APP-006557 (ECC-0034)

IMPLEMENTATION OF AND COMPLIANCE WITH THE ENVIRONMENTAL MANAGEMENT PLAN FOR TRISTONE BUSINESS TRUST'S IRRIGATION SCHEME EXPANSION PROJECT, STAMPRIET, HARDAP REGION, NAMIBIA

10 December 2025

Prepared by:

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS / ACRONYMS / SYMBOLS / UNITS

The following is a list of the abbreviations, acronyms, symbols, and units used in this Report:

AIDS	Acquired Immunodeficiency Syndrome
DEAF	Directorate of Environmental Affairs and Forestry
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
EAPAN	Environmental Assessment Professionals of Namibia
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPA	Environmental Protection Authority
GIS	Geographic Information System
GMO	Genetically Modified Organism
GN	General Notice / Government Notice
GRN	Government of the Republic of Namibia
ha	hectare
HIV	Human Immunodeficiency Virus
I&APs	Interested and Affected Parties
IEMA	Institute of Environmental Management and Assessment
IFC	International Finance Corporation
ISEP	Institute of Sustainability and Environmental Professionals
km	kilometre
m^3/annum	cubic metre per annum
m^3/day	cubic metre per day
MAWLR	Ministry of Agriculture, Water and Land Reform
MAFWLR	Ministry of Agriculture, Fisheries, Water and Land Reform
MET	Ministry of Environment and Tourism
MEFT	Ministry of Environment, Forestry and Tourism
MFMR	Ministry of Fisheries and Marine Resources
MME	Ministry of Mines and Energy
MIME	Ministry of Industries, Mines and Energy
NamPower	Namibia Power Corporation (Proprietary) Limited
NCE	Namibia Chamber of Environment
PPE	Personal Protective Equipment
PV	Photovoltaic
SA	South Africa
SHE	Safety, Health, Environment
SLR	SLR Environmental Consulting (Namibia) (Pty) Ltd
STAS	Stampriet Transboundary Aquifer System
STIs	Sexually Transmitted Infections
TB	Tuberculosis
TBT	Tristone Business Trust
UK	United Kingdom
UNAM	University of Namibia

1 Introduction

1.1 Background

Tristone Business Trust (TBT; Registration Number T62/17) has been operating an irrigation scheme on seven farm areas around 40 kilometres (km) south-east of Stampriet (see Figure 1), in the Hardap Region, Namibia, since 2005.

> The Tristone Business Trust forms part of The Briedenhann Group of companies and trusts, which owns and manages the Group assets. The Briedenhann Family Trust is the ultimate shareholder/beneficiary of all entities, with the Briedenhann Family being listed as the Beneficiaries. Since 2017, the Group has nominated to split the ownership and management structures of the Group's assets. In accordance with this decision, the Tristone Business Trust and Onestone Business Trust, were registered to conduct all trading activities. The trusts collectively manage all the Group's assets, in contract with the entities which legally own the assets, via management agreements entered into between the respective parties. The Briedenhann Group is currently involved in several trades, of which "crop and feed production" is one (CR van Wyk (CRVW) Accounting Services CC, 2021).

In 2018/19, SLR Environmental Consulting (Namibia) (Pty) Ltd (SLR) prepared a Scoping Report (including an Impact Assessment and Groundwater Specialist Study) and Environmental Management Plan (EMP) for the Irrigation Scheme Expansion Project (SLR, 2019a, b, c).

