Volwaterbaai Desalination Plant and Associated Infrastructure, Northern Cape

Scoping Report

Report Prepared for

Sedex Desalination (Pty) Ltd

Report Number 451101/02

NCDENC Reference Numbers: NC/EIA/07/NAM/KAM/KOT1/2013
NCP/EIA/0000225/2013

Report Prepared by

srk consulting

January 2014

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Note:

The Scoping Report was updated following the conclusion of the public comment period on the Scoping Report to produce this Final Scoping Report for submission to the Northern Cape Department of Environment and Nature Conservation.

The Final Scoping Report and the Executive Summary are identical in most respects to the versions made available for public comment. All changes in the Final Scoping Report are underlined ***and*** *italicised for ease of reference.*

A Comments and Responses Report, documenting the stakeholder engagement associated with release of the Scoping Report for public comment, and stakeholder comments and responses by SRK and the proponent, has been included as ***Appendix 5B****.*

Profile and Expertise of EAPs

SRK Consulting (South Africa) Pty Ltd (SRK) has been appointed by Sedex Desalination (Pty) Ltd (Sedex Desalination) to undertake the Environmental Impact Assessment (EIA) process required in terms of the National Environmental Management Act 107 of 1998 (NEMA).

SRK Consulting comprises over 1 700 professional staff worldwide, offering expertise in a wide range of environmental and engineering disciplines. SRK's Cape Town environmental department has a distinguished track record of managing large environmental and engineering projects and has been practising in the Western Cape since 1979. SRK has rigorous quality assurance standards and is ISO 9001 accredited.

As required by NEMA, the qualifications and experience of the key independent Environmental Assessment Practitioners (EAPs) undertaking the EIA are detailed below.

Project Director and Reviewer: Christopher Dalgliesh, BBusSc (Hons); MPhil (EnvSci)
Certified with the Interim Board for Environmental Assessment Practitioners South Africa (CEAPSA)
Chris Dalgliesh is a Partner at SRK Consulting and the Head of the Environmental Department in Cape Town. He has over 19 years of experience as an environmental consultant working on a broad range of EIA, auditing, environmental planning and management, public consultation and environmental management system projects. Chris's experience includes managing and co-ordinating major EIAs throughout Southern Africa and South America in the mining, energy, land-use planning and development, water and waste management, and industrial sectors.

Project Manager: Sharon Jones, BSc Hons (Env. Sci); MPhil (EnviroMan)
Certified with the Interim Board for Environmental Assessment Practitioners South Africa (CEAPSA)
Sharon Jones is a Principal Environmental Consultant with over 16 years of experience, primarily in South Africa, Southern Africa (Mozambique, Angola and Namibia) and South America (Suriname). Sharon has undertaken a number of EIAs for a variety of activities, provided input into IFC due diligence studies, compiled numerous construction and operational phase EMPs for a range of projects, and has audited compliance with EMPs on a number of sites. She is also involved with the development of Environmental Management Frameworks. Sharon is a registered Professional Natural Scientist (Environmental Science) with SACNASP and a Certified Environmental Practitioner of South Africa (CEAPSA).

Statement of SRK Independence

Neither SRK nor any of the authors of this Report have any material present or contingent interest in the outcome of this Report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of SRK.

SRK has no beneficial interest in the outcome of the assessment which is capable of affecting its independence.

Disclaimer

The opinions expressed in this report have been based on the information supplied to SRK by Sedex Desalination or their appointed consultants. SRK has exercised all due care in reviewing the supplied information, but conclusions from the review are reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

