Date: 31 July 2023

Proposed Development Project on Portion 16 of the farm Klein Dassenberg No. 20, Atlantis

---

Client Representative Firm:
ASAPH Town Planners/ECOS Consulting
RE: Peter Harmse
Email: environmental@ecos-consulting.co.za

Independent Aquatic Specialist Sub-Consultant:
Mr Earl L Herdien *Pr.Sci.Nat.*
SACNASP Registration No. 400211/11
Email: earll.herdien@gmail.com
Office Address: Unit 162 Fourth Avenue, Churchill Estate, 7500.

Image Credits:
This assessment made use of freely available sector-based reference maps, photography and Geographic Information Systems (GIS) sourced from the National Department of Agriculture, and the National Department of Water and Sanitation. In addition, selected reference data and street view images were digitised and analysed in GIS by use of the Google Earth Pro Platform. Site photographs were taken in person during ground-truth site habitat confirmation assessment.

Specialist Consultant Declaration of Independence

I, *Earl L Herdien*, declare that I am independent of the client and their consultants, and stand to gain no financial benefit from the proposed activity apart from remuneration for the work performed. All views expressed in this quote are my own and the use of all material from other sources has been acknowledged.

……..

Name: Earl L Herdien *Pr.Sci.Nat*
Vocation: Environmentalist, Naturalist, Biodiversity Scientist & Professional Aquatic Scientist
SACNASP Registration Number: 400211/11
Email: earll.herdien@gmail.com
Office Address: Unit 162 Fourth Avenue, Churchill Estate, 7500.
Date: 31 July 2023

1. Background

1.1. An applicant intending to undertake an activity identified in the scope of this protocol on a site identified on the screening tool as being of:
1.1.1. “very high sensitivity” for aquatic biodiversity, must submit an Aquatic Biodiversity Specialist Assessment; or
1.1.2. “low sensitivity” for aquatic biodiversity, must submit an Aquatic Biodiversity Compliance Statement.
1.1.3. The assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP), with expertise in the field of aquatic sciences

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

Figure 1: Excerpt from Project Environmental Assessment Practitioner NEMA Screening Tool Report inferring on the Aquatic Biodiversity Sensitivity Theme

1.1.4. The figure above indicates the need for a specialist compliance statement for the proposed project due to the project area being classified with a low sensitivity feature in terms of the Aquatic Biodiversity Theme.

1.2. Terms of Reference

1.2.1. The proponent Velaskar Property Development (Pty) Ltd intends developing a shopping centre on the subject project property erven, Portion 16 of the farm Klein Dassenberg No. 20 in Atlantis, which requires environmental authorisation and planning level input such as this aquatic biodiversity statement report.

1.2.2. The terms of reference for this professional opinion report was sourced from the “Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity”, as published on 20 March 2020, in Government Gazette 43110, Notice Number 320.

1.2.2.1. The compliance statement must:
1.2.2.1.1. Be applicable to the preferred site and the proposed development footprint;
1.2.2.1.2. Confirm that the site is of “low” sensitivity for aquatic biodiversity; and
1.2.2.1.3. Indicate whether or not the proposed development will have an impact on the aquatic features.

1.2.2.2. The compliance statement must contain, as a minimum, the following information:
1.2.2.2.1. Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;
1.2.2.2.2. A signed statement of independence by the specialist;
1.2.2.2.3. A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
1.2.2.2.4. A baseline profile description of biodiversity and ecosystems of the site;
1.2.2.2.5. The methodology used to verify the sensitivities of the aquatic biodiversity features on the site including the equipment and modelling used where relevant;
1.2.2.2.6. In the case of a linear activity, confirmation from the aquatic biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;
1.2.2.2.7. Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;
1.2.2.2.8. A description of the assumptions made as well as any uncertainties or gaps in knowledge or data; and
1.2.2.2.9. Any conditions to which this statement is subjected.
1.2.2.2.10. A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report

2. Project and Site Locality Context

Figure 2: Project Site Map

2.1. The project site is located in an old agricultural area known as Klein Dassenberg on the corner of the Reygersdal Drive (R301) and Saxonwold Roads.
2.2. The project property is situated directly opposite the urban edge and peri-urban fringe node of the broader Atlantis south township of Witsand and with Atlantis Industry about 1.5km further to the west.

3. Project Site Landscape Context

3.1. Although the project site area can be described as a flat plain in a broader general sense, and in particular along site south central and north-eastern vicinity (zero degree gradient). It is however noted in contrast that the site west and north is significantly higher (151m) than site central region (146m) whereas the site east and south (148m) is marginally higher than site central region. These characteristics relates to an undulating sloping landscape with a 5m rising range along the north west and 1m-2m along the southern boundary. These high lying features may be associated to relict dune as well due to its proximity to the shoulder of the past road development comprising an avenue of trees (i.e. possible anthropogenic berms in parts).

