIC OF SOUTH AFRICA
DIRECTORATE: BIODIVERSITY RISK MANAGEMENT
13 OCT 2023
PRIVATE BAG X4390 CAPE TOWN, 8000
ALIEN AND INVASIVE SPECIES: PERMIT

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Issuing Authority: Department of Forestry, Fisheries & the Environment · Directorate: Biodiversity Risk Management · Private Bag X 4390 · Cape Town 8000 · 14 Loop Street Cape Town 8001 Tel: 027 441 2748 · Email: AISPermits@dffe.gov.za

1.19. Permits will be revoked if specimens are not being held or used as specified in the permit conditions.

1.20. The Permit Holder may apply for the renewal of a permit 60 (sixty) days before the expiry of the period for which the permit was issued.

2. CONDITIONS FOR HAVING IN POSSESSION OR EXERCISING PHYSICAL CONTROL OVER *EUCALYPTUS GRANDIS* (SALIGNA GUM, ROSE GUM)

2.1. This Permit is only valid for the species and location indicated on the permit.

2.2. The Permit Holder must not breed or multiply the permitted species.

2.3. The Permit Holder must ensure that the plants do not spread to the surrounding environment or outside the permitted area.

2.4. The Permit Holder will be held responsible for any costs that are incurred by the relevant authority in an effort to control specimens that spread from his/her facility

2.5. The specimens must not be transported as live specimens without a transport permit from the Department's Directorate Biodiversity Risk Management: Issuing Authority.

2.6. The specimens which spread from the facility must be immediately reported to the Department via e-mail on AISPermits@dffe.gov.za.

DEPARTMENT OF FORESTRY, FISHERIES & THE ENVIRONMENT
REPUBLIC OF SOUTH AFRICA
DIRECTORATE BIODIVERSITY RISK MANAGEMENT: ISSUING AUTHORITY
13 OCT 2023
PRIVATE BAG X4390 CAPE TOWN, 8000
ALIEN AND INVASIVE SPECIES PERMIT

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Issuing Authority: Department of Forestry, Fisheries & the Environment · Directorate: Biodiversity Risk Management · Private Bag X 4390 · Cape Town 8000 · 14 Loop Street Cape Town 8001 Tel: 021 441 2748 · Email: AISpermits@dffe.gov.za

3. VALIDITY OF PERMIT AND RIGHT TO APPEAL

3.1. This Permit shall automatically expire on the date as indicated on the Permit. The Permit shall be invalid should the permit allocated be suspended or cancelled in terms of NEMBA.

3.2. Within 20 (twenty) days after receiving the notification of cancellation, amendment or suspension., the Permit Holder may lodge an appeal against the decision to cancel, suspend, or amend this Permit in terms of section 43 (1) of the NEMA appeal. Late appeals may not be considered.

3.3. The appeal must be addressed to the Minister of Forestry, Fisheries and the Environment, clearly marked "**APPEAL**" for the attention of Adv. Mokete Rakgogo, and hand delivered or couriered to Environment House, 473 Steve Biko Road, Arcadia, Pretoria, 0083 or emailed to MRakgogo@dffe.gov.za or Appeals@dffe.gov.za before the closing date. The appeal shall set out all the relevant facts as well as the grounds of appeal and shall be accompanied by any relevant document(s).

DEPARTMENT OF FORESTRY, FISHERIES & THE ENVIRONMENT
REPUBLIC OF SOUTH AFRICA
DIRECTORATE: BIODIVERSITY RISK MANAGEMENT AUTHORITY
13 OCT 2023
PRIVATE BAG X4390 CAPE TOWN 8000
ALIEN AND INVASIVE SPECIES: PERMIT

ANNEXURE M
Environmental Authorisation (EA)
and addendum to EA

Western Cape Government

Department of Environmental Affairs and Development Planning
Zaahir Toefy
Directorate: Development Management
Zaahir.Toefy@westerncape.gov.za | 021 483 2700
DEADPEIAAdmin.George@westerncape.gov.za | 044 814 2006

EIA REFERENCE NUMBER: 16/3/3/1/D2/26/0023/22
NEAS REFERENCE: WCP/EIA/0001158/2022
DATE OF ISSUE: 13 June 2023

THE DIRECTOR
CEDERDALE INVESTMENTS (PTY) LTD.
4 Liddle Street
CAPE TOWN
8001

Attention: Mr. A. J. Katz

Cell: 082 773 4567
E-mail: amjkatz@gmail.com

Dear Sir,

NOTICE OF DECISION: APPLICATION FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014: PROPOSED DEVELOPMENT OF A RESIDENTIAL ESTATE ON ERF 19001, HEATHER PARK, GEORGE

1. With reference to the aforementioned application, the Department hereby notifies you of its decision to **grant Environmental Authorisation in respect of the Preferred Alternative applied for**, attached herewith together with the reasons for the decision.

2. In terms of Regulation 4 of the Environmental Impact Assessment Regulations, 2014, you are instructed to ensure, within 14 days of the date of the Environmental Authorisation, that all registered interested and affected parties ("I&APs") are provided with access to and reasons for the decision, and that all registered I&APs are notified of their right to appeal.

3. Your attention is drawn to Chapter 2 of the Appeal Regulations, 2014, which prescribes the appeal procedure to be followed. This procedure is summarized in the attached Environmental Authorisation.

Yours faithfully

Zaahir Toefy

Digitally signed by Zaahir Toefy
Date: 2023.06.13 12:58:47 +02'00'

DIRECTOR: DEVELOPMENT MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING

Copied to: EAP: HilLand Environmental E-mail: environmental2@hilland.co.za | cathy@hilland.co.za

Western Cape Government

Department of Environmental Affairs and Development Planning
Zaahir Toefy
Directorate: Development Management
Zaahir.Toefy@westerncape.gov.za | 021 483 2700
DEADPEIAAdmin.George@westerncape.gov.za | 044 814 2006

EIA REFERENCE NUMBER: 16/3/3/1/D2/26/0023/22
NEAS REFERENCE: WCP/EIA/0001158/2022
DATE OF ISSUE: 13 June 2023

ENVIRONMENTAL AUTHORISATION

APPLICATION FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014: PROPOSED DEVELOPMENT OF A RESIDENTIAL ESTATE ON ERF 19001, HEATHER PARK, GEORGE

With reference to your application for the abovementioned, find below the outcome with respect to this application.

DECISION

By virtue of the powers conferred on it by the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") and the Environmental Impact Assessment ("EIA") Regulations, 2014, the Competent Authority herewith **grants Environmental Authorisation** to the applicant to undertake the listed activities specified in section B below with respect to ***the Preferred Alternative***, described in the Final Basic Assessment Report ("FBAR"), dated 9 March 2023 as prepared and submitted by *HilLand Environmental,* the appointed environmental assessment practitioner ("EAP").

The applicant for this Environmental Authorisation is required to comply with the conditions set out in section E below.

A. DETAILS OF THE APPLICANT FOR THIS ENVIRONMENTAL AUTHORISATION

THE DIRECTOR
CEDERDALE INVESTMENTS (PTY) LTD.
% Mr. A. J. Katz
4 Liddle Street
CAPE TOWN
8001

Mobile: 082 773 4567
E-mail: amjkatz@gmail.com

The abovementioned applicant is the holder of this Environmental Authorisation (hereinafter referred to as "**the Holder**").

B. LIST OF ACTIVITIES AUTHORISED

Listed Activities	Activity/Project Description
Environmental Impact Assessment Regulations Listing Notice 1 of 2014, Government Notice No. 983 of 4 December 2014, as amended.	
Activity Number: 27 *Activity Description:* *The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—* *(aa) the undertaking of a linear activity; or* *(bb) maintenance purposes undertaken in accordance with a maintenance management plan.*	The clearance of more than 1 ha of indigenous vegetation for the development of a residential estate.
Activity Number: 28 *Activity Description:* *Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:* *(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.*	The development of a residential estate on land that was used for agriculture of more than 5ha.
Environmental Impact Assessment Regulations Listing Notice 3 of 2014, Government Notice No. 985 of 4 December 2014, as amended.	
Activity Number: 12 *Activity Description:* *The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan* ***i. Western Cape*** *i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;* *ii. Within critical biodiversity areas identified in bioregional plans;* *iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas;* *iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or* *v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.*	The clearance of more than 300m^2 of Endangered Garden Route Shale Fynbos for the residential development and associated infrastructure.

The abovementioned list is hereinafter referred to as "**the listed activity**".

The Holder is herein authorised to undertake the following activities that includes the listed activities as it relates to the transformation of land previously used for agriculture and the clearance of indigenous vegetation for the construction of the residential development and associated structures and infrastructure.