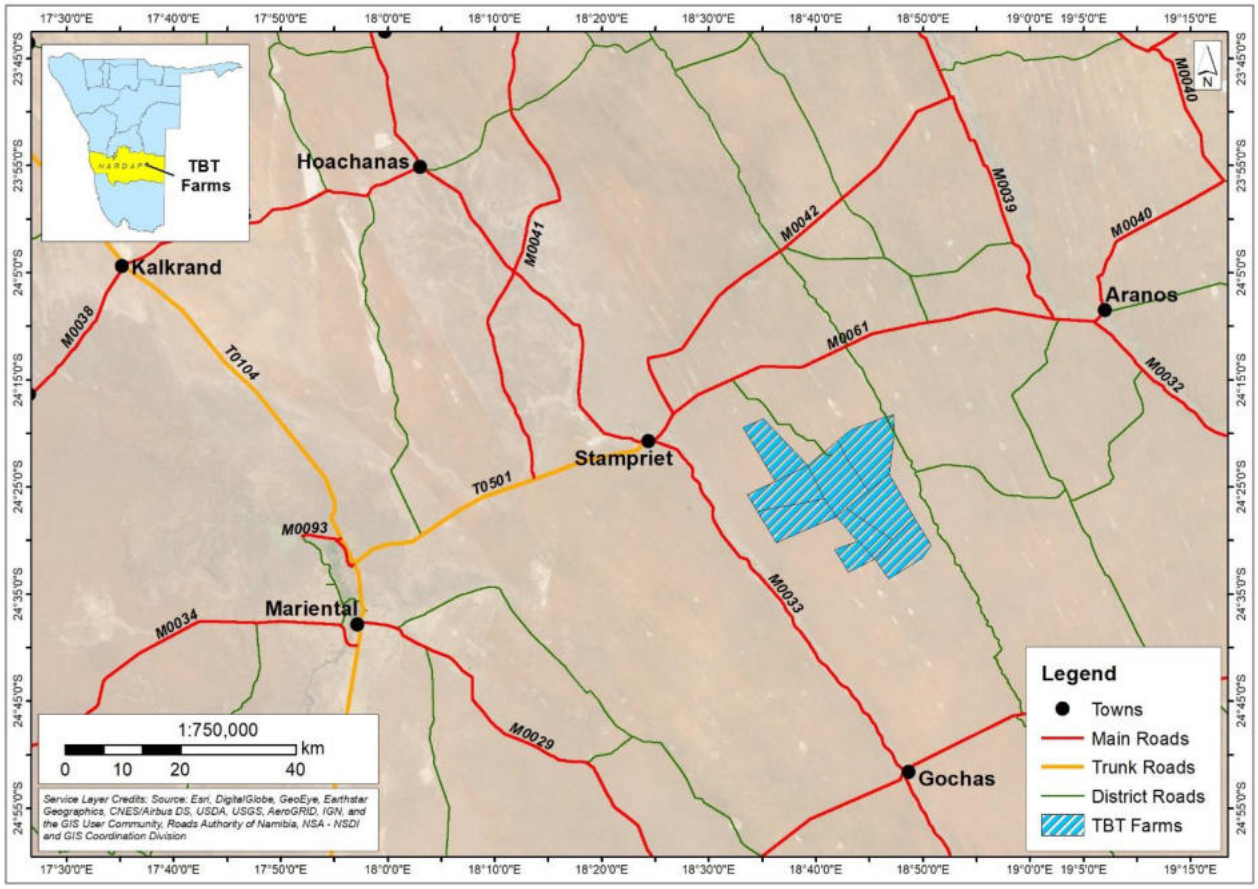

Figure 1: Maps showing the location of the Tristone Business Trust (TBT) Farms, Hardap Region, Namibia (*Source: Miss Maike Prickett, GIS Specialist, June 2022*).

At the time (2018/19), the size of the farm areas (Portion 1 of Farm Eerstbegin No. 197 (Dikbos), Portion B of Farm De Duine No. 198 (Witpan), Remaining Portion / Remainder of Farm Hartebeestloop No. 202 / Portion

1 of Farm Hartebeestloop No. 202, Portion 1 of Farm Breedestraat No. 204 (Oserikare), Farm Okongona No. 203, and Portion 3 (a Portion of Portion 2) of Farm Fricourt No. 199 (Grunfeld); see Figure 2 and Table 5) amounted to 38,855 hectares (ha) (*overall size; the actual areas under irrigation were much smaller*), nine boreholes drilled across the various portions (farm areas) of the scheme were used to supply 970,000 cubic metres per annum (m³/annum) of groundwater, and the crops produced from the scheme included maize, oats, lucerne, fruit and cowpeas, and fruit.

Tristone Business Trust planned to expand the irrigation scheme to include a new portion, Portion A of Farm De Duine No. 198 (Steyn's Halt) (see Figure 2), covering a total area of 5,100 ha (*overall size; the actual planned irrigation area was much smaller*). The land was previously cleared and maize (dry land / rainfed) was planted (the three existing boreholes in the area were too shallow and not suitable for irrigation, and it was planned to drill a new borehole).

As part of the expansion of the irrigation scheme, Tristone Business Trust planned to: i) renew the existing (at the time) abstraction permits; and ii) to amend the abstraction limit from the permitted 970,000 m³/annum to 1,800,000 m³/annum (the latter amount included the proposed 210,000 m³/annum that was to be supplied by the new borehole to be drilled on Steyn's Halt) (see SLR, 2019a; Maartens, 2022: Table 1).