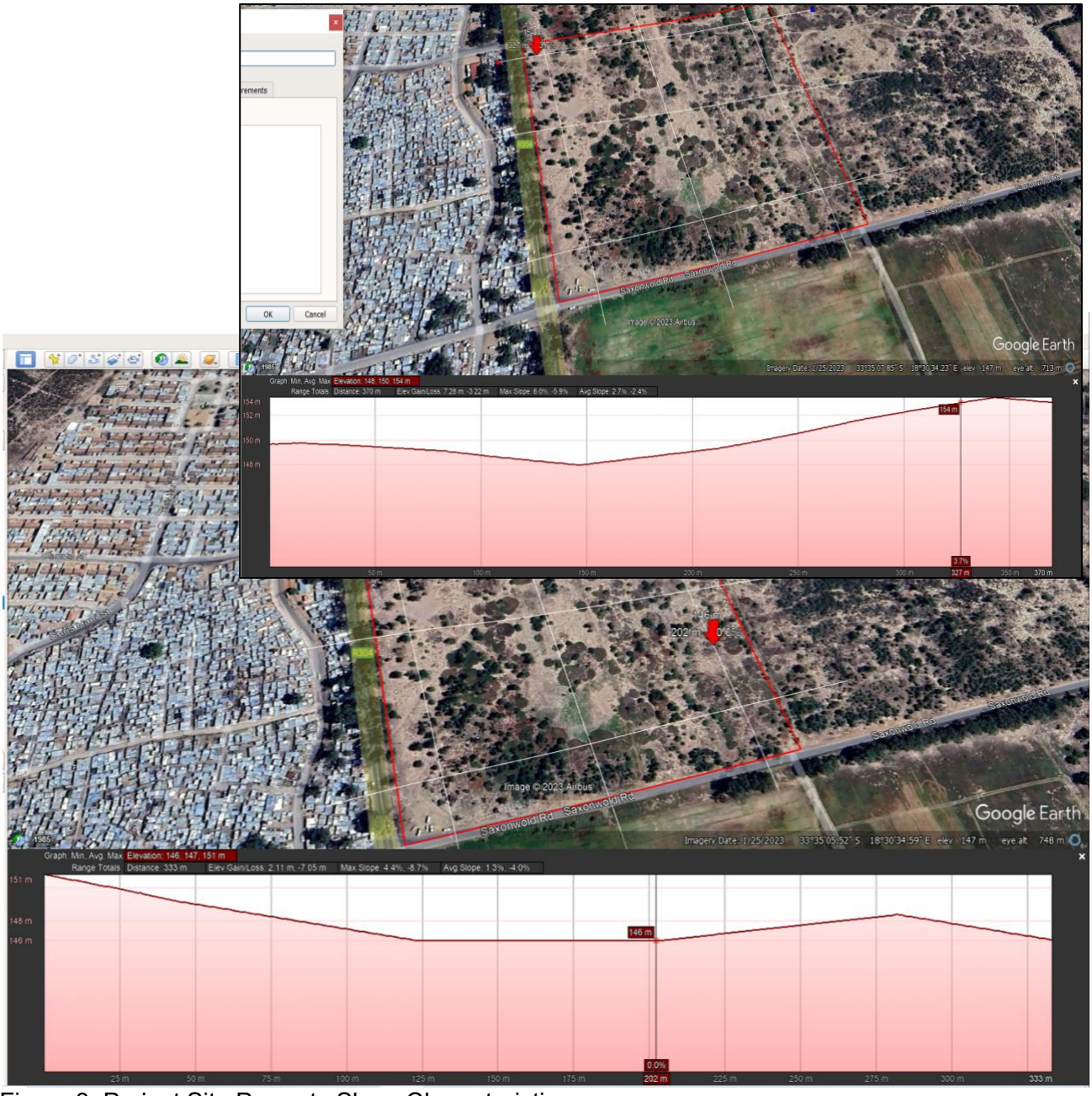

Figure 3: Project Site Property Slope Characteristics

4. Project Site Reference Land Use Setting

4.1. The surrounding land use setting can be broadly classified as agricultural industry (See following image).
4.2. From a snapshot view, the property does not seem in formal use, appearing significantly transformed from an alien vegetation invasion perspective in relation to its terrestrial dune sand plain reference context.
4.3. Due to the proximity of the project property to the main roadways and township locality situated on the opposite western extent, it is assumed that some degree of informal use of the site takes place.

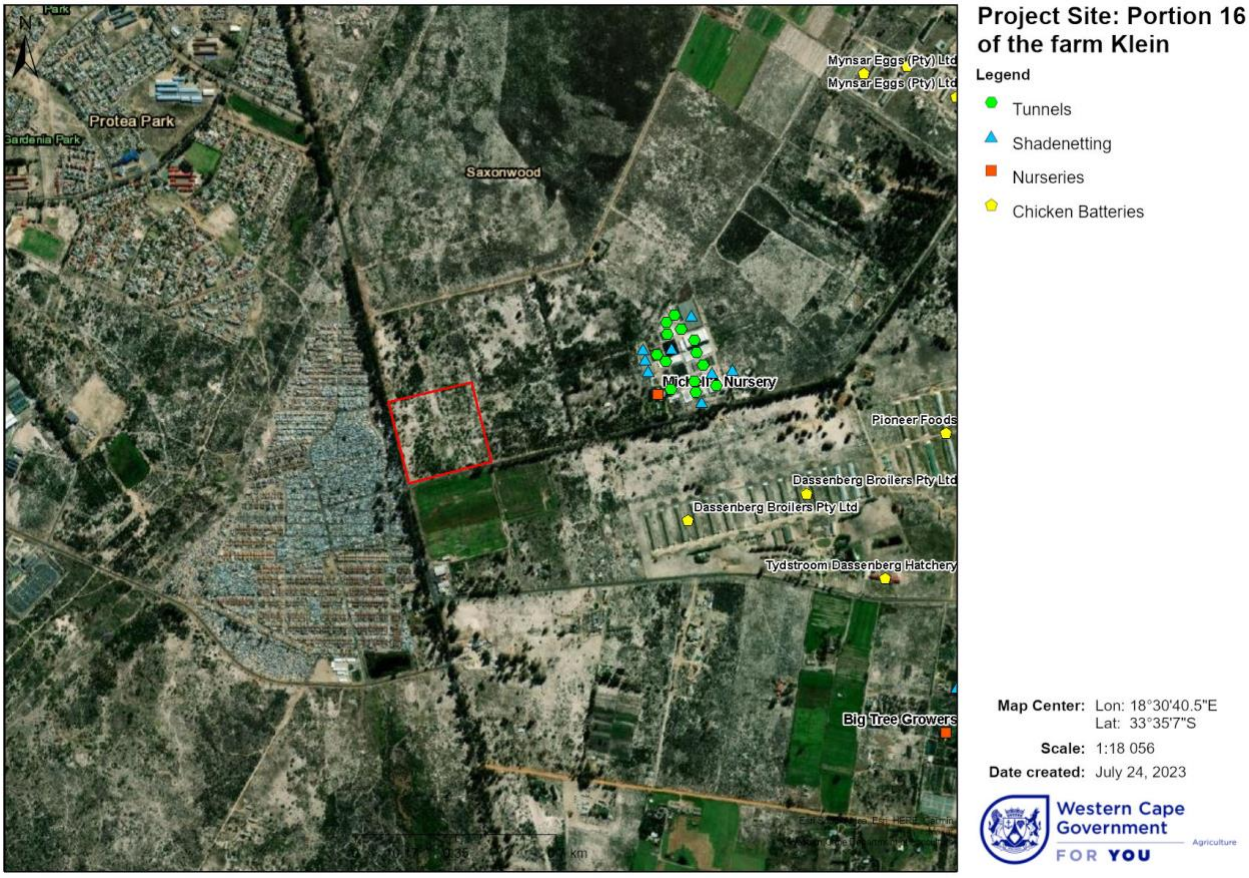

Figure 4: Project Site Land use setting

5. Project Site Historic Reference Context

5.1. A historic reference context for the project site was constructed by use of reference topographic maps, reference aerial photography and also by use of the Google Pro Timeline feature.
5.2. In general the site historic setting indicates past cultivation use (topomaps).
5.3. Figure 10 indicates that the site comprised agriculture industry during the February 2003 time period, whereas in current this use has been decommissioned and the structures have been removed.
5.4. Alien clearing practise is also evident from the 2014 period to current. The following aerial photography, GIS and satellite imagery refer.

