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NamPower Encroacher Bush Biomass Power Project – Namibia

Summary of Specialist Studies and Authors

The Environmental Impact Assessment (EIA) for the proposed 40 MW encroacher-bush biomass power project near Otjikoto (commissioned by NamPower with co-financing input from the European Investment Bank, and managed by SLR Consulting) was supported by a suite of specialist studies and accompanying technical appendices. The list below sets out each study, the specialist firm that produced it, the named author(s), date/version, and a short description of scope and methodology.

Source documents are the 19 PDFs supplied for this project (specialist reports, appendices to the Biodiversity EIA, supporting figures, the NamPower SHEQ policy and the GIZ/MAWF bush-harvesting reference document).

1. Air Quality, Climate Change & Health Risk Assessment (AQIA/HRA)

Specialist firm	Airshed Planning Professionals (Pty) Ltd (Midrand, South Africa)
Author(s)	Rochelle Bornman (MPhil, GIS & Remote Sensing, Cambridge) and Hanlie Liebenberg-Enslin (PhD, University of Johannesburg). Reviewed by H. Liebenberg-Enslin.
Date / version	Revision 3 – 12 November 2019 (initial draft May 2018, Rev 1 Aug 2018)
Report reference	Report No. 17SLR01
Scope & methodology	Quantified the air quality, climate change and human-health risk implications of the proposed 40 MW encroacher-bush biomass power plant near Otjikoto. Compiled baseline ambient air quality, characterised stack and fugitive emissions, ran AERMOD dispersion modelling for criteria pollutants and trace species (including dioxins/furans, heavy metals and PM), assessed health risk against WHO/SA AAQS guidelines, and quantified greenhouse-gas emissions of bush-to-energy conversion.

2. Noise Impact Assessment

Specialist firm	SLR Consulting Limited (Edinburgh, UK office)
Author(s)	SLR specialist team (Edinburgh).
Date / version	Final – August 2018

Report reference	SLR Ref. 405.03854.00016
Scope & methodology	Established baseline noise levels at the nearest noise-sensitive receptors (a homestead/cattle farm and an adjacent game farm) through on-site noise surveys and predicted construction- and operational-phase noise contributions from the proposed power plant. Significance was rated against IFC General EHS Guideline limits and SANS 10103 criteria, with mitigation recommendations to keep cumulative levels within acceptable thresholds.

3. Archaeological Impact Assessment (AIA)

Specialist firm	SLR Consulting (Namibia) (Pty) Ltd
Author(s)	SLR Heritage specialist team.
Date / version	Version 4 – November 2019
Report reference	SLR Ref. 406.03854.0017
Scope & methodology	Identified archaeological, anthropological and ethnographic resources within and around the proposed plant site through a desktop review of Namibian heritage records and a foot-survey site visit. Applicable Namibian heritage legislation and IFC PS8 standards were used to frame significance ratings. Recommended chance-find protocols and pre-construction walk-downs to manage residual risk to undiscovered material.

4. Socio-Economic Impact Assessment (SEIA)

Specialist firm	Ashby Associates (AACC) commissioned through SLR Consulting (Namibia)
Author(s)	Auriol Ashby and Immanuel Katali. Reviewer: Auriol Ashby.
Date / version	Revision 12 – September 2019 (final issued November 2019)
Report reference	SLR Project No. 734.05062.00001, Doc. 2
Scope & methodology	Assessed the socio-economic effects of the proposed power plant and associated bush-harvesting/transport operations on host and neighbouring communities. Combined desktop demographic and economic data with stakeholder engagement, employment-creation estimates, local procurement potential, land-use, livelihoods, in-migration

	and gender considerations. Significance ratings cover construction and operations and inform mitigation and community-benefit measures.

5. Environmental Management Plan – Harvesting & Transportation

Specialist firm	SLR Consulting (Namibia) (Pty) Ltd
Author(s)	Werner Petrick (Author/Project Manager), assisted by Immanuel Katali. Reviewed by Chris Herbert, Marc Scourfield and Ed Perry.
Date / version	Final – November 2020 (Rev D; earlier drafts Sept 2018 – Oct 2020)
Report reference	SLR Project No. 734.05062.00001
Scope & methodology	Translates the findings of the suite of specialist studies into operational management actions covering encroacher-bush harvesting, on-farm chipping/stockpiling, loading and road transport of biomass to the Otjikoto plant. Sets responsibilities, monitoring, performance indicators and corrective-action protocols for vegetation, soil, water, fauna, traffic, dust, noise, waste, occupational health and safety, and stakeholder engagement.

