TABLE OF CONTENTS

		PAGE
	EXECUTIVE SUMMARY	i
	LIST OF TABLES	
1.	INTRODUCTION	1-1
1.1	Energy Policy framework	1-1
1.1.1.	White Paper on the Energy Policy of the Republic of South Africa – 1998	1-2
<i>1.1.2.</i>	Integrated Energy Plan (IEP) – 2003	1-2
1.1.3.	National Integrated Resource Plan (NIRP) – 2003/2004	1-2
1.1.4.	Eskom Integrated Strategic Electricity Planning (ISEP) – 2005	1-3
1.2.	Overview of the Proposed Project	1- 6
1.3.	Environmental Legal Requirements	1-7
1.3.1.	The National Environmental Management Act	1-7
1.3.2.	The Constitution of South Africa	1-11
1.3.3.	Legal requirements in terms of other Acts	1-11
1.4	Environmental Study Requirements	1-12
2.	TECHNICAL DESCRIPTION OF THE PROPOSED PROJECT	2-1
2.1	The Proposed Pumped Storage Scheme	2-1
2.1.1	Reservoirs	2-3
2.1.2	Intake and Outfall Structures	2-3
2.1.3	Waterways	2-3
2.1.4	Power House Complex	2-5
2.1.5	Power house complex access	2-6
2.1.6	Access and Site Roads	2-6
2.1.7	Construction Villages	2-6
<u>2.1.8</u>	Communication Mast	2-7
3.	PROJECT ALTERNATIVES	3-1
3.1.	High-level Eskom site identification for pumped	3-1
	storage schemes in South Africa	
3.1.1.	Preliminary Site Selection	3-1
3.1.2.	Final Site Selection	3-3
3.2.	'Current Scheme'	3-5
3.3.	The 'Do Nothing' Alternative	3-5
3.4.	Location Alternatives for the Establishment of a Pumped Storage Facility	3-6
3.5.	Description of Site Alternatives Identified within the Steelpoort / Roossenekal area, Limpopo Province	3-7
3.5.1	Site A (Southern Site)	3-7
3.5.2	Site B (Middle Site, Potential High Head)	3-8

Table of contents i 14/02/2007

<i>3.5.3</i>	Site C (Northern Site)	3-8
3.6	Description of Road Alternatives Identified within the Steelpoort area, Limpopo/Mpumalanga Province	3-9
4.	APPROACH TO THE ENVIRONMENTAL SCOPING STUDY	4-1
4.1	Authority Consultation during Scoping phase	4-1
4.1.1	Consultation with Decision-making Authorities	4-1
4.1.2	Consultation with other Relevant Authorities	4-2
4.2	Environmental Scoping Study (ESS)	4-2
4.2.1	Specialist Inputs	4-3
4.2.2	Assumptions of the Study	4-4
4.3	Public Participation Process for the Environmental Scoping Study	4-4
4.3.1	Advertising	4-5
4.3.2	Identification of and Consultation with Stakeholders and I&APs	4-5
4.3.3	Background Information Document	4-7
4.3.4	Consultation and Public Involvement	4-7
4.3.5	Social Issues Trail	4-9
4.4	Review of Draft Environmental Scoping Report and Plan of Study for EIA	4-9
4.4.1	Public Review of Draft Environmental Scoping Report and Plan of Study for EIA	4-10
4.4.2	Authority Review of Draft Environmental Scoping Report and Plan of Study for the EIA.	4-10
4.5	Final Environmental Scoping Report	4-11
5.	METHODOLOGY TO BE USED DURING IMPACT EVALUATION DURING THE ESS	5-1
5.1	Site Evaluation – Environmental Screening Investigation Desk-top and Field Studies	5-1
5.2	Specialist Inputs	5-1
5.3	Rating Methodology and Criteria	5-4
6.	ENVIRONMENTAL SCOPING STUDY	
6.1	Description of Affected Environment	6-1
6.1.1	Location and Topography	6-1
6.1.2	Drainage	6-1
6.1.3	Land Use	6-2
6.1.4	Climate	6-2
6.1.5	Nature and Extent of the Impacts	6-3
6.2	Terrestrial Ecology	6-4
6.2.1	Species of Concern	6-4
6.2.2	Flora	6-5
6.2.3	Fauna	6-7
6.2.4	Site-specific Ecological Evaluation	6-9
6.3	Riverine Ecology	6-13
6.3.1	Sites A and B	6-13
6.3.2	Site C	6-17