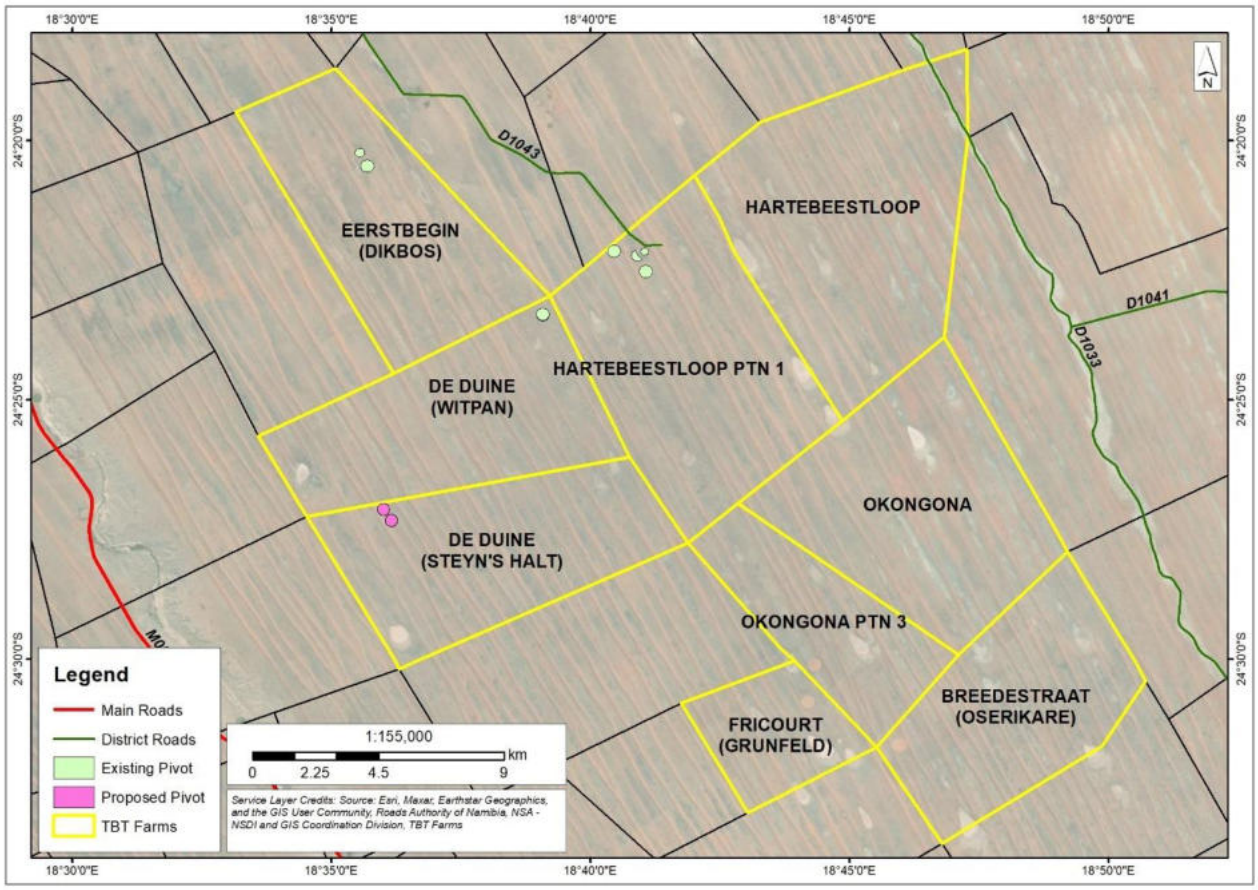

Figure 2: Map showing the location of: Portion 1 of Farm Eerstbegin No. 197 (Dikbos); Portion B of Farm De Duine No. 198 (Witpan); Remaining Portion / Remainder of Farm Hartebeestloop No. 202 / Portion 1 of Farm Hartebeestloop No. 202; Portion 1 of Farm Breedestraat No. 204 (Oserikare); Farm Okongona No. 203; Portion 3 (a Portion of Portion 2) of Farm Fricourt No. 199 (Grunfeld); and Portion A of Farm De Duine No. 198 (Steyn's Halt) (*Source: Miss Maike Prickett, GIS Specialist, June 2022*).

An application for an Environmental Clearance Certificate (ECC) was submitted to the Office of the Environmental Commissioner, Ministry of Environment and Tourism (MET; now Ministry of Environment, Forestry and Tourism (MEFT)) in March 2019 (in line with the Commencement of the Environmental Management Act (EMA), 2007 (Act No. 7 of 2007) (06 February 2012; Government Notice (GN) No. 28), the Listed Activities that may not be undertaken without an Environmental Clearance Certificate (ECC) (GN No. 29), and the Environmental Impact Assessment (EIA) Regulations (GN No. 30) (Government of the Republic

of Namibia (GRN), 2012)). The Office of the Environmental Commissioner granted the ECC on 12 July 2019, and it expired on 12 July 2022.