The specific details of the proposed development on the property comprises of the following:

- 84 Housing units (5 different types-);
- 3 apartment blocks with 95 flats/apartment units;
- Internal roads and driveways;
- Parking areas;
- Internal open space areas;
- Communal recreational, Club house and Guard house facilities;
- Associated civil services and electrical connections.

The development must be implemented in accordance with the layout developed by Robert Silke and Partners (dated 24 February 2023) Drawing number 202203 SKE 200 Rev 16 (Annexure 2).

C. SITE DESCRIPTION AND LOCATION

The property, erf 19001 is located directly adjacent to the Malgas River and behind the existing housing estate, Homewood in George. The property is within the urban edge of the George Municipal area.

Coordinates of the site:

Position:	**Latitude (South)**	**Longitude (East)**
Middle Point	33° 56' 58.43"	22° 25' 32.89"

SG digit code of Erf 19001: C02700020001900100000

Refer to Annexure 1: Locality Plan of this Environmental Authorisation; and Annexure 2 for the Site Development Plan ("SDP").

The above is hereinafter referred to as "**the site**".

D. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Mrs Cathy Avierinos
EAPASA Registration number: 2019/1053
% HILLAND ENVIRONMENTAL
P.O. Box 590
GEORGE
6530

Tel: 044 889 0229
E-mail: environmental2@hilland.co.za | cathy@hilland.co.za
Website: www.hilland.co.za

E. CONDITIONS OF AUTHORISATION

Scope and Validity Period of authorisation

1. This Environmental Authorisation is granted for the period from date of issue until **30 June 2028** (validity period), during which period the Holder must ensure that the—
   (a) physical implementation of all the authorised listed activities is started with and concluded at the site;
   (b) construction monitoring and reporting requirements are undertaken at the site and submitted to the Competent Authority in time to allow said authority to process such documents timeously;
   (c) post construction rehabilitation and monitoring requirements is undertaken and completed at the site; and
   (d) environmental auditing requirements are complied with; and that such auditing is finalised in time to allow the competent authority to be able to process the environmental audits timeously within the specified validity period.

2. The construction phase of the Environmental Authorisation is subject to the following:
   2.1 The Holder must finalise the post construction rehabilitation and monitoring requirements within a period of 3-months from the date the development activity (construction phase) is concluded.

3. The Holder is authorised to undertake the listed activities specified in Section B above in accordance with the Preferred Alternative described in the FBAR dated 9 March 2023 on the site as described in Section C above.

   This Environmental Authorisation is only for the implementation of the Preferred Alternative which entails:

   The Holder is herein authorised to undertake the following activities that includes the listed activities as it relates to the transformation of land previously used for agriculture and the clearance of indigenous vegetation for the construction of the residential development and associated structures and infrastructure.

The specific details of the proposed development on the property comprises of the following:

- 84 Housing units (5 different types-);
- 3 apartment blocks with 95 flats/apartment units;
- Internal roads and driveways;
- Parking areas;
- Internal open space areas;
- Communal recreational, Club house and Guard house facilities;
- Associated civil services and electrical connections.

The development must be implemented in accordance with the layout developed by Robert Silke and Partners (dated 24 February 2023) Drawing number 202203 SKE 200 Rev 16 (Annexure 2).

4. This Environmental Authorisation may only be implemented in accordance with an approved Environmental Management Programme ("EMPr").

5. The Holder shall be responsible for ensuring compliance with the conditions by any person acting on his/her behalf, including an agent, sub-contractor, employee or any person rendering a service to the Holder.

6. Any changes to, or deviations from the scope of the alternative described in section B above must be accepted or approved, in writing, by the Competent Authority before such changes or deviations may be implemented. In assessing whether to grant such acceptance/approval or not, the Competent Authority may request information in order to evaluate the significance and impacts of such changes or deviations, and it may be necessary for the Holder to apply for further authorisation in terms of the applicable legislation.

Notification and administration of appeal

7. The Holder must in writing, within 14 (fourteen) calendar days of the date of this decision–

   7.1. notify all registered Interested and Affected Parties ("I&APs") of –
      7.1.1. the decision reached on the application;
      7.1.2. the reasons for the decision as included in Annexure 3;
      7.1.3. the date of the decision; and
      7.1.4. the date when the decision was issued.

   7.2. draw the attention of all registered I&APs to the fact that an appeal may be lodged against the decision in terms of the National Appeal Regulations, 2014 (as amended) detailed in Section G below;

   7.3. draw the attention of all registered I&APs to the manner in which they may access the decision;

   7.4. provide the registered I&APs with the:
      7.4.1. name of the Holder (entity) of this Environmental Authorisation,
      7.4.2. name of the responsible person for this Environmental Authorisation,
      7.4.3. postal address of the Holder,

7.4.4. telephonic and fax details of the Holder,
7.4.5. e-mail address, if any, of the Holder,
7.4.6. contact details (postal and/or physical address, contact number, facsimile and e-mail address) of the decision-maker and all registered I&APs in the event that an appeal is lodged in terms of the 2014 National Appeals Regulations (as amended).

7.5. The listed activities, including site preparation, must not commence within 20 (twenty) calendar days from the date the applicant notified the registered I&APs of this decision.

7.6. In the event that an appeal is lodged with the Appeal Authority, the effect of this Environmental Authorisation is suspended until the appeal is decided (i.e., the listed activities), including site preparation, must not commence until the appeal is decided.

Written notice to the Competent Authority

8. Seven calendar days' notice, in writing, must be given to the Competent Authority before commencement of any activities.

8.1. The notice must make clear reference to the site details and EIA Reference number given above.

8.2. The notice must also include proof of compliance with the following conditions described herein: **Conditions no.: 7**, **10** and **12.**

9. Seven calendar days' written notice must be given to the Competent Authority on completion of the construction activities.

Management of activity

10. The draft or Environmental Management Programme ("EMPr") submitted as part of the application for Environmental Authorisation must be amended and submitted to this Department for approval, at least 90 days prior to commencement of any activities on the site:

10.1. The EMPr must be amended to incorporate the following —

10.1.1. Incorporate all the conditions given in this Environmental Authorisation;

10.1.2. The ECO must conduct site inspections every two weeks during the construction phase (The frequency may be increased to weekly site inspections).

10.1.3. All ECO monitoring reports compiled monthly during the construction phase must be submitted to the competent authority quarterly (every three months), except when there is non-compliance observed, in which case the ECO must bring to the competent authority's immediate attention by means of a written report.

10.1.4. The ECO must conduct site inspections every two weeks during the rehabilitation phase and submit the ECO monitoring reports during this phase monthly.

10.1.5. Include the auditing schedule as set out by this Environmental Authorisation.

11. The EMPr must be included in all contract documentation for all phases of implementation.

Monitoring

12. The Holder must appoint a suitably experienced Environmental Control Officer ("ECO"), for the duration of the construction and rehabilitation phases of implementation contained herein.

13. The ECO must–

    13.1. be appointed prior to commencement of any works (i.e. removal and movement of soil);

    13.2. ensure compliance with the EMPr and the conditions contained herein;

    13.3. keep record of all activities on the site; problems identified; transgressions noted and a task schedule of tasks undertaken by the ECO;

    13.4. remain employed until all development activities are concluded, and the post construction rehabilitation and monitoring requirements are finalised; and

    13.5. the ECO must conduct site inspections at least every 2 (two) weeks and must submit ECO Monitoring Reports on a monthly basis to the competent authority.

14. A copy of the Environmental Authorisation, EMPr, any independent assessments of financial provision for rehabilitation and environmental liability, closure plans, audit reports and compliance monitoring reports must be kept at the site of the authorised activities and be made available to anyone on request, and where the Holder has website, such documents must be made available on such publicly accessible website.

15. Access to the site referred to in Section C must be granted, and the environmental reports mentioned above must be produced, to any authorised official representing the Competent Authority who requests to see it for the purposes of assessing and/or monitoring compliance with the conditions contained herein.

Environmental Auditing

16. The Holder must, for the period during which the environmental authorisation and EMPr remain valid ensure the compliance with the conditions of the environmental authorisation and the EMPr, is audited.

17. The frequency of auditing of compliance with the conditions of the environmental authorisation and of compliance with the EMPr, must adhere to the following programme:

    17.1. Auditing during the non-operational phase (construction activities):

        17.1.1. During the period which the development activities have been commenced with on the site, the Holder must ensure annual environmental audit(s) are undertaken and the Environmental Audit Report(s) submitted annually to the Competent Authority.

17.1.2. A final Environmental Audit Report for the construction phase (non-operational component) must be submitted to the Competent Authority within **three (3) months** of completion of the construction phase.