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Acronyms and Abbreviations

AGES	Africa Geo-Environmental Services
BA	Basic Assessment
Ca	Calcium
$CaCO_3$	Calcium Carbonate
CBA	Critical Biodiversity Area
CH_3CO_3H	Peroxyacetic Acid
CIP	Cleaning in Process
Cl	Chlorine
CO_2	Carbon Dioxide
CWDP	Coastal Waters Discharge Permit
DAF	Dissolved air flotation (a solids separation process)
DEA	National Department of Environmental Affairs
DEA&DP	(Western Cape) Department of Environmental Affairs and Development Planning
DEA: O&C	Department of Environmental Affairs: Oceans and Coasts
DMF	Dual media filtration
DWA	Department of Water Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Programme
EMZ	Environmental Management Zone
ESA	Ecological Support Area
EStA	Early Stone Age
$FeCl_3$	Ferric Chloride
GGP	Gross Geographic Product
GN	Government Notice
H_2SO_4	Sulphuric Acid
HAT	Highest Astronomical Tide
HCl	Hydrochloric Acid
HIA	Heritage Impact Assessment
HWM	High Water Mark
IAP	Interested and Affected Party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IUCN	International Union for Conservation of Nature and Natural Resources
KLM	Kamiesberg Local Municipality
LAT	Lowest Astronomical Tide
LM	Local Municipality
LSA	Late Stone Age
MHI	Major Hazardous Installation

MPA	Marine Protected Area
MLRA	Marine Living Resources Act: Act 18 of 1998
Mm^3	Million cubic metres
MSA	Middle Stone Age
MSL	Mean Seawater Level
Na_2CO_3	Sodium Carbonate
NaOH	Sodium Hydroxide
NCDENC	Northern Cape Department of Environment and Nature Conservation
NCPG	Northern Cape Provincial Government
NDBSP	Namakwa District Biodiversity Sector Plan
NDM	Namakwa District Municipality
NEMA	National Environmental Management Act 107 of 1998 as amended
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
NEM:ICMA	National Environmental Management: Integrated Coastal Management Act 24 of 2008
NEM:PAA	National Environmental Management: Protected Areas Act 57 of 2003
NFEPA	National Freshwater Ecosystem Priority Area
NH_3	Ammonium Hydroxide
NHRA	National Heritage Resources Act 25 of 1999
NSBA	National Spatial Biodiversity Assessment
NSDF	National Spatial Development Framework
NSSD	National Strategy for Sustainable Development and Action Plan
NTC	National Training Centre
NTU	Nephelometric Turbidity Units
NWA	National Water Act 36 of 1998
OHSA	Occupational Health and Safety Act 85 of 1993
PGDS	Provincial Growth and Development Strategy
PSDF	Provincial Spatial Development Framework
RDL	Red Data List
RHDHV	Royal Haskoning DHV
RO	Reverse Osmosis
S&EIR	Scoping and Environmental Impact Reporting
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SAS	Scientific Aquatic Services
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
SEMP	Strategic Environmental Management Plan
SKEP	Succulent Karoo Ecosystem Programme
SLP	Social and Labour Plan
SMBS	Sodium Metabisulphite

SPC	Spatial Planning Categories
SRK	SRK Consulting (South Africa) (Pty) Ltd
StatsSA	Statistics South Africa
ToR	Terms of Reference
UDS	Urine Diversion Systems
VIP	Ventilated Improved Pit
WMA	Water Management Area
WSP	WSP Africa Coastal Engineers
WUL	Water Use Licence

Glossary

Aquifer	An underground body of water.
Baseline	Information gathered at the beginning of a study which describes the environment prior to development of a project and against which predicted changes (impacts) are measured.
Biocide	Substance that is used to destroy all forms of life.
Biodiversity	The diversity, or variety, of plants, animals and other living things in a particular area or region. It encompasses habitat diversity, species diversity and genetic diversity
Brine	High salinity effluent discharged from the desalination plant. This may contain small amounts of chemicals used in the desalination plant.
Consultation	A process for the exchange of views, concerns and proposals about a proposed project through meaningful discussions and the open sharing of information.
Disclosure	The release of or provision of access to information, usually (but not exclusively) in the form of written reports.
Disinfectant	Substance applied to non-living objects to destroy microorganisms.
Ecology	The study of the interrelationships of organisms with and within their environment.
Ecosystem	The interconnected assemblage of all species' populations that occupy a given area and the physical environment with which they interact.
Endemic / Endemism	Found only within the study area.
Environment	The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historical and cultural aspects.
Environmental Impact Assessment	A process of evaluating the environmental and socio-economic consequences of a proposed course of action or project.
Environmental Impact Assessment Report	The report produced to relay the information gathered and assessments undertaken during the EIA.
Environmental Management Programme	A description of the means for achieving environmental objectives and targets during all stages of a specific proposed activity.
Fauna	The collective animals of a given region.
Feasibility study	The determination of the technical and financial viability of a proposed project.
Feedwater	Raw, untreated water feeding into the desalination process.
Flora	The collective plants growing in a geographic area.
Geohydrology	The study of groundwater.