Figure 5: Project Site Topographical Map representing the Year 2000 (Grid Reference 3318DA)

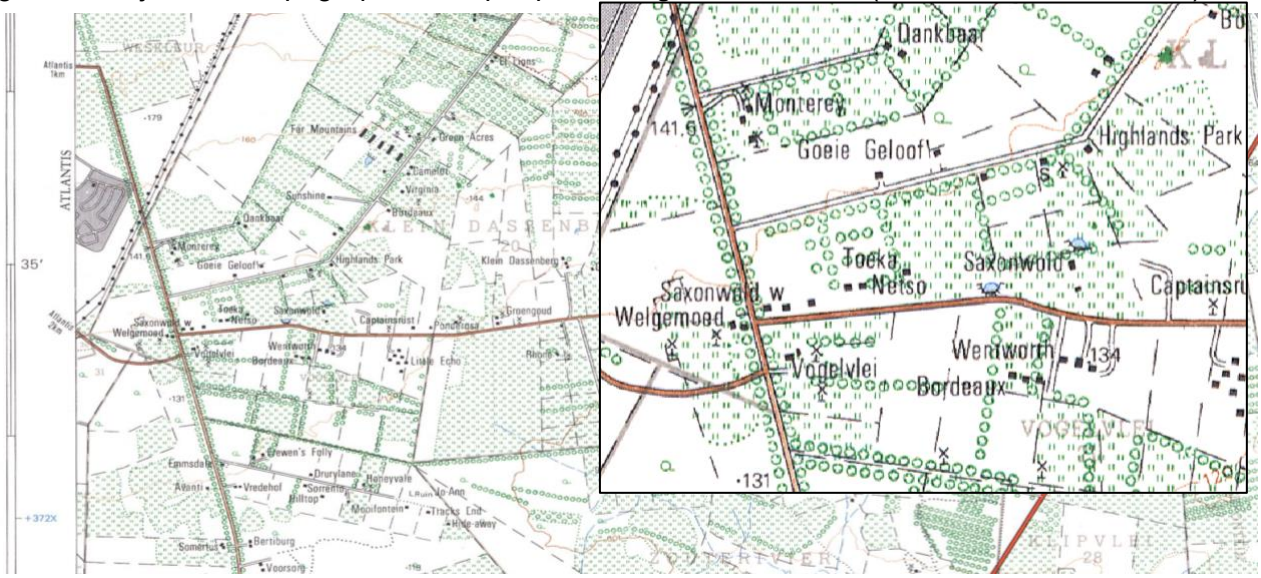

Figure 6: Project Site Topographical Map representing the Year 1980 (Grid Reference 3318DA)

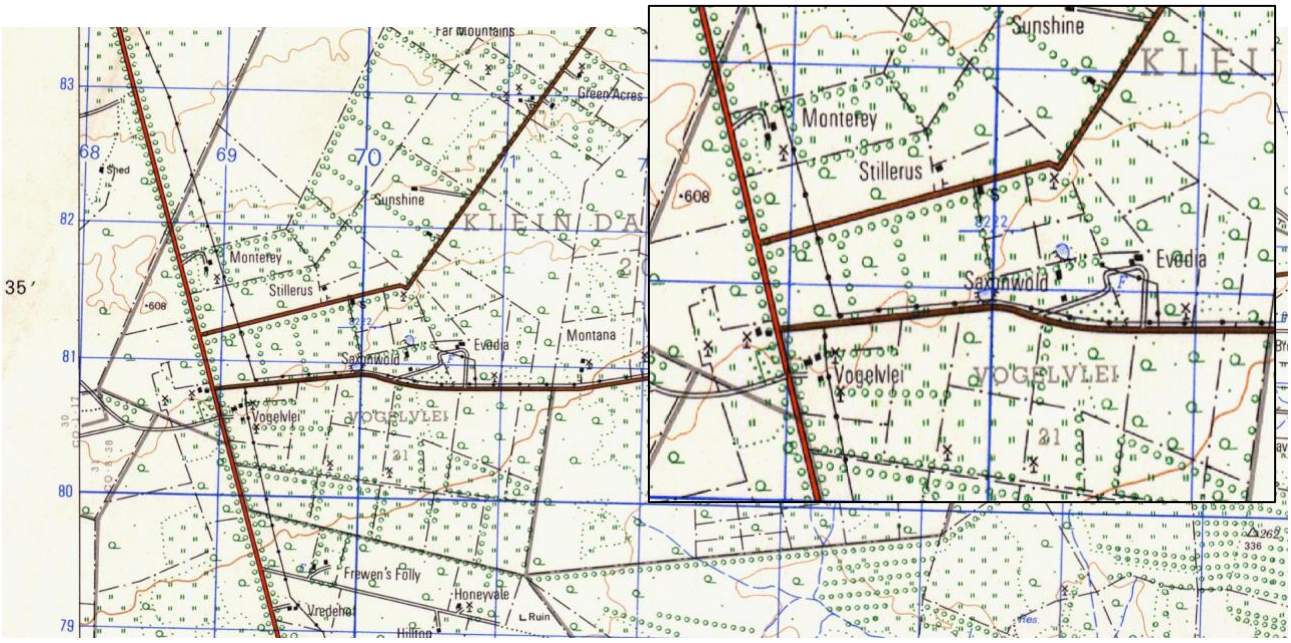

Figure 7: Project Site Topographical Map representing the Year 1966 (Grid Reference 3318DA)