18. The Environmental Audit Report(s), must–

18.1. be prepared and submitted to the Competent Authority, by an independent person with the relevant environmental auditing expertise. Such person may not be the ECO or EAP who conducted the EIA process;

18.2. provide verifiable findings, in a structured and systematic manner, on–

18.2.1. the level of compliance with the conditions of the environmental authorisation and the EMPr and whether this is sufficient or not; and

18.2.2. the ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.

18.3. identify and assess any new impacts and risks as a result of undertaking the activity;

18.4. evaluate the effectiveness of the EMPr;

18.5. identify shortcomings in the EMPr;

18.6. identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr;

18.7. indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation;

18.8. indicate the date on which the maintenance/ rehabilitation was commenced with and the progress of the rehabilitation;

18.9. include a photographic record of the site(s) applicable to the audit; and

18.10. be informed by the ECO reports.

19. The Holder must, within 7 calendar days of the submission of the audit report to the Competent Authority, notify all potential and registered I&APs of the submission and make the report available to anyone on request and on a publicly accessible website (if applicable).

Specific Conditions

20. The residential estate development must be set back behind the line depicted on the SDP as "edge of bush" (hereinafter referred to as the "development setback line") and the area between this line and the Malgas River must be managed as an open space area and must not be developed. Further to this—

20.1. Only the security fence may be constructed beyond this line as depicted on the SDP.

20.2. No new buildings, structures or bulk engineering services infrastructure may be constructed / installed in the open space area, unless the necessary authorisation has been obtained.

21. The open space area between the development setback line and the Malgas River must be managed for a conservation use. Further to the above—

21.1. The Holder must ensure that alien invasive plant species will be removed from the open space area within the specified validity period in accordance with an approved Invasive Alien Clearing Plan.

Note: Failure to complete this action prior to the validity period of this Environmental Authorisation expiring, may require the amendment of the environmental authorisation or EMPr.

21.2. A copy of the approved Invasive Alien Clearing Plan issued in terms of the National Environmental Management: Biodiversity Act, 2004 (Act no 10 of 2004) ("NEM:BA") must be submitted to this Department prior to commencement of the activities on the site.

21.3. The Holder of the EA must adopt a "Conservation Management Plan" (CMP) and must address and / or incorporate the following—

(a) Fire management requirements (i.e., protective and ecological).
(b) No planting except for rehabilitation in terms of an approved management plan.
(c) No collection or damaging of fauna and flora.
(d) No vehicles of any type are permitted, except for rehabilitation and management in terms of an approved management plan.
(e) Financial provisions for the management and upkeep of the conservation area.

The CMP must be compiled prior to the transfer of the first erf and must be included in the purchase agreements. A copy of the CMP must be submitted to the Competent Authority prior to the lapsing of this Environmental Authorisation's validity period.

Note: The CMP should be ready for implementation with the establishment of Homeowners' Association ("HOA").

22. Should any heritage remains be exposed during excavations or any other actions on the site(s), these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape. Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from Heritage Western Cape. Heritage remains may only be disturbed by a suitably qualified heritage specialist working under a directive from the relevant Heritage Resources Authority.

Heritage remains include meteorites, archaeological and/or paleontological remains (including fossil shells and trace fossils); coins; indigenous and/or colonial ceramics; any articles of value or antiquity; marine shell heaps; stone artefacts and bone remains; structures and other built features with heritage significance; rock art and rock engravings; shipwrecks; and/or graves or unmarked human burials including grave goods and/or associated burial material.

F. GENERAL MATTERS

1. Notwithstanding this Environmental Authorisation, the Holder must comply with any other statutory requirements that may be applicable when undertaking the listed activities.

Amendment of Environmental Authorisation and EMPr

2. If the Holder does not start with the listed activity and conclude the activity within the period referred to in Section E, this Environmental Authorisation shall lapse for that activity, and a new application for Environmental Authorisation must be submitted to the relevant Competent Authority.

   If the Holder wishes to extend a validity period specified in the Environmental Authorisation, an application for amendment in this regard must be made to the relevant Competent Authority prior to the expiry date of such a period.

   Note:

   (a) Failure to lodge an application for amendment prior to the expiry of the validity period of the Environmental Authorisation will result in the lapsing of the Environmental Authorisation.

   (b) It is an offence in terms of Section 49A(1)(a) of NEMA for a person to commence with a listed activity if the competent authority has not granted an Environmental Authorisation for the undertaking of the activity.

3. The Holder is required to notify the Competent Authority where any detail with respect to the Environmental Authorisation must be amended, added, substituted, corrected, removed or updated.

   In assessing whether to amend or correct the EA, the Competent Authority may request information to evaluate the significance and impacts of such changes or deviations, and it may be necessary for the Holder to apply for further authorisation in terms of the applicable legislation.

   The onus is on the Holder to verify whether such changes to the environmental authorisation must be approved in writing by the relevant competent authority prior to the implementation thereof.

   Note: An environmental authorisation may be amended or replaced without following a procedural requirement contained in the Regulations if the purpose is to correct an error and the correction does not change the rights and duties of any person materially

4. The manner and frequency for updating the EMPr is as follows:

   (a) Any further amendments to the EMPr, other than those mentioned above, must be approved in writing by the relevant competent authority.

   (b) An application for amendment to the EMPr must be submitted to the Competent Authority if any amendments are to be made to the impact management outcomes of the EMPr. Such amendment(s) may only be implemented once the amended EMPr has been approved by the competent authority.

The onus is however on the Holder to confirm the legislative process requirements for the above scenarios at that time.

5. Where an amendment to the impact management outcomes of an EMPr is required before an environmental audit is required in terms of the environmental authorisation, an EMPr may be amended on application by the Holder of the environmental authorisation.

Compliance with Environmental Authorisation and EMPr

6. Non-compliance with a condition of this environmental authorisation or EMPr is an offence in terms of Section 49A(1)(c) of the National Environmental Management Act, 1998 (Act no. 107 of 1998, as amended).

7. This Environmental Authorisation is granted for a set period from date of issue, during which period the listed activity must be commenced with and concluded, including the post-construction rehabilitation; monitoring requirements and environmental auditing requirements which must be concluded.

   The validity period and conditions of the environmental authorisation has been structured to promote the effective administration of the environmental authorisation and guidance has been provided to ensure the compliance thereof within the validity period, for example the following milestones should not be missed:

   - Failure to submit the revised EMPr to the Competent Authority at least 90-days prior to the construction activities commencing on site, may result in the competent authority not being able to process / review the revised EMPr prior to the intended date of commencement.

   - Failure to complete the post construction rehabilitation and monitoring requirements at least six months prior to expiry of the validity period of an environmental authorisation may result in the Holder not being able to comply with the environmental auditing requirements in time.

   - Failure to complete the final auditing requirements at least three months prior to expiry of the validity period of the environmental authorisation may result in the Holder not being able to comply with all the environmental auditing and reporting requirements and may result in the competent authority not being able to process the audit timeously.

   - Failure to lodge an application for amendment prior to the expiry of the validity period of the Environmental Authorisation will result in the lapsing of the Environmental Authorisation.

   Note: It is advised that if any of the milestones as indicated above, might not be achieved, the Holder must consider extending the validity period through an amendment process.

8. This Environmental Authorisation is subject to compliance with all the peremptory conditions (**i.e., 7**, **10** and **12).** Failure to comply with all the peremptory conditions prior to the physical implementation of the activities (including site preparation) will render the entire EA null and void. Such physical activities shall be regarded to fall outside the scope of the Environmental Authorisation and shall be viewed as an offence in terms of Section 49A(1)(a) of NEMA.

9. In the event that the Environmental Authorisation should lapse, it is an offence in terms of Section 49A(1)(a) of NEMA for a person to commence with a listed activity, unless the competent authority has granted an Environmental Authorisation for the undertaking of the activity.

10. Offences in terms of the NEMA and the Environmental Impact Assessment Regulations, 2014, will render the offender liable for criminal prosecution.