6. Soil Impact Assessment

Specialist firm	SLR Consulting (Namibia) (Pty) Ltd – Swakopmund branch
Author(s)	Michelle Papenfus (author). Reviewed by Carl Steyn. Project Manager: Werner Petrick.
Date / version	Revision 2 – 29 October 2019 (initial July 2018)
Report reference	SLR Project No. 7NA.05062.00002, Report No. 1
Scope & methodology	Characterised soil types, depth, texture and erodibility within the harvesting footprint and at the proposed plant site through field sampling and laboratory analysis. Assessed risks of erosion, compaction, contamination and loss of productive capacity associated with mechanical bush harvesting and plant construction, and proposed topsoil stripping, stockpile management and post-harvest aftercare mitigation measures.

7. Biodiversity EIA – Vertebrate & Vegetation Baseline and Impact Assessment

Specialist firm	Africa Wildlife Resources (AWR) with Agri-Ecological Services

Author(s)	Theo Wassenaar (AWR, lead author) and Cornelis van der Waal (Agri-Ecological Services). Assistants: Titus Shuuya, Elize Nghalipo, Oliver Freyer. Internal review: Theo Wassenaar.
Date / version	Final – 11 November 2019 (earlier versions from May 2018)
Report reference	AWR Catalogue No. 2017-02.1
Scope & methodology	Integrated baseline study of vegetation communities, mammals, reptiles, amphibians and ecological function across the proposed harvesting blocks and plant site, followed by a biodiversity impact assessment. Used vegetation transects, descending-point surveys, woody belt transects, faunal expected-species lists and conservation-status screening (Forest Act, Nature Conservation Ordinance, IUCN, CITES). Provides species lists and impact ratings on habitat loss, fragmentation, fauna disturbance and protected species.

8. Avifauna Baseline / Scoping Study

Specialist firm	African Conservation Services cc (Swakopmund) – sub-consultant to SLR
Author(s)	Dr Ann Scott and Mike Scott.
Date / version	Draft 2 – 30 June 2017
Report reference	Sub-consultant report to SLR
Scope & methodology	Site-selection-level avifaunal assessment across the candidate plant locations. Combined literature review, Atlas of Southern African Birds data and site reconnaissance to identify expected bird species, Red Data and endemic species, key habitats and Important Bird Areas. Highlighted sensitive receptors and provided a comparative ranking of sites and recommendations to be taken into the impact-assessment phase.

9. Invertebrate Scoping Study

Specialist firm	Biodata Consultancy cc (Windhoek)
Author(s)	John Irish.
Date / version	21 June 2017
Report reference	Scoping-level specialist report

Scope & methodology	Scoping-level invertebrate assessment comparing the six candidate biomass-plant sites. Drew on literature, bioclimatic envelopes and site visits to identify taxa of legal/conservation concern, endemic species, sensitive habitats and ecosystem-service issues; recommended the preferred site and flagged invertebrate issues to be carried forward into the EIA phase.

10. Visual Impact Assessment (VIA)

Specialist firm	Graham A Young Landscape Architect (Groenkloof, South Africa)
Author(s)	Graham A Young, PrLArch, FILASA (Author and Reviewer).
Date / version	Final Revision 04 – 04 June 2019
Report reference	Project Ref. 013_Biomass Power Project, Namibia
Scope & methodology	Assessed the visual and landscape-character implications of the proposed plant and ancillary infrastructure. Mapped viewsheds, identified visually-sensitive receptors (homesteads, tourism routes), assessed visibility and visual intrusion of stacks, buildings and lighting, and rated significance for construction and operations. Provided screening, lighting-control and landscape mitigation recommendations.

11. Traffic Impact Assessment (TIA)

Specialist firm	Burmeister & Partners (Pty) Ltd (Windhoek/Swakopmund)
Author(s)	T. Pretorius (Burmeister & Partners) – primary author.
Date / version	Revision 2 – October 2019 (final, NamPower comments addressed)
Report reference	Document Ref. W1453/Biomass TIA Report
Scope & methodology	Quantified the traffic generated by biomass haulage (chip trucks), construction traffic, ash export and ad-hoc supplier movements on the surrounding road network and at the B1/site-access intersection. Assessed road-capacity, intersection level-of-service, road-safety and pavement-loading impacts, and recommended intersection upgrades, signage, speed management and access-control measures.

12. Appendix 7 – Effects of Harvesting on Savanna Community Structure

Specialist firm	Independent specialist addendum to the Biodiversity EIA
Author(s)	Cornelis van der Waal and Theo Wassenaar.
Date / version	Fieldwork July 2017; finalised as Appendix to the Biodiversity EIA (Nov 2019)
Report reference	Appendix 7 to AWR 2017-02.1
Scope & methodology	Field-based addendum testing the ecological outcomes of past commercial bush harvesting at three reference savanna sites (Gabus, Tirol and the Cheetah Conservation Fund property). Compared harvested, control and chemically/physically maintained treatments using descending-point and belt transects to quantify effects on herbaceous productivity, woody species diversity, community structure and large-herbivore use.