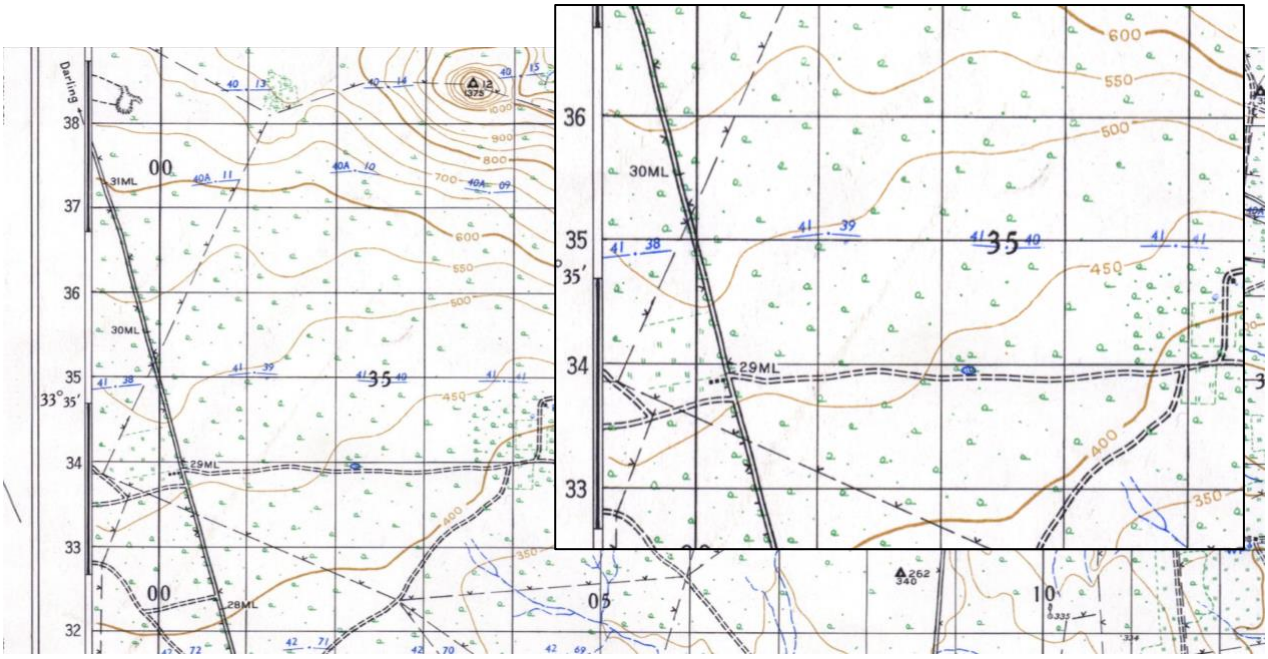

Figure 8: Project Site Topographical Map representing the Year 1941 (Grid Reference 3318DA)

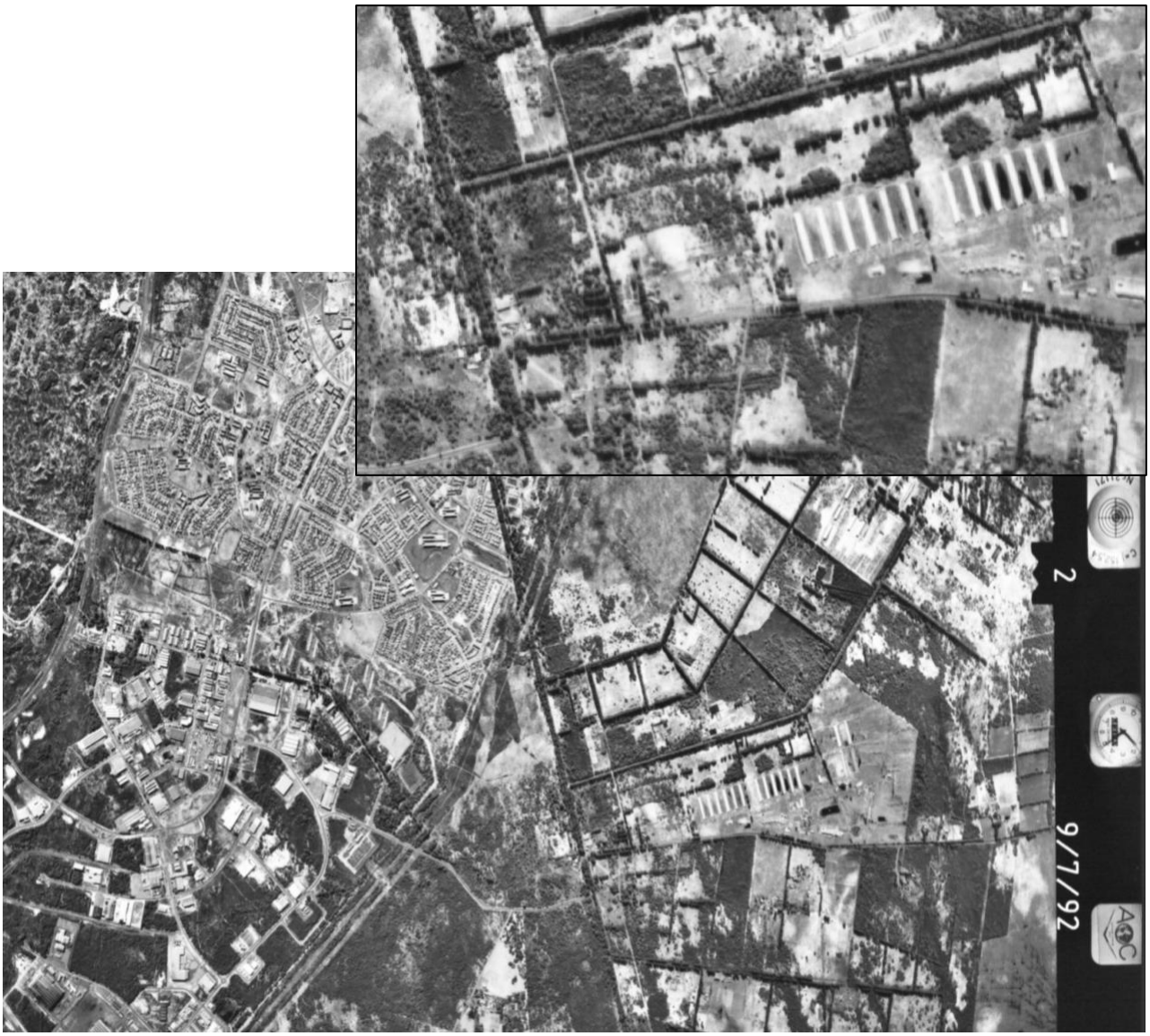

Figure 9: Project Site Aerial Photo representing the Year 1992

Figure 10: Google Earth Timeline Image representing the Project Site During the February 2003
Figure 11: Google Earth Timeline Image representing the Project Site During the October 2006