G. APPEALS

1. An appellant (if the holder of the decision) must, within 20 (twenty) calendar days from the date the notification of the decision was sent to the holder by the Competent Authority –
   1.1. Submit an appeal in accordance with Regulation 4 of the National Appeal Regulations 2014 (as amended) to the Appeal Administrator; and
   1.2. Submit a copy of the appeal to any registered I&APs including any Organ of State with interest in the matter; and
   1.3. Submit a copy of the appeal to the decision-maker (i.e. the Competent Authority that issued the decision) at:
   Zaahir.Toefy@westerncape.gov.za and copied to:
   DEADPEIAadmin.George@westerncape.gov.za
   Gavin.Benjamin@westerncape.gov.za

2. An appellant (if NOT the holder of the decision) must, within 20 (twenty) calendar days from the date the holder of the decision sent notification of the decision to the registered I&APs–
   2.1. Submit an appeal in accordance with Regulation 4 of the National Appeal Regulations 2014 (as amended) to the Appeal Administrator; and
   2.2 Submit a copy of the appeal to the holder of the decision and any registered I&AP including any Organ of State with an interest in the matter; and
   2.3 Submit a copy of the appeal to the decision-maker (i.e. the Competent Authority that issued the decision) at:
   Zaahir.Toefy@westerncape.gov.za and copied to:
   DEADPEIAadmin.George@westerncape.gov.za
   Gavin.Benjamin@westerncape.gov.za

3. The holder of the decision (if not the appellant), the decision-maker that issued the decision, the registered I&AP and the Organ of State must submit their responding statements, if any, to the appeal authority and the appellant within 20 (twenty) calendar days from the date of receipt of the appeal submission.

4. The appeal and the responding statement must be submitted to the Appeal Administrator at the address listed below:

   By post: Western Cape Ministry of Local Government, Environmental Affairs and Development Planning
   Private Bag X9186
   CAPE TOWN
   8000

   By facsimile: (021) 483 4174; or

   By hand: Appeal Administrator
   Attention: Mr Marius Venter (Tel: 021 483 3721)
   Room 809
   8th Floor Utilitas Building, 1 Dorp Street, Cape Town, 8001

   Note: For purposes of electronic database management, you are also requested to submit electronic copies (Microsoft Word format) of the appeal, responding statement and any supporting documents to the Appeal Authority to the address listed above and/ or via e-mail to DEADP.Appeals@westerncape.gov.za.

5. A prescribed appeal form as well as assistance regarding the appeal processes is obtainable from the Appeal Administrator at: Tel. (021) 483 3721, E-mail DEADP.Appeals@westerncape.gov.za or URL http://www.westerncape.gov.za/eadp.

H. DISCLAIMER

The Western Cape Government, the Local Authority, committees or any other public authority or organisation appointed in terms of the conditions of this Environmental Authorisation shall not be responsible for any damages or losses suffered by the Holder, developer or his/her successor in any instance where construction or operation subsequent to construction is temporarily or permanently stopped for reasons of non-compliance with the conditions as set out herein or any other subsequent document or legal action emanating from this decision.

Your interest in the future of our environment is appreciated.

Yours faithfully

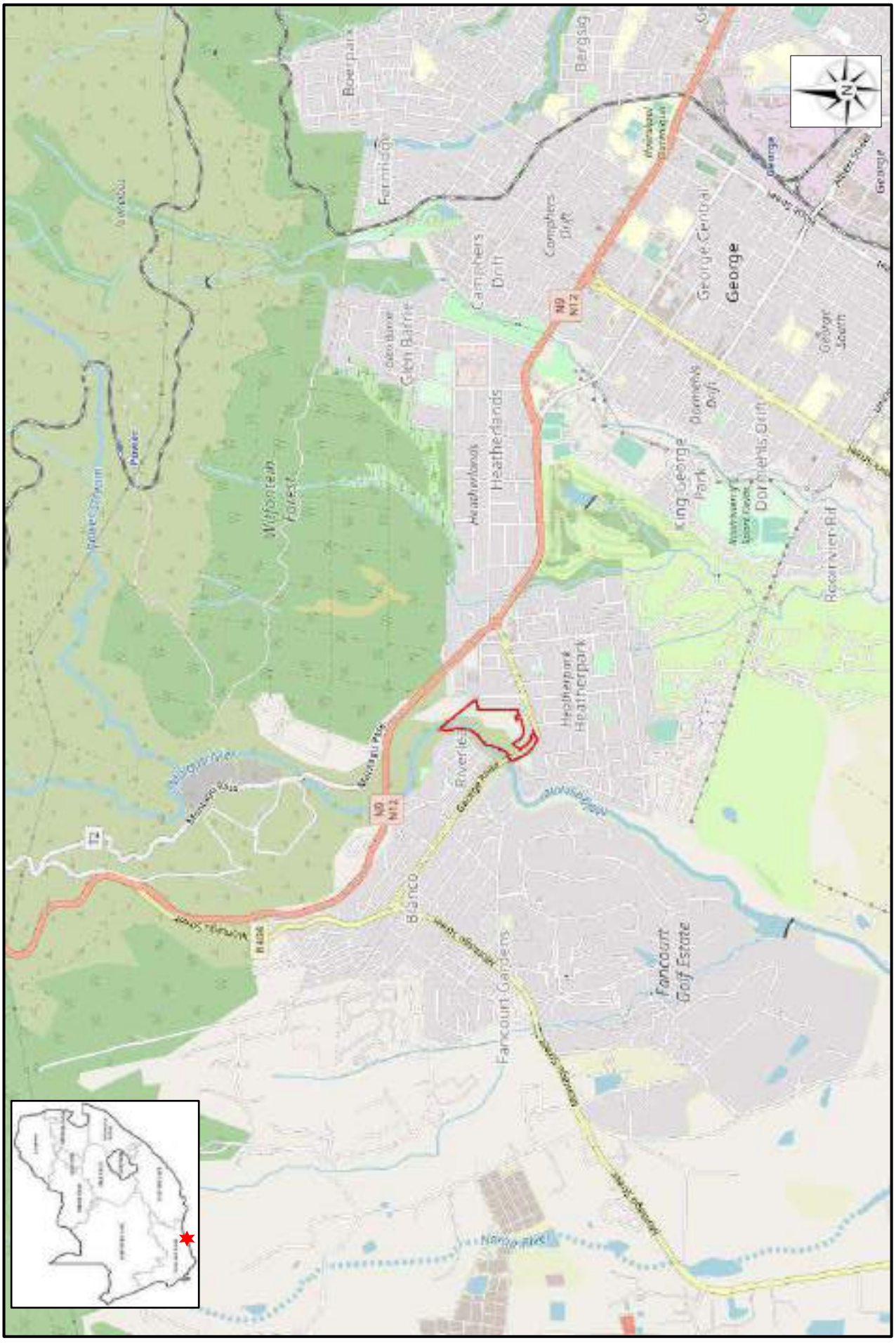
Zaahir Toefy
Digitally signed by Zaahir Toefy
Date: 2023.06.13 12:57:25 +02'00'

DIRECTOR: DEVELOPMENT MANAGEMENT
WCG: DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING

DATE OF DECISION: 13 JUNE 2023

FOR OFFICIAL USE ONLY:	
EIA REFERENCE NUMBER:	16/3/3/1/D2/26/0023/22
NEAS REFERENCE:	WCP/EIA/0001158/2022
CASE OFFICER:	Ms Jessica Christie | Jessica.Christie@westerncape.gov.za

ANNEXURE 1: LOCALITY MAP



ANNEXURE 2: SITE DEVELOPMENT PLAN

ANNEXURE 3: REASONS FOR THE DECISION

In reaching its decision, the Competent Authority considered, *inter alia*, the following:

a) The information contained in the Application Form received on 29 August 2022, the Final Basic Assessment Report (FBAR) and EMPr submitted together with the FBAR on 9 March 2023;

b) Relevant information contained in the Departmental information base, including the Guidelines on Public Participation, Alternatives (dated March 2013);

c) The objectives and requirements of relevant legislation, policies and guidelines, including section 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998);

d) The comments received from I&APs and responses to these, included in the FBAR dated 9 March 2023;

e) The balancing of negative and positive impacts and proposed mitigation measures; and

f) A site inspection was not done. The officials have sufficient knowledge of the site.

All information presented to the Competent Authority was taken into account in the consideration of the application for Environmental Authorisation. A summary of the issues that were considered to be the most significant for the decision is set out below.

1. Public Participation

A sufficient public participation process was undertaken, and the applicant has satisfied the minimum requirements as prescribed in the EIA Regulation 2014 for public involvement. The public participation process included:

- identification of and engagement with interested and affected parties (I&APs) including organs of state which have jurisdiction in respect of the activity to which the application relates;
- fixing a notice board at the site on 16 September 2022;
- giving written notice to the owners and occupiers of land adjacent to the site and any alternative site where the listed activities are to be undertaken, the municipality and ward councillor, and the various organs of state having jurisdiction in respect of any aspect of the listed activities on 16 September 2022 to comment on the Draft Basic Assessment Report;
- the placing of a newspaper advertisement in the "*George Herald*" on 15 September 2022; and
- making the revised Basic Assessment Report available to I&APs for public review from 6 January 2023 till 6 February 2023.