Heritage Resources	Refers to something, e.g. a building, an area, a ritual, etc. that forms part of a community's cultural legacy or tradition and is passed down from preceding generations.
Integrated Environmental Management	The practice of incorporating environmental management into all stages of a project's life cycle, namely planning, design, implementation, management and review.
Mitigation measures	Design or management measures that are intended to minimise or enhance an impact, depending on the desired effect. These measures are ideally incorporated into a design at an early stage.
Process Water	Also referred to as permeate. This is water from the desalination process which has not yet been demineralised and disinfected to meet the standards required to be considered Product Water.
Product Water	Water from the desalination process which has undergone all final treatments (demineralisation and disinfection) to meet the required water quality standards for the end use.
Red Data List	Species of plants and animals that, because of their rarity and/or level of endemism, are included on a Red Data List (usually compiled by the IUCN) which provides an indication of their threat of extinction and recommendations for their protection.
Reverse Osmosis Desalination	The process whereby water is forced through semi-permeable membranes at very high pressure, thereby producing permeate of low (or zero) salinity and brine in which all solutes have been concentrated.
Scoping	A procedure to consult with stakeholders to determine issues and concerns and for determining the extent of and approach to an EIA. This process results in the development of a scope of work for the EIA and specialist studies.
Specialist study	A study into a particular aspect of the environment, undertaken by an expert in that discipline.
Stakeholders	All parties affected by and/or able to influence a project, often those in a position of authority and/or representing others. Also referred to as Interested and/or Affected Parties.
Stakeholder engagement	The process of notifying and consulting stakeholders about a proposed project, and providing opportunities for input into the EIA process and project design. Also referred to as Public Participation.
Surfzone	The area in which waves from the ocean start to break onto the shore.
Sustainable development	Sustainable development is generally defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. NEMA defines sustainable development as the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

1 Introduction

1.1 Background and Introduction

Sedex Minerals (Pty) Ltd (Sedex Minerals) intends to mine a Rare Earth Element deposit and beneficiate the ore to produce a mixed rare earth salt at the Zandkopsdrift Mine, 30 km south of the town of Garies in the Northern Cape Province. Sedex Desalination (Pty) Ltd (Sedex Desalination), a subsidiary of Sedex Minerals proposes to construct a 4 million m^3/annum (Mm^3/a) seawater desalination plant, including associated infrastructure and services at Volwaterbaai, on the farm Strandfontein 559 in the Northern Cape, (see Figure 1-1) to supply demineralised water via a transfer pipe to the Zandkopsdrift Mine.

The National Environmental Management Act 107 of 1998, as amended (NEMA), and the Environmental Impact Assessment (EIA) Regulations, 2010 (promulgated in terms of NEMA) warrant that listed activities require Environmental Authorisation (EA) from the National Department of Environmental Affairs (DEA) or provincial equivalent, in this case the Northern Cape Department of Environment and Nature Conservation (NCDENC). A Scoping and Environmental Impact Reporting (S&EIR, also referred to as an EIA) process is required to support an application for EA.

SRK Consulting (South Africa) Pty Ltd (SRK) has been appointed by Sedex Desalination to undertake the S&EIR process required in terms of the NEMA, the EIA Regulations, 2010.

1.2 Purpose of the Report

This document is intended to guide the EIA process and specialist studies by:

- Providing an overview of the legal requirements with regard to the proposed project, the proposed project description and anticipated environmental and social issues and impacts that will be further investigated in the EIA; and
- Setting out the scope of the EIA process and the Terms of Reference (ToR) for specialist studies and outlining the approach and methodologies to be used in the EIA process, e.g. the proposed impact rating methodology.

This report will be submitted to NCDENC for their acceptance.

1.3 Structure of this Report

This report describes the proposed activity and its context, details the stakeholder engagement process, presents the results of the Scoping Phase and sets out the Plan of Study for the Impact Assessment Phase. The report consists of the following sections:

Section 1: Introduction

Provides an introduction and background to the proposed project and outlines the purpose of this document and the assumptions and limitation applicable to the study.