Figure 12: Google Earth Timeline Image representing the Project Site During the August 2009

Figure 13: Google Earth Timeline Image representing the Project Site During the August 2011

Figure 14: Google Earth Timeline Image representing the Project Site During the March 2014

Figure 15: Google Earth Timeline Image representing the Project Site During the June 2014

Figure 16: Google Earth Timeline Image representing the Project Site During the July 2014

Figure 17: Google Earth Timeline Image representing the Project Site During the August 2016

Figure 18: Google Earth Timeline Image representing the Project Site During the July 2019

6. Project Site Aquatic Biodiversity Sensitivity Review

6.1. Project site soils are sandy in nature comprising dune and sandplain reference types and classified under the grey regic sands types. These dune sands typically overlay calcrete and shale lenses on a deeper shale and/or sedimentary bedrock typical of the Table Mountain Supergroup (TMG). Overall the site soils are associated to the broader Sandveld group geologies.

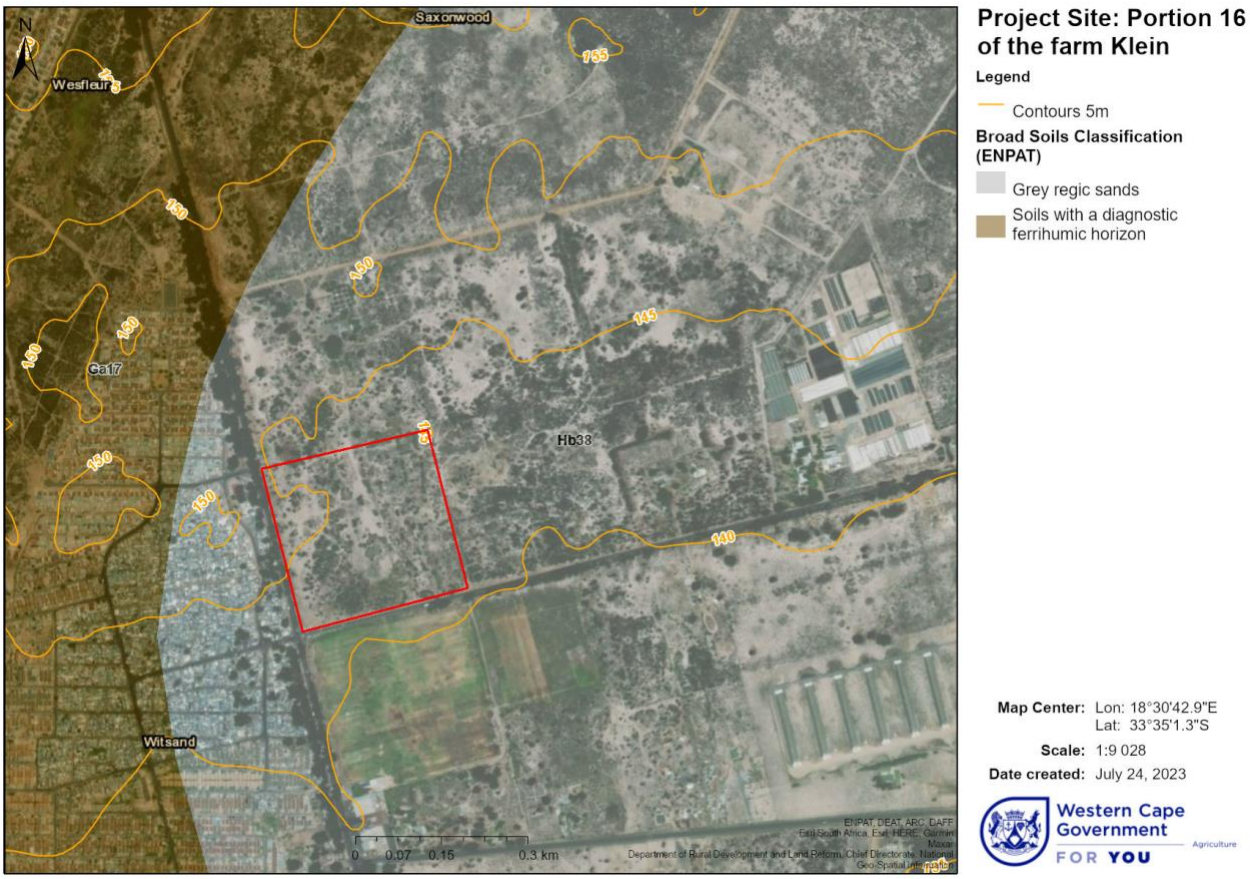

Figure 19: Study site soil map with contour lines (dune on northern site extent indicated as 150m)

6.2. The project site does not comprise any conservation priority areas, however in the broader site vicinity there are terrestrial conservation zones to the north as well as the east (see below image).

Figure 20: Study site and surrounding protected areas map

6.3. Project site natural flow accumulation model below indicates that site drainage takes place from the site north-west towards the site centre and then that site drains towards the south in general. No significant or high flow accumulation was found to transverse the site however it is clear that the site has at least 2 minor drainage zones regarded as low flow accumulation.