Since the granting of the ECC in July 2019, irrigation activities on Portion 1 of Farm Breedestraat No. 204 (Oserikare), Farm Okongona No. 203, and Portion 3 (a Portion of Portion 2) of Farm Fricourt No. 199 (Grunfeld) ceased, and the groundwater abstraction permits were not renewed. Permit numbers 10423, 10475, 10450, 10474, and 10331 have since been renewed, allowing the abstraction of 1,460,000 m^3/annum (adding the 210,000 m^3/annum that was planned to be abstracted from Portion A of Farm De Duine No. 198 (Steyn's Halt) in 2018/19, would bring the total to 1,670,000 m^3/annum) (see Maartens, 2022: Table 1).

In 2022, a total area of 76 ha was under irrigation (see Figure 2 - existing pivots); the crops produced from the scheme included wheat (~13,000 tonnes), maize (~6,000-7,000 tonnes), and oats (see Maartens, 2022).

Tristone Business Trust proposed to develop the irrigation areas on Portion A of Farm De Duine No. 198 (Steyn's Halt) (see Figure 2 – proposed pivots; the additional amount of water to be pumped from the two boreholes on Farm Steyn's Halt amounts to 1,650 cubic metres per day (m^3/day) or 602,250 (rounded to 600,000) m^3/annum). Two boreholes were drilled on 07 October 2021 (by Mr Otto van Vuuren and as per the drilling permits issued by the Department of Water Affairs (DWA), Ministry of Agriculture, Water and Land Reform (MAWLR) in November 2019).

Dr Diganta Sarma, Hydrogeologist (Namib Hydrosearch), conducted an assessment, i.e. the development of a numerical groundwater flow model of the Auob Aquifer (Stampriet Transboundary Aquifer System (STAS)), including detailed work over the abstraction areas, and an application for a groundwater abstraction permit for 600,000 m^3/annum (vs 210,000 m^3/annum) was to be submitted to the DWA, MAWLR (bringing the total water abstraction to 2,060,000 m^3/annum; see Maartens, 2022).

An application for the Renewal of the ECC was submitted via MEFT's online portal on 21 June 2022 (APP-0010355; APP 203 on 07 September 2022, and following the collapse on MEFT's online portal). The relevant documentation, including a report *Implementation of and Compliance with the Environmental Management Plan for Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia* was submitted to the Office of the Environmental Commissioner on 11 July 2022 (see Maartens, 2022). Tristone Business Trust was issued an ECC by the Office of the Environmental Commissioner on 12 July 2022 (ECC-0034; renewal) (see Table 1); the ECC expired on 12 July 2025.

1.2 Terms of Reference

LM Environmental Consulting was appointed by Tristone Business Trust to assist with the environmental management-related tasks (see Table 1 for a list of the applications/reports submitted to MEFT to date), and on 09 October 2025, Tristone Business Trust requested LM Environmental Consulting to prepare and submit a report, illustrating the implementation of and compliance with the Environmental Management Plan (EMP) (see LM Environmental Consulting, 2022), in aid of the application for the renewal of the Environmental Clearance Certificate (ECC) (the ECC expired on 12 July 2025).

Table 1: List of the applications/reports submitted to the Ministry of Environment, Forestry and Tourism since 2019.

Application / Report	Date of Submission	Status
Application for an Environmental Clearance Certificate (ECC) & Proposed Irrigation Scheme Expansion Project, Stampriet, Hardap Region Scoping Report (Including Impact Assessment) (SLR Environmental Consulting (Namibia) (Pty) Ltd (SLR), 2019a)	March 2019	ECC-0034 (12 July 2019)
Application for the renewal of the ECC & Audit Report (APP-0010355 / APP 203): Implementation of and Compliance with the Environmental Management Plan for Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia (Maartens, 2022)	14 July 2022 (online) and 21 July 2022 (hard copy) – the Ministry of Environment, Forestry and Tourism (MEFT's) Online Portal collapsed shortly after	Renewed ECC-0034 (12July 2022)