Section 2: Governance Framework and Environmental Process

Provides a brief summary and interpretation of the relevant legislation as well as pertinent strategic planning documents, and outlines the approach to the environmental process.

Section 3: Project Description

Describes the location and current status of the site and provides a brief summary of the surrounding land uses as well as background to and a motivation for the proposed project.

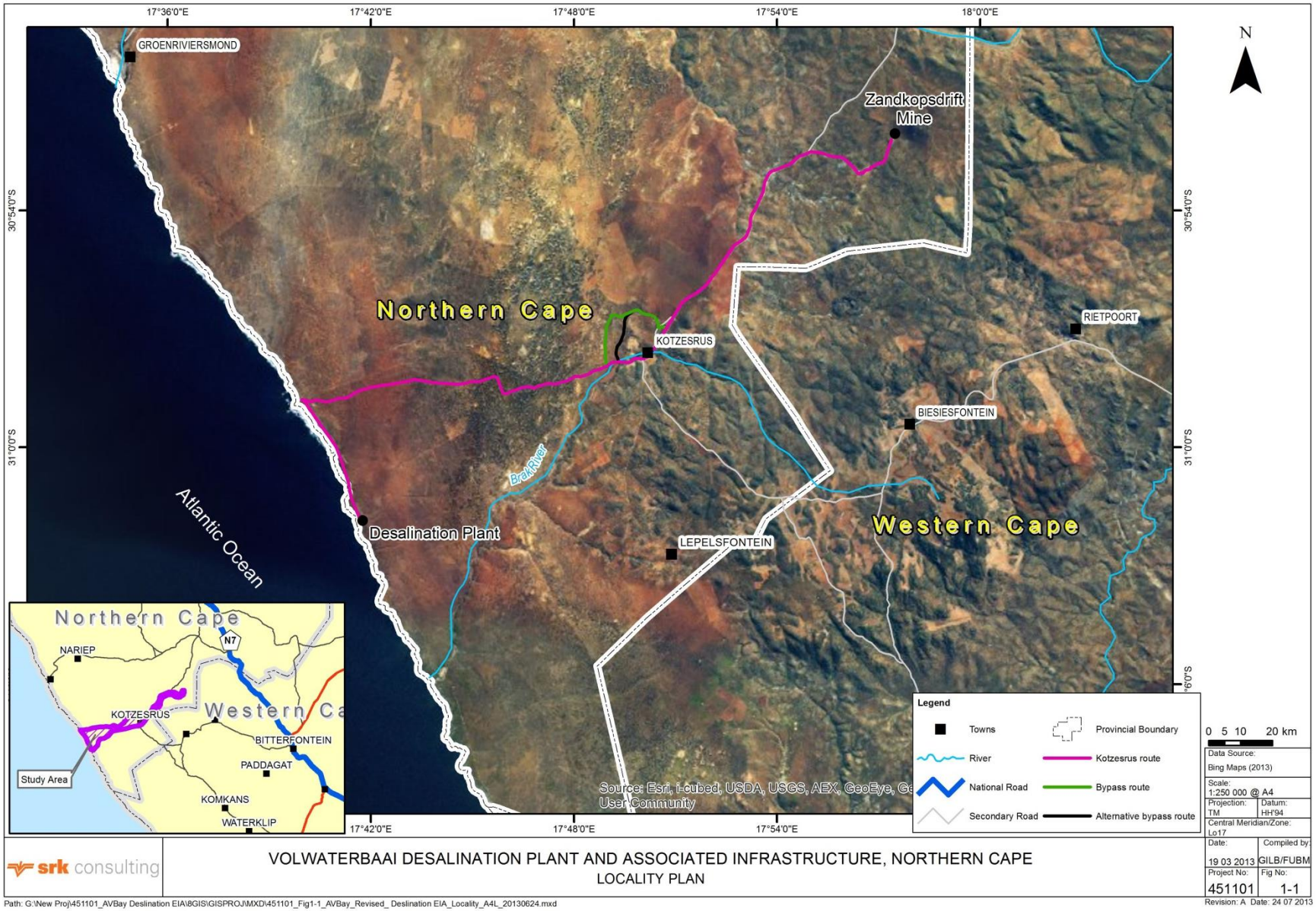

Figure 1-1: Locality Plan

Section 4: Description of the Affected Environment

Briefly describes the biophysical and socio-economic characteristics of the affected environment that will be considered in the assessment of potential project impacts.