6.3.3	Site selection summary – riverine ecology	6-17
6.3.4	Nature and Extent of Impacts	6-17
6.4	Water Quality	6-18
6.4.1	Site A	6-19
6.4.2	Site B	6-19
6.4.3	Site C	6-20
6.4.4	Nature and Extent of Impacts	6-20
6.4.5	Site selection summary – Water Quality	6-22
6.5	Hydrology, Surface Water and Groundwater	6-22
6.5.1	Methodology	6-22
6.5.2	The study area	6-23
6.5.3	Hydrogeology	6-23
6.5.4	Site Selection Summary – Groundwater	6-24
6.5.5	Surface water quantity	6-26
6.5.6	Site Selection Summary - Surface Water and General Hydrology	6-27
6.5.7	Nature and Extent of Impacts	6-28
6.6	Wetlands	6-31
6.6.1	Methodology	6-31
6.6.2	Evaluation of the ESI	6-31
6.6.3	Site assessment	6-32
6.6.4	Studies to be conducted during the EIA phase	6-33
6.6.5	Site selection	6-34
6.6.6	Nature and extent of impacts	6-34
6.7	Geology	6-35
6.7.1	Nature and Extent of Impacts	6-35
6.8	Soils and Agricultural Potential	6-36
6.8.1	Land Types	6-36
6.8.2	Terrain Form and Terrain type	6-37
6.8.3	Terrain Unit	6-37
6.8.4	Nature and Extent of the Impacts	6-38
6.8.5	Site Selection Summary	6-39
7.	ENVIRONMENTAL SCOPING STUDY – SOCIAL ASPECTS	
7.1	Air Quality	7-1
7.1.1	Methodology	7-1
7.1.2	Baseline description of the area	7-2
7.1.3	Identified sensitive receptors	7-2
7.1.4	The Impact of Particulate Matter	7-3
7.1.5	Nature and Extent of the Impacts	7-5
7.2	Traffic	7-9
7.2.1	Status Quo Report	7-9
7.2.2	Assumptions for Traffic / Transport Scoping	7-9
7.2.3	Nature and Extent of the Impacts	7-9
7.3	Socio-economic Assessment	7-12
7.3.1	Introduction	7-12
<i>7.3.2</i>	Demographic	7-12
7.3.3	Displacement of Person	7-20