The following Organs of State provided comment on the proposal:

- *WCG: Department of Agriculture*
- *Department of Forestry, Fisheries and Environment – Forestry Section*
- *Breede Gouritz Catchment Management Agency*
- *Heritage Western Cape; and*
- *CapeNature*
- *George Municipality*

- *General Public / Interested & Affected Parties (I&APs) included:*
    - *Homewood Homeowners' Association*
    - *Abé Myburgh*
    - *Isabeau van der Westhuizen*
    - *Jean Smith*
    - *Lorenzo Clasen*
    - *Russ Smith*
    - *Jaco van der Merwe*

Key issues identified by I&APs and stakeholders:

- Visual Impact
  The neighbouring property owners in the Homewood Estate were concerned about the visual intrusion of double-storey duplexes. The applicant and architects redesigned to single storey units.

- Traffic Impact
  The Homewood HOA and neighbouring property owners were concerned about the increase in traffic that will occur. The Traffic Impact Assessment Adequately addressed the concerns.

All the comments and issues raised by the respective *Organs of State and I&APs* that were captured in the Basic Assessment Report were responded to by the EAP. The Competent Authority is satisfied with the responses from the EAP to the I&APs comments and concerns.

2. Alternatives

Preferred Layout Alternative (Herewith Approved):

The Holder is herein authorised to undertake the following activities that includes the listed activities as it relates to the transformation of land previously used for agriculture and the clearance of indigenous vegetation for the construction of the residential development and associated structures and infrastructure.

The specific details of the proposed development on the property comprises of the following:

- 84 Housing units (5 different types-);
- 3 apartment blocks with 95 flats/apartment units;
- Internal roads and driveways;
- Parking areas;
- Internal open space areas;
- Communal recreational, Club house and Guard house facilities;
- Associated civil services and electrical connections.

The development must be implemented in accordance with the layout developed by Robert Silke and Partners (dated 24 February 2023) Drawing number 202203 SKE 200 Rev 16 (Annexure 2).

Various layout designs took place from the initial design that was presented to the various specialists to assess. From the public participation and comment from this Department and other Organs of State, the preferred layout was considered. The following are the previous alternative site development plans:

Layout Alternative 2:
A new residential development on Erf 19001 is proposed. The following is proposed as part of the preferred site development plan:

- - 92 Housing units (3 different types-);
- - 3 apartment blocks with 97 flats/apartment units;
- - Internal roads and driveways;
- - Parking areas;
- - Internal open space areas;
- - Communal recreational, Club house and Guard house facilities;
- Associated civil services and electrical connections.

"No-Go" Alternative

The no-go alternative is to have the site remain as is. There is an existing planning approval however, the Environmental Authorisation that was linked to this planning approval has lapsed.

3. Impact Assessment and Mitigation Measures

3.1 *Activity Need and Desirability*

The property has previously been earmarked for infill development; however, the previous environmental authorisation lapsed. A new developer now proposes to develop this property with a higher density of units. The George Municipality's Spatial Development Framework ("MSDF") supports densification and infill development along routes that are served by public transport. This property also falls within a "Priority Investment Area" according to the MSDF.

3.2 *Biophysical Impacts*

According to the Terrestrial Biodiversity Specialist, the site consists of a combination of secondary grassland (on the flat uplands) and Eucalyptus woodland (in the steep-sided valley) with low indigenous diversity. It is altered (not natural) and to have low biodiversity value. The steep sided valley area is potentially sensitive as it retains a level of ecological functionality and could possibly be restored to forest in time.

No plants species of conservation concern (SCC) were found on the site, and it was found unlikely that any of the species flagged would be found on the site. In terms of the animal species, it was found that the development site is not considered to be good habitat for the species that are expected to occur in the area. The riparian zone and buffer area was found to be more valuable habitat and rehabilitation and restoration is encouraged.

This Department was concerned that the initial design layout did not adequately respond to the environmental attributes of the property and the extent the steep embankment and

drainage would have on the development. As indicated by the specialists, the area was filled in and there is an already steep slope toward the Malgas River. This steep area generally started at the edge of the tree line along the riparian edge of the property (western edge) and the proposal to have structures and infrastructure beyond this line was a concern to this Department. Through consultation, the layout was adapted and changed to accommodate the comments from this Department. The area between the "development setback line" and the Malgas River will be zoned as an open space (i.e., Open Space II: Private Open Space) which will have a limited use. The management objectives for this area aim to achieve a conservation outcome. Conditions have been included in this authorisation to promote these objectives.

3.3 *Aquatic Biodiversity*

The two possible wetland areas were inspected and assessed. No wetland features were identified in the southern location. Wetland soils and vegetation were identified in the northern location and a wetland area was delineated on this basis. However, assessment of historical imagery of the site, reinforced by findings in the geotechnical report indicate that this area was heavily impacted by infilling associated with the development of Homewood Village. Therefore, the wetland was considered artificial. A functional assessment of the artificial wetland indicates the feature has low value in terms of ecosystem services, importance, and sensitivity. No water use authorisation is required because the proposed development footprint is located outside of the regulated area of the Malgas River as defined in Government Notice No. 509 of 2016 as published in terms of the National Water Act (Act No. 36 of 1998).

3.4 *Heritage / Archaeological Aspects*

Heritage Western Cape issued comment in July 2015 and confirmation was received that this comment is still valid. The competent authority is satisfied that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of the National Heritage Resources Act, 1999 and the comments and recommendations of the relevant heritage resources authority with regard to the proposed development have been taken into account.

3.5 *Other Impacts*

No other impacts of significance are anticipated for the area that has been authorised in this Environmental Authorisation.

Considering the findings of the impact assessment and proposed mitigation measures to address the aforementioned impacts this Department is satisfied that the activity will not negatively impact on the receiving environment, subject to strict implementation of conditions of this EA and the mitigation measures proposed in the EMPr.

4. *Scope and Validity Period of authorisation*

This environmental authorisation does not define specific operational aspects. The environmental authorisation's validity period has been granted for a period of five (5) years, during which period the construction activities must commence and be concluded,

including the post-construction rehabilitation and monitoring and submission of the final environmental audit reports for the construction phase. Considering the proposed implementation programme, the monitoring and post-construction rehabilitation can be adequately incorporated in the construction phase.

Where the activity has been commenced with, the EIA Regulations, 2014 allow that (upon application) the period for which the environmental authorisation is granted may be extended for a further period of 5-years.

5. National Environmental Management Act Principles

The National Environmental Management Principles (set out in section 2 of the NEMA, which apply to the actions of all organs of state, serve as guidelines by reference to which any organ of state must exercise any function when taking any decision, and which must guide the interpretation, administration and implementation of any other law concerned with the protection or management of the environment), *inter alia*, provides for:

- the effects of decisions on all aspects of the environment to be taken into account;
- the consideration, assessment and evaluation of the social, economic and environmental impacts of activities (disadvantages and benefits), and for decisions to be appropriate in the light of such consideration and assessment;
- the co-ordination and harmonisation of policies, legislation and actions relating to the environment;
- the resolving of actual or potential conflicts of interest between organs of state through conflict resolution procedures; and
- the selection of the best practicable environmental option.

6. Conclusion

After consideration of the information and factors listed above, the Department made the following findings:

(a) The identification and assessment of impacts are detailed in the FBAR dated 9 March 2023 and sufficient assessment of the key identified issued and impacts have been completed.

(b) The procedure followed for the impact assessment is adequate for the decision-making process.

(c) The proposed mitigation of impacts identified and assessed, curtails the identified negative impacts.

(d) The EMPr proposed mitigation measures for the pre-construction, construction and rehabilitation phases of the development and were included in the FBAR. The mitigation measures will be implemented to manage the identified environmental impact during the construction phase.

Due consideration is also given to the person's duty of care described in Section 28 of NEMA:

"Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such

harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment".

In view of the above, the NEMA principles, compliance with the conditions stipulated in this Environmental Authorisation, and compliance with an approved EMPr, the Competent Authority is satisfied that the proposed listed activities will not conflict with the general objectives of integrated environmental management stipulated in Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and that any potentially detrimental environmental impacts resulting from the listed activities can be mitigated to acceptable levels.

---------- **END** ----------

Western Cape Government

Department of Environmental Affairs and Development Planning
Zaahir Toefy
Directorate: Development Management
Zaahir.Toefy@westerncape.gov.za | 021 483 2700
DEADPEIAAdmin.George@westerncape.gov.za | 044 814 2006

REFERENCE: 16/3/3/5/D2/26/0012/23
NEAS REF.: WCP/EIA/AMEND/0000783/2023
DATE OF ISSUE: 10 NOVEMBER 2023

THE DIRECTOR
CEDERDALE INVESTMENTS (PTY) LTD.
4 Liddle Street
CAPE TOWN
8001

Attention: Mr. A. J. Katz

Cel: 082 773 4567
E-mail: amjkatz@gmail.com

Dear Sir

APPLICATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) FOR THE AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION ISSUED 13 JUNE 2023 (DEA&DP REF NO. 16/3/3/1/D2/26/0023/22) FOR THE PROPOSED DEVELOPMENT OF A RESIDENTIAL ESTATE ON ERF 19001, HEATHER PARK, GEORGE

1. With reference to the aforementioned application, the Department hereby notifies you of its decision to **grants the amendment of the Environmental Authorisation issued on 13 June 2023**, attached herewith together with the reasons for the decision.