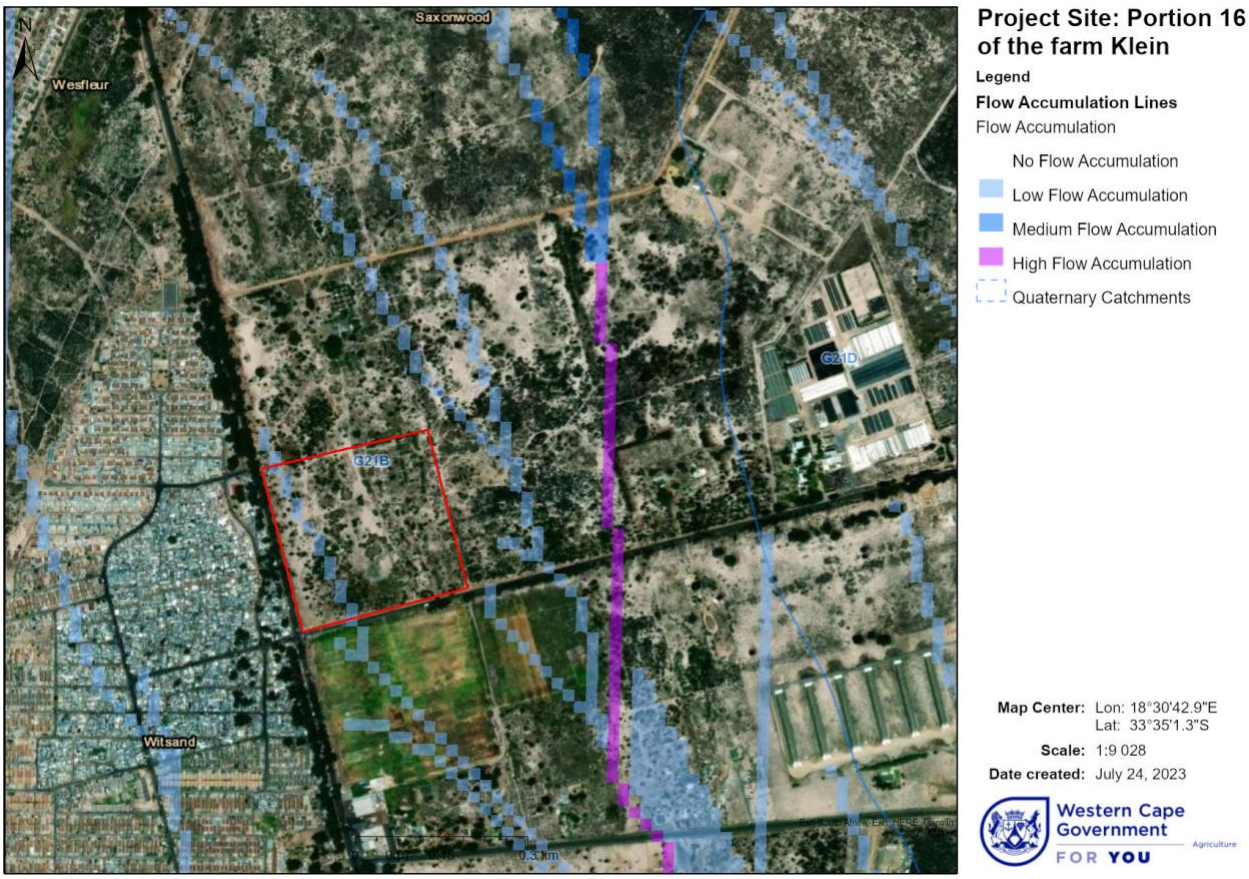

Figure 21: Study site natural flow accumulation model

6.4. The project site was modelled for alien invasive vegetation and was found to comprise significant blue gum stands as part of old roadside avenues and that the site itself is invaded by Port-Jackson vegetation (see below).

Figure 22: Study site alien vegetation presence model

7. Ground-truth photographic walk-about habitat assessment (see following photos)

7.1. A site ground-truth habitat inspection was undertaken on Saturday the 30th of July 2023 to provide a snapshot assessment of site habitat and in specific to confirm for presence of any site watercourses or any site wetland.
7.2. It should be noted that significant rainfall took place prior to site assessment.
7.3. The photographic assessment confirmed that the site was indeed significantly transformed from its natural reference state to a severe degree.
7.4. The level of transformation is related to past land uses such as the site being previously under cultivation as well as having been used previously for agricultural industry.
7.5. More recently it is clear that the site is being used as an informal dumping ground even as the project property is fenced off. This is attributed to the proximity of the site to a low cost settlement situated opposite the R304 which is just to the site west.
7.6. It is also clear that the site has significant alien vegetation with evidence of past alien clearing practise and significant weeds.
7.7. The site landscape also appears to be significantly altered from its reference undulating dune system possibly from past development as well as possibly from mining of parts of the site (i.e. Zama Zama).
7.8. It was also noted that parts of the site and vegetation was recently burnt.
7.9. It however must be noted that some very limited natural vegetation occurs on the site as remnants of the dune and plain type of fynbos, such as “daisies”, “vygies” and “restios”.

Figure 23: Study site higher lying north-western vicinity indicating severe site disturbance and a stray dog in the background.

Figure 24: Study site higher lying central area looking south-east, depicting alien eradication and weedy vegetation.

Figure 25: Study site western boundary depicting the site fence and weedy vegetation.

Figure 26: Site photo indicating the avenue of blue gums on the site western vicinity as well as the low cost settlement further west and site pathways.

Figure 27: Site photo indicating past alien eradication as well as the change in slope from the site looking north.

Figure 28: Image of site soil comprising typical dune sands without structure

Figure 29: Site remnant natural vegetation daisies (left) and restios (right).

Figure 30: Site photo indicating patches of “vygies” habitat nested amidst weedy vegetation.

Figure 31: Photo indicating the lower laying eastern and south eastern site area with evidence of past burn.

Figure 32: Soil profile of site lower laying vicinity indicating some limited organic horizon indicative of past cultivation practise.