7.3.4	Health and Safety	7-21
7.3.5	Access Route to Site	7-25
7.3.6	Loss of Income	7-27
7.3.7	Employment Creation	7-28
7.3.8	Infrastructural Development	7-29
7.3.9	Noise	7-31
7.3.10	Summary Description and Assessment of Potential Impacts – Social Impact Assessment	7-31
7.3.11	Conclusions and Recommendations	7-33
7.4	Visual Impact	7-35
7.4.1	Site Selection Summary – Visual Impacts	7-36
7.5	Heritage	7-36
7.5.1	Stone Age (2000 000 ago to ad 200)	7-36
7.5.2	Iron Age (AD 200 – AD 1830)	7-37
7.5.3	Historic Period (post ad 1840)	7-37
7.5.4	Site A	7-38
7.5.5	Site B	7-38
7.5.6	Site C	7-38
7.5.7	Site Selection Summary – Heritage Aspects	7-38
7.6	Tourism	7-40
7.6.1	Methodology	7-40
7.6.2	Current tourism in and around Steelpoort	7-40
7.6.3	Future tourism in and around Steelpoort	7-43
7.6.4	Preferred site selection	7-44
7.6.5	Nature and extent of the impacts	7-44
	national and anti-map and	
8.	CONCLUSIONS AND RECOMMENDATIONS	8-1
8.1	Alternatives	8-1
8.2	Potential Environmental Impacts	8-2
8.3	Conclusions	8-10
8.4	Recommendations	8-10
8.4.1	Preferred Site Alternative	8-10
9.	PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT	9-1
9.1	Approach to Undertake the Environmental Impact Assessment Phase of the Project	9-1
9.1.1	Authority Consultation	9-1
9.2	Application for Authorisation	9-2
9.3	Environmental Impact Assessment	9-3
9.3.1	Aims of the Environmental Impact Assessment	9-3
9.3.2	Issues not requiring further assessment	9-3
9.3.3	Detailed Studies to be undertaken as part of the EIA	9-4
9.4	Public Participation Process	9-12
9.4.1	Advertising	9-12
9.4.2	Identification of and Consultation with Key	9-12
	Stakeholders	
9.4.3	I&AP Database	9-12
9.4.4	Consultation and Public Involvement	9-13
9.4.5	Social Issues Trail	9-14

9.5	Compilation of the Environmental Impact Assessment Report	9-14
9.6	Review of the Environmental Impact Assessment Report	9-16
9.6.1	Public Review of the Environmental Impact Assessment report	9-16
9.6.2	Authority Review of the Environmental Impact Assessment Report	9-16
9.7	Authorisation	9-17
9.8	Environmental Management Plan	9-17
9.9	Environmental Study Team	9-18
10.	REFERENCES	10-1

APPENDICES

Appendix A:	Locality map
Appendix B:	Applicable permitting requirements and legislation
Appendix C:	Minutes of the pre-application meeting with authorities
Appendix D:	Application Forms and Declarations of Interest
Appendix E:	Advertisements of commencement of EIA process
Appendix F:	Background Information Document (briefing paper) and registration and comment form
Appendix G:	Minutes of Meetings
Appendix H:	Issues Trail and I&AP Database
Appendix I:	Advertisements of availability of draft ESR for public comment
Appendix J:	Air Quality Assessment Report
Appendix K:	Environmental Screening Investigation Report
Appendix L:	Hydro-geological Investigation Report
Appendix M:	Wetlands Assessment Report
Appendix N:	Traffic Assessment Report
Appendix O:	Social Assessment Report
Annendix P·	Tourism Assessment Report

LIST OF TABLES

Table 5.1:	Specialist studies and the components investigated during the Environmental Screening Investigation (ESI)	5-2
Table 5.2:	Specialist studies and the components investigated by the specialist team during the ESS	5-3
Table 6.1:	Average monthly temperature for the region	6-3
Table 6.2:	Rating of Impact: Topography And Climate	6-3
Table 6.3:	The six main IUCN categories indicating the level to which a species' survival is threatened (Minter <i>et al</i> , 2004).	6-4
Table 6.4:	The "old" IUCN Red Data categories (1986) (Hilton-Taylor, 1996).	6-4
Table 6.5:	Alternative site ratings based on terrestrial ecology	6-12
Table 6.6:	Potential impact on Terrestrial fauna and flora	6-12
Table 6.7:	Alternative site ratings based on riverine ecology	6-17
Table 6.8:	Rating Of Impacts on Riverine Ecology	6-18
Table 6.9:	Rating Of Impacts on Water Quality	6-21
Table 6.10:	Alternative site ratings based on water quality	6-22
Table 6.11:	Rating Of Impacts on Hydrology	6-30
Table 6.12:	Rating Of Impacts on Wetlands	6-34
Table 6.13:	Rating Of Impacts on Geology	6-36
Table 6.14:	Rating Of Impacts on Agricultural Potential	6-39
Table 6.15:	Site selection – agricultural potential – ESI	6-39
Table 7.1	Rating Of Impacts on Air Quality	7-8
Table 7.2:	Rating Of Impacts on Traffic	7-11
Table 7.3	Affected Communities	7-13
Table 7.4:	Rating Of Impacts in Terms of Influx of Workers	7-19
Table 7.5:	Potential displacement of persons at each of the alternative sites	7-20
Table 7.6:	Site selection and impacts summary – displacement of persons – ESI	7-20
Table 7.7:	Site selection summary – displacement of persons – ESI	7-21
Table 7.8	Potential health risks and suitability of alternative sites	7-22
Table 7.9	Site selection summary – Health and Safety – ESI	7-23
Table 7.10	Impacts summary – Health and Safety (HIV/Aids) – ESS	7-23