2. In terms of Regulation 4 of the Environmental Impact Assessment Regulations, 2014, you are instructed to ensure, within 14 days of the date of the Environmental Authorisation, that all registered interested and affected parties ("I&APs") are provided with access to and reasons for the decision, and that all registered I&APs are notified of their right to appeal.

3. Your attention is drawn to Chapter 2 of the Appeal Regulations, 2014, which prescribes the appeal procedure to be followed. This procedure is summarised in the attached Addendum to the Environmental Authorisation.

Yours faithfully

Zaahir Toefy
Digitally signed by Zaahir Toefy
Date: 2023.11.10 11:56:32 +02'00'

DIRECTOR: DEVELOPMENT MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING
WESTERN CAPE GOVERNMENT

Copied to:
EAP: HilLand Environmental E-mail: cathy@hilland.co.za / environmental2@hilland.co.za

Western Cape Government

Department of Environmental Affairs and Development Planning
Zaahir Toefy
Directorate: Development Management
Zaahir.Toefy@westerncape.gov.za | 021 483 2700
DEADPEIAAdmin.George@westerncape.gov.za | 044 814 2006

REFERENCE: 16/3/3/5/D2/26/0012/23
NEAS REF.: WCP/EIA/AMEND/0000783/2023
DATE OF ISSUE: **10 NOVEMBER 2023**

ADDENDUM TO ENVIRONMENTAL AUTHORISATION

APPLICATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) FOR THE AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION ISSUED 13 JUNE 2023 (DEA&DP REF NO. 16/3/3/1/D2/26/0023/22) FOR THE PROPOSED DEVELOPMENT OF A RESIDENTIAL ESTATE ON ERF 19001, HEATHER PARK, GEORGE

With reference to your application for the abovementioned, find below the decision with respect to the application (dated 10 October 2023) for the amendment to the Environmental Authorisation issued on 13 June 2023 (hereinafter referred to as an "Environmental Authorisation").

A. DECISION

By virtue of the powers conferred on it by the National Environmental Management Act, 1998 (Act No. 107 of 1998, as amended) and the Environmental Impact Assessment Regulations, 2014, ("NEMA EIA Regulations") the competent authority herewith **grants** the amendment of the Environmental Authorisation issued on 13 June 2023.

The Environmental Authorisation is amended as set out below:

1. The deletion of the words "The development must be implemented in accordance with the layout developed by Robert Silke and Partners (dated 24 February 2023) Drawing number 202203 SKE 200 Rev 16 (Annexure 2)" wheresoever they may appear in Section B, Section E and Annexure 3 of the Environmental Authorisation, and the insertion of the following words in their stead:

   "*The development must be implemented in accordance with the layout developed by Robert Silke and Partners (dated 21 July 2023) Drawing number 202203 SKE 200 Rev 21 (Annexure 2).*"

Note: A copy of the substituted Site Development Plan (SDP) has been attached to this Addendum to the Environmental Authorisation and must be appended to and read in conjunction with the original Environmental Authorisation issued on 13 June 2023.

2. All other conditions contained in the Environmental Authorisation issued on 13 June 2023 still remain unchanged and in force.

B. REASONS FOR THE DECISION

In reaching its decision, the Department took, *inter alia,* the following into consideration:

1. The application is regarded to be for a non-substantive amendment to the Environmental Authorisation as it will not change the scope of the valid environmental authorisation, nor increase the level or nature of the impact, which impact was initially assessed and considered when application was made for an environmental authorisation.

2. The environment and the rights and interests of other parties are not likely to be adversely affected by this decision to amend the Environmental Authorisation.

C. CONDITIONS

1. The applicant must in writing, within **14 (fourteen) calendar days** of the date of this decision (refer to Government Notice R.993 of 8 December 2014) –

    1.1. notify all registered interested and affected parties, including those registered during the initial application process of –
        1.1.1. the outcome of the application;
        1.1.2. the reasons for the decision as included in Annexure 1;
        1.1.3. the date of the decision; and
        1.1.4. the date of issue of the decision.

    1.2. draw the attention of all registered interested and affected parties to the fact that an appeal may be lodged against the decision in terms of the National Appeals Regulation, 2014 detailed in Section D below.

2. The holder of the environmental authorisation must provide the Competent Authority with seven (7) calendar days' notice before commencement of the continuation of the construction activities. This notice must include proof of compliance with Condition 1 described in Section C of this Addendum to the Environmental Authorisation.

D. APPEALS

1. An appellant (if the holder of the decision) must, within 20 (twenty) calendar days from the date the notification of the decision was sent to the holder by the Competent Authority –
    1.1. Submit an appeal in accordance with Regulation 4 of the National Appeal Regulations 2014 (as amended) to the Appeal Administrator; and
    1.2. Submit a copy of the appeal to any registered I&APs including any Organ of State with interest in the matter; and

1.3. Submit a copy of the appeal to the decision-maker (i.e. the Competent Authority that issued the decision) at:

Zaahir.Toefy@westerncape.gov.za and copied to:
DEADPEIAadmin.George@westerncape.gov.za
Gavin.Benjamin@westerncape.gov.za

2. An appellant (if NOT the holder of the decision) must, within 20 (twenty) calendar days from the date the holder of the decision sent notification of the decision to the registered I&APs–

2.1. Submit an appeal in accordance with Regulation 4 of the National Appeal Regulations 2014 (as amended) to the Appeal Administrator; and

2.2 Submit a copy of the appeal to the holder of the decision and any registered I&AP including any Organ of State with an interest in the matter; and

2.3 Submit a copy of the appeal to the decision-maker (i.e. the Competent Authority that issued the decision) at:

Zaahir.Toefy@westerncape.gov.za and copied to:
DEADPEIAadmin.George@westerncape.gov.za
Gavin.Benjamin@westerncape.gov.za

3. The holder of the decision (if not the appellant), the decision-maker that issued the decision, the registered I&AP and the Organ of State must submit their responding statements, if any, to the appeal authority and the appellant within 20 (twenty) calendar days from the date of receipt of the appeal submission.

4. The appeal and the responding statement must be submitted to the Appeal Administrator at the address listed below:

By post: Western Cape Ministry of Local Government, Environmental Affairs and Development Planning
Private Bag X9186
CAPE TOWN
8000

By facsimile: (021) 483 4174; or

By hand: Appeal Administrator
Attention: Mr Marius Venter (Tel: 021 483 3721)
Room 809
8th Floor Utilitas Building, 1 Dorp Street, Cape Town, 8001

Note: For purposes of electronic database management, you are also requested to submit electronic copies (Microsoft Word format) of the appeal, responding statement and any supporting documents to the Appeal Authority to the address listed above and/ or via e-mail to DEADP.Appeals@westerncape.gov.za.

5. A prescribed appeal form as well as assistance regarding the appeal processes is obtainable from the Appeal Administrator at: Tel. (021) 483 3721, E-mail DEADP.Appeals@westerncape.gov.za or URL http://www.westerncape.gov.za/eadp.

E. DISCLAIMER

The Western Cape Government, the Local Authority, committees or any other public authority or organisation appointed in terms of the conditions of this Addendum to the Environmental Authorisation shall not be responsible for any damages or losses suffered by the holder, developer or his/her successor in any instance where construction or operation subsequent to construction is temporarily or permanently stopped for reasons of non-compliance with the conditions as set out herein or any other subsequent document or legal action emanating from this decision.

Your interest in the future of our environment is appreciated.