8. Overall Findings and Compliance Recommendations

8.1. From an overall perspective this opinion report suggests that the project site investigated comprised “old land” previously cultivated and previously developed.
8.2. The past site development has significantly disturbed and transformed the natural ecosystem of the project site.
8.3. The compounding effect of more recent site disturbance from an informal use as well as alien invasion perspective has further deteriorated the site natural setting to one that is severely disturbed and severely transformed.
8.4. The project site investigated did not comprise any wetlands nor distinct watercourses. Site soils were profiled and revealed no mottling of soils although some limited organics were found close to the soil surface (i.e. past site cultivation).
8.5. No obligate wetland vegetation was found during the site ground-truth investigation.
8.6. Due to the transformed state of the site landscape comprising some remnant dunes and irregular slopes, it is recommended that a geotechnical study should inform the site structural development planning.
8.7. It is also recommended that a site stormwater management plan is developed to ensure that site drainage is formally controlled.

Figure 33: photo indicating poor stormwater management on the R301 road.

SPECIALIST CURRICULUM VITAE / RESUME

Personal Details

Full name : Earl Lesley Herdien *Pr.Sci.Nat.*

Nationality : South African (KhoiSan/Afrikaner/Indian/Black/Coloure

Profession / Career : Independent EAP and Water Use Adviser
Aquatic and Life Scientist
Strategic and Specialist Environmental Consultant

Email : Earll.Herdien@Gmail.com

Membership in Professional Societies:

- Registered as a Professional Natural Scientist with SACNASP (Reg. No. 400211/11)

Education:

BSc (Hons), Environmental Law, Biodiversity and Conservation Biology, University of the Western Cape, South Africa - **2005**

BSc, Environmental Science, Biodiversity and Conservation Biology, University of the Western Cape (Nominated for Prestigious Golden Key Awards) - **2004**

Majors: Environmental Science, Botany and Zoology I, 2 and 3

Employment History Summary:

2016-current Independent Consultant / KC Phyto (Pty) Ltd NED

Professional Aquatic Scientist, Water Use Advisor, Certificated Biodiversity Scientist and Environmental Scientist

2013-2015 National Department of Water and Sanitation Western Cape Region

Water Use and Resource Protection Lead Scientist

2010-2013 Royal Haskoning DHV (Previously SSI Engineers and Environmental Consultants)

Senior Consultant

International Rivers Delta's and Coasts Service Sector Lead Consultant / General Environmental Services Specialist / Water and Transport Engineering Sector Specialist / Strategic Unit Specialist Scientist

2008 -2010 BlueScience

Aquatic Consultant/Freshwater Scientist (professional experience and training)

During this period Earl was a locum lecturer/consultant for the UWC IWRM MPhil Catchment Processes Module and as a presenter for the Environmental Water Requirements Training field schools

2005 - 2008 CapeNature (professional mentorship experience and training)
Conservation Scientist/Riparian Ecologist (Western Cape River Conservation Unit founding member)

2003-2004 South African National Biodiversity Institute (SANBI)
Junior Botanist/Agricultural Research Technician (Prestigious Mandela Internship)

2002-2003 University of the Western Cape (UWC)
Marine Biologist Research Assistant to MSc and PhD students as well as assisting Professors with research
In-house consultant for Marine EIA's/Core Samples biota identification to family level. Field school demonstrator.

Experience Portfolio Overview:

Strategic Environmental and Sustainability Management (2008-current)

- WULA's, EIA's, Scoping Reports and EMP's for mining and energy sectors across South Africa (ESKOM UCG, Transmission dev 33kV-765kV, SANRAL borrow-pits dev, Black Mountain Vedanta Ore mines management MPRDA, SolAfrica Upington 75MW CSP dev, CoCT mix dev, Sand mining, Prospecting)
- WULA's, EIAs, Scoping Reports and EMPs for rail, road and water service infrastructure (Agriculture, PRAZA, SANRAL, Municipal and District pipe, stormwater, servitudes and water treatment plants)
- WULA's, EIA's, Scoping Reports and EMP's for private mix residential, industry, golf estates
- Development of estuary off-set plan for Richards Bay IDZ
- Development of EMFs for Northern Cape, KwaZulu Natal and Gauteng DM's
- Development of EMS's and specialised EMPr for Amatole DM, Drift Sands Nature Reserve, De Zalze Golf Estate, Mount Royal Golf Estate, Tokai Steenberg Estate
- Supporting Consultant to the Department of National Treasury (OCPO) Bulk Fuel Sourcing Strategy
- Currently undertaking University of the Western Cape (UWC) integrated WULA (NWA S21a & i water uses)

EIA and WULA Specialist Regulation, Compliance and Enforcement (2005-2008 and 2013-2015)

- Acted as an official advisory and specialist resource, providing permit application technical evaluation assessments and commenting on biodiversity matters in terms of CARA/NEMA/NEM:BA for CapeNature
- Acted as an official advisory and specialist resource, providing permit application technical evaluation assessments and commenting on water use matters for EIA/WULA in terms of the NWA for the Department of Water and Sanitation Western Cape Region
- Conducted numerous official site inspections with recommendations for crises/disaster management, compliance contraventions (NEMA S24G and NWA S19), as well as public health and safety

- Produced specialist reports and talks for relevant related water and conservation forums/organisations as mandated by serving as a civil servant on a broad spectrum of environmental issues
- Undertook groundwater compliance surveys of numerous landfills operated by the City of Cape Town
- Undertook Environmental Water Requirements (EWR) monitoring for the Berg and Olifants/Doorn Water Management Areas EWR sites as well as Resource Quality Objectives (RQO) compliance monitoring

Water Quality (WQ) Monitoring and Management (2005-current)

- WQ Monitoring for the Breede WMA (40 sites) testing against DWS recreational standards
- Supervised WQ Monitoring for the Stellenbosch and Cape Winelands municipal areas rivers (20 sites)
- Undertook water treatment works compliance monitoring (i.e. Stellenbosch and Franschhoek WWTW)
- Undertook construction based WQ monitoring for EIA EMPR of Calgro M3 Fleurhof dam (AMD)
- Undertook seasonal WQ monitoring and established a WQ monitoring network for Grindrod Coal Terminal Expansion (Matola) Maputo (SADC)
- WQ of Zambezi floodplain for a 20000ha Biofuel development in Caia District Sofala Province (SADC)
- Supported the compilation of Blue and Green Drop information for the Western Cape Environmental Outlook Report as well as for the National Environmental Outlook Report and for the iLemba EMF

River Monitoring and Management (2005-current)