Table 7.11	Impacts summary – Health and Safety (Safety Hazard of Water levels) – ESS	7-24
Table 7.12	Impacts summary – Health and Safety (Vehicle Emissions) – ESS	7-24
Table 7.13	Access routes	7-25
Table 7.14	Impacts summary – Health and Safety (Traffic Hazard) – ESS	7-25
Table 7.15 Table 7.16	Impacts summary – Health and Safety (Disruption of Community Activities) – ESS Site Selection – access routes – ESI	7-26 7-26
Table 7.17	Potential loss of income	7-28
Table 7.18	Site selection summary – loss of income – ESS	7-28
Table 7.19:	Site selection summary – loss of income – ESI	7-28
Table 7.20:	Site selection summary – employment creation – ESS	7-29
Table 7.21:	Site selection and impacts summary – infrastructural development – ESI	7-29
Table 7.22:	Site selection and impacts summary – infrastructural development – ESS	7-30
Table 7.23:	Site selection summary – employment creation – ESI	7-30
Table 7.24:	Rating of Impacts – Noise – ESS	7-31
Table 7.25:	Construction and Operations activities	7-31
Table 7.26:	Summarized Ranking of Alternative Sites (ESS)	7-33
Table 7.27:	Site Preference Ratings for the Proposed Sites	7-34
Table 7.28:	Symbols of Rating Impacts	7-34
Table 7.29:	Summary of Impact Ratings – Social Aspects	7-34
Table 7.30:	Potential visual impacts associated with the alternative sites	7-36
Table 7.31:	Site Selection – Visual Impacts – ESI	7-36
Table 7.32:	Site Selection – Heritage Aspects – ESI	7-38
Table 7.33:	Rating of impacts – tourism – ESS	7-46
Table 8.1.	Potentially significant issues associated with the proposed Pumped Storage Scheme, identified within the Environmental Screening Investigation and the Environmental Scoping Study. The area of potential impact and recommendations for investigations to be undertaken within the EIA phase are also specified.	8-3
Table 9.1.	Criteria for the classification of environmental impacts	9-14
Table 9.2.	Key milestones of the programme for the EIA phase of the project	9-17

 Table 9.3.
 Proposed specialist team and their areas of expertise
 9-18

ACRONYMS AND ABBREVIATIONS

DEAT Department of Environmental Affairs and Tourism

DME Department of Minerals and Energy

DWAF Department of Water Affairs and Forestry

ECA Environment Conservation Act

EI Erodibility Index

EIA Environmental Impact Assessment
EMP Environmental Management Plan
ESI Environmental Screening Investigation

IEP Integrated Energy Plan

ISEP Integrated Strategic Electricity Plan

I&AP Interested and Affected Party

L DEDET Limpopo Department of Economic Development, Environment

and Tourism

M DALA Mpumalanga Department of Agriculture and Land Affairs

NEMA National Environmental Management Act

NGO Non-Governmental Organisation

NWA National Water Act

PSS Pumped Storage Scheme

SAHRA South African Heritage Resource Agency

SAWB South African Weather Bureau