Yours faithfully

Zaahir Toefy

Digitally signed by Zaahir Toefy
Date: 2023.11.10 11:58:13 +02'00'

DIRECTOR: DEVELOPMENT MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING
WESTERN CAPE GOVERNMENT

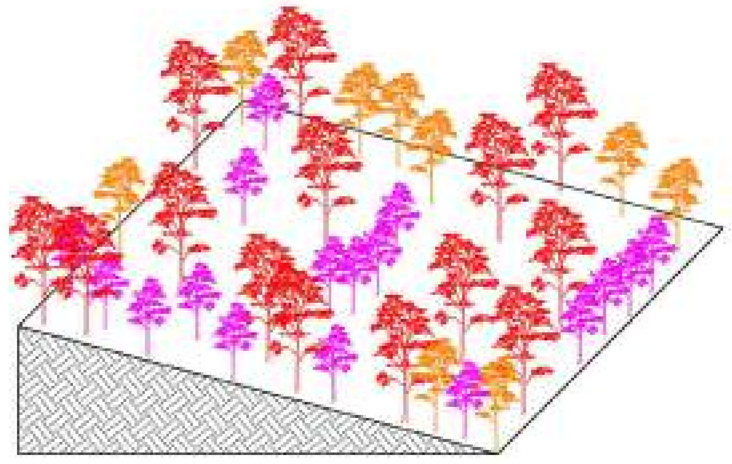
DATE OF DECISION: 10 NOVEMBER 2023

FOR OFFICIAL USE ONLY:

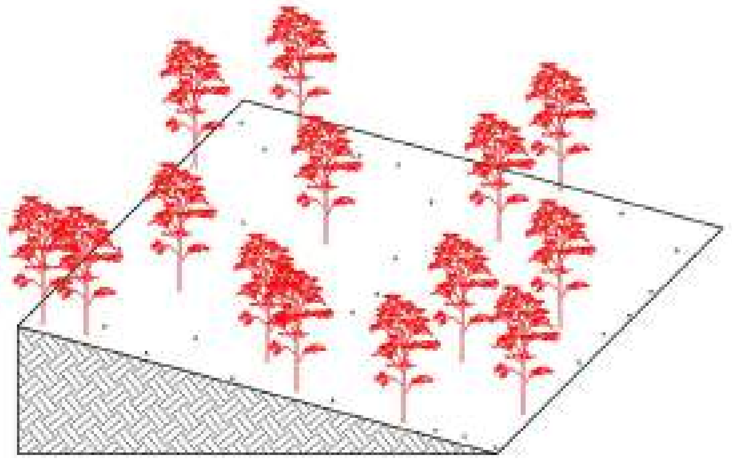
REFERENCE:	16/3/3/1/D2/26/0023/22
NEAS REFERENCE:	WCP/EIA/0001158/2022
ENQUIRIES:	MS. JESSICA CHRISTIE
DATE OF ISSUE:	13 JUNE 2023
EA ADDENDUM #1 REFERENCE:	16/3/3/5/D6/25/0010/23
NEAS REF.:	WCP/EIA/AMEND/0000773/2023
ENQUIRIES:	MS. JESSICA CHRISTIE
DATE OF ISSUE:	THIS DECISION

ANNEXURE 2: SITE DEVELOPMENT PLAN (as amended)

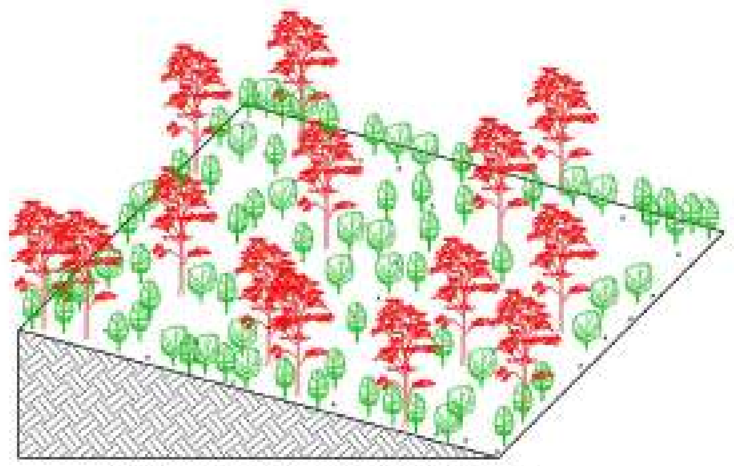
www.westerncape.gov.za
Private Bag X6509, George, 6530 | 4th Floor, York Park Building, 93 York Street, George



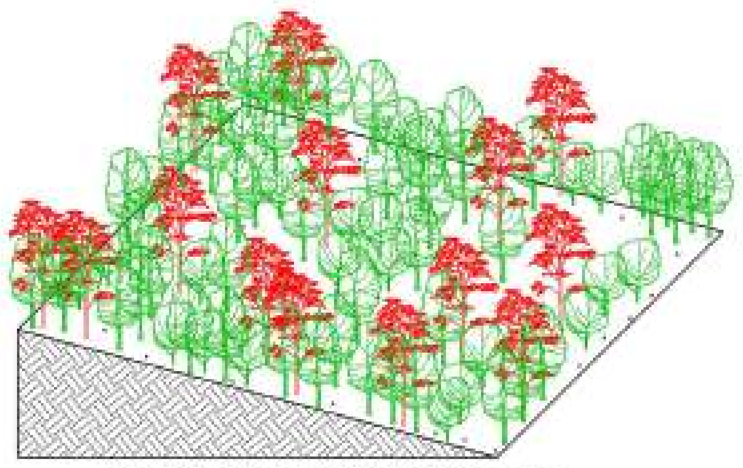
1) EXISTING ALIEN VEGETATION



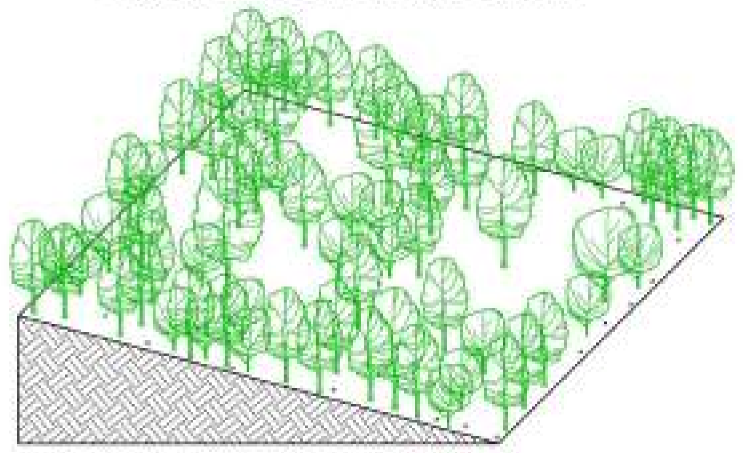
2) INVASIVE ALIEN VEGETATION CLEARING. TREE STUMPS AND SELECTED LARGE GUM TREES TO REMAIN



3) PLANTING OF MIX INDIGENOUS TREES, SHRUBS & GROUNDCOVERS

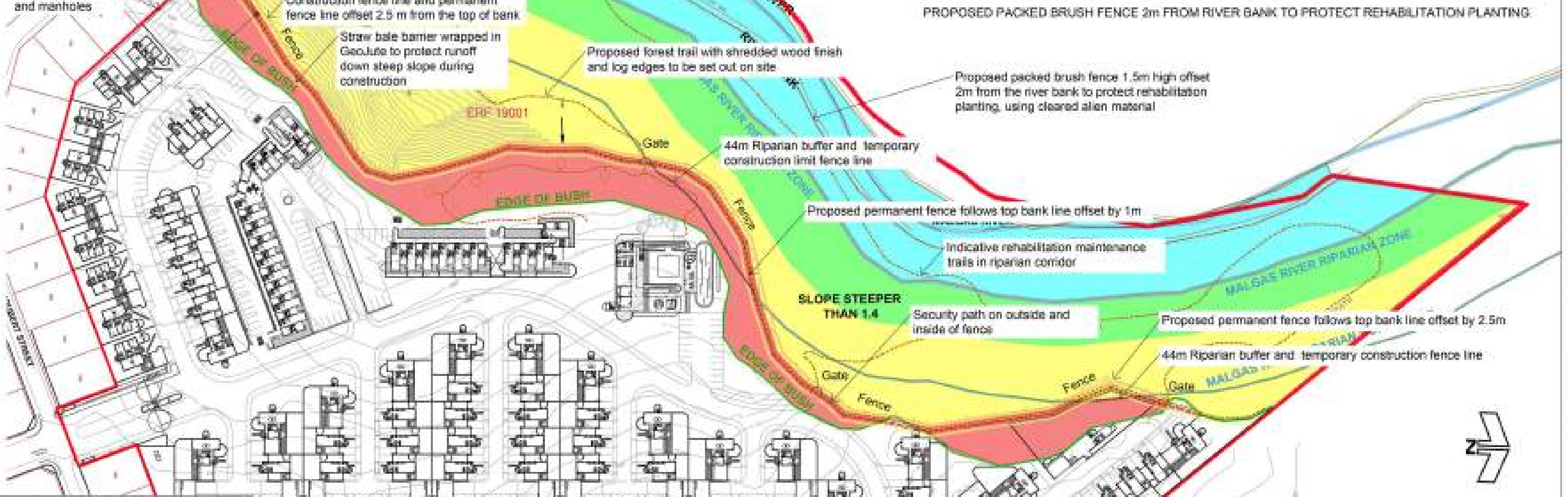


4) ONCE INDIGENOUS TREES HAVE ESTABLISHED, REMOVE ALL LARGE GUM TREES



5) ESTABLISHED REHABILITATED INDIGENOUS FOREST

RIPARIAN CORRIDOR REHABILITATION



PLAN OF PROPOSED REHABILITATION


PROPOSED PACKED BRUSH FENCE 2m FROM RIVER BANK TO PROTECT REHABILITATION PLANTING

LEGEND

- PRE-CONSTRUCTION CLEARING OF INVASIVE SPECIES WITH LATER FELLING OF *Eucalyptus grandis*
- PRE-CONSTRUCTION CLEARING OF INVASIVE SPECIES INCLUDING *Eucalyptus grandis*
- PHASED CLEARING OF INVASIVES WITH LATER FELLING OF *Eucalyptus grandis*
- PHASED CLEARING OF INVASIVES WITH LATER FELLING OF *Eucalyptus grandis*