- Produced fact sheets for River Health and biomonitoring for various organisations
- Provided lectures, mentorships, and courses in the field of Integrated Environmental Management and Resource Directed Measures (Water Resource/Watercourse Monitoring and Management)
- Provided numerous specialist management planning reports across South Africa relating to capturing, qualifying and quantifying Ecoclassification based EcoStatus or Ecological State models, contextualising development related impacts/risks and relevant associated aquatic features aspects with respect to “resource quality” by utilising various biomonitoring indices and water monitoring instrumentation
- Undertook thousands of site level biomonitoring and resource quality index assessments for the National River Health Programme and as part of private consulting practise
- Actively participated in the establishing of the Reserves, Classification and Resource Quality Objectives of significant rivers for the establishment of operational CMAs in the Western Cape

Wetland/Estuarine Monitoring and Management (2005-current)

- Numerous delineations and ground-truth mapping investigations
- Obligate Vegetation assessments including significant work experience in Genotyping
- Soil and Wetland classification assessments
- Wetland/Estuary health, Importance and Sensitivity classification
- Wetland Buffer, Monitoring, Management (EMPr) and Rehabilitation Reports

Biodiversity Monitoring and Management (2003-current)

- Undertook hundreds of biodiversity surveys across South Africa, with special interests in wetland and riparian vegetation as well as alien invasive plants and weeds and land rehabilitation
- Skilled in herbarium protocols, taxonomy and molecular ecology (sampled, extracted and sequenced 20 specimens into the National DNA Bank at the Leslie Hill Lab). Worked actively at SANBI (NBI/NBG)/ CAPENATURE/ BOLUS UCT/ UWC Herbariums and voluntary for CREW (Rare and Endangered *Spp*.)
- Participant as an I&AP/conservation authority/environmental practitioner providing active input from biodiversity and watercourse conservation strategic perspectives for policy planning and implementation

Air Quality Monitoring and Management (2009-current)

- Supporting consultant assisting UCT air-quality network monitoring of the quantity and effects of nitrogen deposition within natural Fynbos ecosystems in the Cape
- Supporting consultant for Grindrod Matola terminal air-quality monitoring network establishment and production assessment in Maputo (SADC)

State of the Environment Reporting (SoER 2005-current)

- Contributing and 1st author for the Olifants/Doorn water management area's SoER (Rivers) and technical reports (40 sites, 4 seasons RHP indices monitoring, modelling and recommendations) (2006)
- Contributing and 1st author for the Gouritz water management area's SoER (Rivers) and technical reports (37 sites, 4 seasons RHP indices monitoring, modelling and recommendations) (2007)
- Contributing and 1st author to CapeNature's Flagship Review publication on the Status of Biodiversity in the Western Cape: State of Rivers Report (2007)
- Contributing and 1st author for the Breede water management area's SoER (Rivers) (100 sites, 4 seasons RHP indices monitoring, modelling and recommendations) (2011)
- Contributing and 1st author to the Gauteng State of Environment Report (2011)
- Contributing and 1st author to the National Environmental Outlook Report (2012)
- Contributing and 1st author to the Western Cape Environmental Outlook Report (2013)

Reference work, additional Publications and Skills

Additional publication or personal professional reference work are provided on specific request as the scope of publications, platforms and clients are broad. Earl has undertaken numerous biological, ecological surveys/studies, and/or development consulting assignments and published on peer review as well as popular and professional publication formats consistently for the past 15 years. He owes his development as a professional scientist from deriving key strategic experience working in key positions at National and Provincial Government, as well as growing within the private sector by working for specialist water science company BlueScience and for a specialist international top tier engineering firm Royal HaskoningDHV.

Developing multi-level recommendations forms core competencies Earl is trained and experience in within surface water, groundwater and biodiversity monitoring and management. Earl is also experienced in working on all types of engineering projects, its various planning and implementation phases and has broad experience in terms of various engineering solution scales and land type use application sensitivities relations. Skills development is ongoing for the past 12 years and training is

updated regularly through attending relevant courses and conferencing (i.e. Fynbos Forum, SASAqS, WISA, CAPE, Agri/River/Wetland/Estuary Catchment forums, CapeNature, SANParks, DWS, SANBI, CSIR, CoCT, IAIA).

References:

company name: National Department of Water and Sanitation Western Cape Region
line manager (oversight): Wilna Kloppers
function: Manager of Resource Protection Directorate under Regulations Directorate
email: wilner.kloppers@westerncape.gov
location: 52 Voortrekker Road, Bellville
contact number: 0219416061

company name: Royal HaskoningDHV (RHDHV) / Prev. Steward Scott International (SSI)
line manager (oversight): Malcolm Roods
function: Market Segment Leader for Transport, Aviation and Planning Sector
email: malcolm.roods@rhdhv.com
location: Building No 5, Country Club Golf Estate, 21 Woodlands Drive, Woodmead
contact number: 0117986000 / alternatively 0219367600

company name: BlueScience Consulting
line manager (oversight): Dana F Grobler
function: Director (professional SACNASP mentorship)
email: dana@bluescience.co.za
location: 9 Quantum Street Technopark Stellenbosch
contact number: 0218510555

company name: CapeNature (Scientific Services - SSU)
line manager (oversight): Dr Ernst HW Baard
function: Director
email: ebaard@capenature.co.za ; alternatively ss_admin@capenature.co.za
location: PGWC Shared Services Centre, Corner of Bosduif and Volstruis Streets, Bridgetown (previously Jonkershoek Scientific Services Office which burnt down)
contact number: 0218668000

company name: South African National Biodiversity Institute (SANBI)
line manager (oversight): Dr Matthieu Rouget
function: GIS, Biodiversity Planning and Plant Taxonomy Mentor (Internship)
email: rouget@ukzn.ac.za ; alternatively Dr Ferozah Conrad f.conrad@sanbi.org.za
location: Kirstenbosch Research Centre, Kirstenbosch NBG, Rhodes Drive, Newlands.
contact number: 0217998800

THE SOUTH AFRICAN COUNCIL FOR NATURAL SCIENTIFIC PROFESSIONS

herewith certifies that

Earl Lesley Herdien
Registration number: 400211/11

is registered as a

Professional Natural Scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice
(Schedule I of the Act)

Aquatic Science **13 July 2011**

13 July 2011
Pretoria

President

Chief Executive Officer