Section 5: Stakeholder Engagement

Details the stakeholder engagement activities conducted and planned for the Scoping Phase.

Section 6: Potential Environmental and Social Impacts

Identifies the potential impacts associated with the proposed expansion that will require investigation during the Impact Assessment Phase.

Section 7: Plan of Study for the EIA

Presents the proposed approach to the Impact Assessment Phase, outlines the methodology that will be adopted in assessing the potential impacts during the Impact Assessment Phase, identifies the specialist studies that are required and proposes the preliminary ToR for these studies.

Section 8: Findings and Recommendations

Summarises the key findings of the Scoping Phase and outlines the way forward in the Impact Assessment Phase.

1.4 Content of Report

The EIA Regulations, 2010 (Government Notice (GN) 543, Chapter 3, Part 3, Section 28) prescribe the required content in a Scoping Report. These requirements and the sections of this Scoping Report in which they have been addressed, are summarised in Table 1-1.

Table 1-1: Content of Scoping Report as per EIA Regulations, 2010

GN 543, S28 Ref.:	Requirement	Section Ref.:
(1) (a) (i)	Details of the EAP who prepared the report	page ii
(1) (a) (ii)	The expertise of the EAP to carry out scoping procedures	page ii
(1) (b)	A description of the proposed activity	3
(1) (c)	A description of any feasible and reasonable alternatives that have been identified	3.5
(1) (d)	A description of the property on which the activity is to be undertaken and the location of the activity on the property	3.3
(1) (e)	A description of the environment that may be affected by the activity	4
(1) (e)	A description of how the environment may affect the activity	6
(1) (f)	An identification of all legislation and guidelines that have been considered in the preparation of the scoping report	2
(1) (g)	A description of environmental issues and potential impacts, including cumulative impacts, that have been identified	6
(1) (h)	Details of the public participation process conducted, including:	5
(1) (h) (i)	Steps taken to notify Interested and Affected Parties (IAPs)	5
(1) (h) (ii)	Proof of notice boards, advertisements and notices	*To be provided later*
(1) (h) (iii)	A list of identified and notified IAPs	App 5A
(1) (h) (iv)	A summary of issues raised by IAPs during initial registration and responses given by EAP	*To be provided later*
(1) (i)	A description of the need and desirability of the proposed activity	3.7
(1) (j)	A description of identified alternatives (including advantages and disadvantages of each alternative)	3.5
(1) (k)	Copies of IAP submissions	*To be*

GN 543, S28 Ref.:	Requirement	Section Ref.:
(1) (l)	Copies of minutes of any meetings held by the EAP with IAPs or other stakeholders which indicate the views of participants on the project	*provided later*
(1) (m)	Responses by the EAP to views presented during initial registration	
(1) (n)	A plan of study for the EIA, including:	7
(1) (n) (i)	A description of the tasks to be undertaken in the EIA (including specialist studies and specialist ToR)	7
(1) (n) (ii)	An indication of the stages at which the competent authority/ies will be consulted	7
(1) (n) (iii)	A description of the method of assessing issues and alternatives	7.9
(1) (n) (iv)	Particulars of the public participation process that will be conducted during the EIA process.	7.5
(1) (o)	Any specific information required by the competent authority	-
(1) (p)	Any other matters required in terms of 24(4)(a) and (b) of NEMA	-
(2)	Any guidelines applicable to the kind of activity	-
(3)	Detailed written proof of an investigation of feasible alternatives, or motivation if no reasonable or feasible alternatives exist.	3.5

1.5 Assumptions and Limitations

As is standard practice, this Scoping Report is based on a number of assumptions and is subject to certain limitations. These are as follows:

- It is assumed that information provided by Sedex Desalination and other consultants and specialists is accurate;
- A more detailed project description will be presented in the EIA Report; and
- Detailed assessment of the potential positive and negative environmental impacts of the proposed development will only be undertaken during the Impact Assessment Phase.

Notwithstanding the above, SRK is confident that these assumptions and limitations do not compromise the overall findings of this report.