NOTES:

1. ALIEN CLEARING WILL BE DONE IN ACCORDANCE WITH AN APPROVED ALIEN CONTROL PLAN (ACP), APPROVED BY DFFE BIOSECURITY INSPECTORS IN ACCORDANCE WITH NEMBA ALIEN SPECIES REGULATIONS.

2. TREE ROOTS WILL NOT BE REMOVED FROM THE SOIL.

3. TREES WILL HAVE HERBICIDE APPLIED TO THE STUMPS AND STUMPS WILL BE LEFT IN THE SOIL AND NOT REMOVED WHICH WOULD DESTABILISE THE SOIL AND RESULT IN ADDITIONAL EROSION RISK.

REHABILITATION ZONES AS PER PLAN

Zone	Area
PRE-CONSTRUCTION & YEAR 13-14	0.7ha
PRE-CONSTRUCTION	1.8ha
YEAR 1-2 & YEAR 9-10	1.9ha
YEAR 3-4 & YEAR 11-12	1.2ha
INDIGENOUS FOREST ESTABLISHMENT PERIOD	

George, Townhouses Erf 19001: REHABILITATION PROGRAMME

	ACTION	PRE-CONSTRUCTION (By Developer)		POST-CONSTRUCTION (By HOA, in years) 1-2	3-4	5-8	9-10	11-12	13-14
1)	Conservation worthy plant rescue and protection	red	blue	yellow	green	grey			
2)	Invasive alien vegetation clearing (excluding roots)	red	blue	yellow	green	grey			
3)	Actively replanting of indigenous plants	red	blue	yellow	green	grey			
4)	Soil stabilisation on steep slope	red	blue	yellow	green	grey			
5)	Removal of Eucalyptus trees (excluding gum stump removal)		blue			grey	yellow	green	red
6)	Establishing Fire Breaks (to fire specialist input)	red				grey			
7)	Monitoring and follow up clearing of alien regrowth and seedlings	ON-GOING PROCESS							

PROPOSED INDIGENOUS PLANT LIST

	INDIGENOUS PLANT LIST
	Trees
[illegible]	[illegible]

	INDIGENOUS PLANT LIST
	Shrubs & Small trees
[illegible]	[illegible]

	INDIGENOUS PLANT LIST
	Groundcovers & Perennials
[illegible]	[illegible]

	INDIGENOUS PLANT LIST
	Bulbs
[illegible]	[illegible]
	Ferns & Fernlike
[illegible]	[illegible]

	INVASIVE PLANT LIST
	Alien invasive
ACM	Acacia mearnsii (NEMBA Category 2)
ACMe	Acacia melanoxylon (NEMBA Category 2)
CIV	Cirsium vulgare (NEMBA Category 1b)
DAS	Datura stramonium (NEMBA Category 1b)
EUG	Eucalyptus grandis (NEMBA Category 1b)
HEC	Hedychium coronarium (NEMBA Category 1b)
LAC	Lantana camara (NEMBA Category 1b)
SOM	Solanum mauritianum (NEMBA Category 1b)

NOTES:

1. ALIEN CLEARING WILL BE DONE IN ACCORDANCE WITH AN APPROVED ALIEN CONTROL PLAN (ACP), APPROVED BY DFFE BIOSECURITY INSPECTORS IN ACCORDANCE WITH NEMBA ALIEN SPECIES REGULATIONS.

2. TREE ROOTS WILL NOT BE REMOVED FROM THE SOIL.

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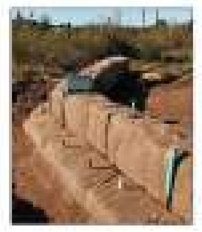

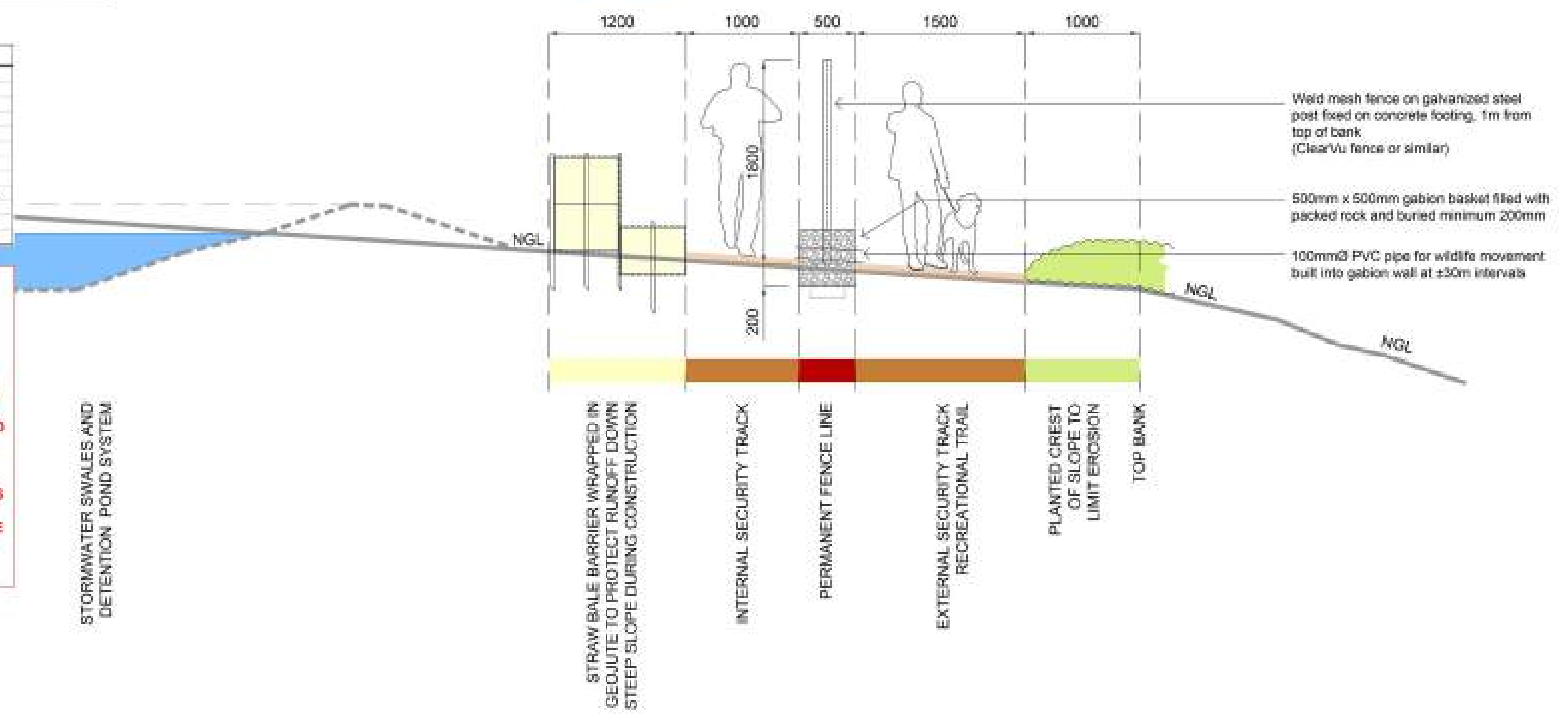

PROPOSED BOUNDARY FENCE TYPICAL DETAIL

SCALE 1:25

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ARBOUR ESTATE

REHABILITATION PLAN

77355	77355 RP 01	I
27 February 2023		
1:1000@A0		
RR/TD		
RR/TD		
TD		
A/V		

SIGNATURA

PLANNING PARTNERS