13. Appendix 9 – Potential Positive & Negative Impacts of Aftercare

Specialist firm	Africa Wildlife Resources / Agri-Ecological Services (Biodiversity EIA team)
Author(s)	Theo Wassenaar and Cornelis van der Waal.
Date / version	Final – November 2019 (with the Biodiversity EIA)
Report reference	Appendix 9 to AWR 2017-02.1
Scope & methodology	Matrix-style evaluation of the environmental implications of available aftercare methods (cut-stump arboricide treatment, fire, browsing, mechanical follow-up and combinations thereof). For each method sets out the appropriate harvesting method, control efficacy, positive impacts, negative impacts, mitigation measures and management considerations, and colour-codes recommended, less-desirable and not-recommended options.

14. Appendices 1–6 – Plant & Animal Species Lists

Specialist firm	Africa Wildlife Resources / Agri-Ecological Services (Biodiversity EIA team)
Author(s)	Theo Wassenaar and Cornelis van der Waal (with assistants Titus Shuuya, Elize Nghalipo, Oliver Freyer).
Date / version	Final – November 2019
Report reference	Appendices 1–6 to AWR 2017-02.1

Scope & methodology	Accompanying species lists supporting the Biodiversity EIA: woody species of conservation concern (Appendix 1); non-woody species of conservation concern (Appendix 2); other plant species of potential concern (Appendix 3); and expected amphibian, reptile and mammal species at both sites (Appendices 4–6). Each list flags protection status under the Forest Act 12 of 2001, Nature Conservation Ordinance 4 of 1975, CITES and IUCN Red List.

15. Appendix 8 – Forestry & Environmental Authorisations Process for Bush Harvesting (Reference)

Specialist firm	MAWF and MET, Namibia – via GIZ Support to De-bushing Project
Author(s)	Compiled by the Southern African Institute for Environmental Assessment (SAIEA) for MAWF/GIZ, based on the 2016 SEA of large-scale bush thinning and value-adding activities.
Date / version	2017
Report reference	Bush Harvesting Guidelines 2017 (also supplied as GIZ-deBushing-Bush-Harvesting-Guidelines-2017.pdf)
Scope & methodology	National guideline document referenced in the EIA. Sets out the Namibian forestry-permit and Environmental Clearance Certificate requirements applicable to bush-thinning and value-addition projects, the categories of projects requiring clearance, a generic EMP framework for bush harvesting, best- and poor-practice guidance, recommended residual tree densities, and protected-tree and encroacher-species lists.

16. NamPower SHEQ Policy Statement

Specialist firm	Namibia Power Corporation (NamPower) – internal
Author(s)	Issued by the NamPower Managing Director.
Date / version	Version 1.0 – 05 September 2019 (five-year review cycle)
Report reference	BIO_INFO_NP POLICY STATEMENT
Scope & methodology	NamPower's corporate Safety, Health, Environment and Quality (SHEQ) Management System policy aligned with ISO 9001:2015, ISO 14001:2015, ISO 55001:2014 and ISO 45001:2018. Sets commitments to legal compliance, continual SHEQ improvement, asset reliability, proactive

	identification and mitigation of environmental aspects, hazards and risks, monitoring/measurement of SHEQ performance, and stakeholder accountability. Provides the corporate framework within which the project-specific EMP operates.

17. Supporting Figures – Appendix 02 (Site Locality / NSR Map) and Appendix 03 (Site Plan)

Specialist firm	SLR Consulting (Namibia/UK)
Author(s)	SLR drawing-office (GIS / CAD) for the Noise Impact Assessment (May 2018).
Date / version	May 2018 (with the Noise Impact Assessment)
Report reference	SLR 03854.00016.22.1.0
Scope & methodology	Project drawings supporting the Noise Impact Assessment and broader EIA: Figure 1 shows the site boundary, the two noise-sensitive receptors (NSR01 homestead/cattle farm, NSR02 game farm) and the baseline survey locations on an aerial base; the Site Plan provides the engineering layout of the proposed plant footprint used by all specialist studies as the impact source.

Notes: (a) The Biodiversity EIA and its Appendices 1–9 form a single integrated specialist study by the AWR / Agri-Ecological Services team, but are listed separately above for clarity. (b) The GIZ/MAWF Bush Harvesting Guidelines document and Appendix 8 of the Biodiversity EIA are the same reference publication, included for completeness. (c) The NamPower SHEQ Policy Statement is an internal corporate policy rather than a specialist study and is included as supporting context.