Application / Report	Date of Submission	Status
Environmental Monitoring Report for Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia. August 2022 to January 2023 (Maartens, 2023a)	15 February 2023 (hard copy only)	No feedback received from the Directorate of Environmental Affairs and Forestry (DEAF), MEFT
Environmental Monitoring Report for Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia. February to July 2023 (Maartens, 2023b)	17 August 2023 (hard copy only)	No feedback received from the DEAF, MEFT
Environmental Monitoring Report for Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia. August 2023 to January 2024 (Maartens, 2024a)	12 February 2024 (hard copy only)	No feedback received from the DEAF, MEFT
Environmental Monitoring Report for Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia. February to July 2024 (Maartens, 2024b)	26 September (hard copy only)	No feedback received from the DEAF, MEFT
Environmental Monitoring Report for Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia. August 2024 to January 2025 (Maartens, 2025)	07 March 2025 (hard copy only)	No feedback received from the DEAF, MEFT
Application for the renewal of the ECC & Audit Report (APP-006557): Implementation of and Compliance with the Environmental Management Plan for Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia (this report)	20 October 2025 (online – application number 251020006557) 10 December 2025 (online) and 11 December 2025 (hard copy)	The MEFT requested the upload of the following documents: updated EMP (Environmental Management Plan) to effect amendment; confirmation of screening notice; preliminary site map; copy of the previous Environmental Clearance Certificate (ECC) issued; CV (Curriculum Vita) of Environmental Assessment Practitioner (EAP); declaration for the submission of assessment reports and other support documents; and proof of written notice to any other organ of state having jurisdiction in respect of any aspect of the activity.

1.3 Environmental Assessment Practitioner

The author of this Report is Dr Lima Maartens who has more than 32 years' experience in natural resource management (*she gained her doctorate (Ph.D.) in Fisheries Science from Rhodes University, South Africa (SA) while working for the Namibian Ministry of Fisheries and Marine Resources (MFMR) in 2000*), lecturing (*University of Namibia (UNAM)*), environmental science and management (*De Beers Marine Namibia and the Canadian Forsys Metals Corp*), and consulting (*LM Environmental Consulting was established by Dr Maartens in October 2009*).

Sectors that she worked in as an Environmental Assessment Practitioner (EAP) include: exploration (including offshore oil and gas); mining and quarrying; renewable energy (solar and wind); tourism; manufacturing; agriculture; aqua- and mariculture; township, property (including medicine storage facilities) and waterfront developments, transport (rail and road), and infrastructure.

Dr Maartens is registered as a Lead Practitioner and Reviewer with the Environmental Assessment Professionals of Namibia (EAPAN) (she served on the Executive Committee during 2016/17), an Associate Member with the Institute of Sustainability and Environmental Professionals (ISEP) (previously the Institute of Environmental Management and Assessment (IEMA)) in the United Kingdom (UK), a Full Member of the Namibia Chamber of Environment (NCE), and a Member of the Namibia Scientific Society.

She has published five peer-reviewed scientific research articles (and three as co-author), six popular articles (and one as co-author), one book chapter (and one book chapter as co-author), 203 technical reports (LM Environmental Consulting), three technical reports (for De Beers Marine Namibia), and one conference paper.

2 Environmental Management Plans: Implementation and Compliance

2.1 Introduction

As part of the EMP Performance Review, the following actions were carried out:

- Abstraction of the applicable information provided in the five (5) Environmental Monitoring Reports (see Maartens, 2023a; b; 2024a; b; and 2025);
- Additional information was supplied by Mr Byron Briedenhann (Chief Financial Officer, Tristone Business Trust) and Mrs Octavia Bailey (Head of Administration & Payroll and Compliance Officer, Tristone Business Trust).

2.2 Compliance: Environmental Management Plans

SLR (2019c) prepared four EMPs applicable to the proposed Irrigation Scheme Expansion Project; the EMPs catered for:

- **Stakeholder Consultation/Communication** (see Table 2); Objectives: i) To ensure that regular communication is provided on the relevant irrigation activities, together with feedback on the environmental management performance of the irrigation scheme and that opportunity is provided for interested and affected parties to continue to raise comments and concerns (complaints) on the same;
- **Biodiversity/Ecology** (see Table 3); Objectives: i) Responsible use of pesticides; ii) Minimise the generation of dust; and iii) Prevent degradation of ecological systems;
- **Groundwater** (see Table 4); Objectives: i) Reduce concentration of contaminants in irrigation water to prevent pollution of the underlying aquifer; ii) To reduce the threat of lowering groundwater levels in the local aquifer, which consequently infringes on the volume available for surrounding water users; and iii) To prevent the dewatering of the aquifer; and
- **Socio-economic** (see Table 6); Objective: i) To enhance the positive socio-economic impacts.

To illustrate compliance with the EMP (see Tables 2, 3, 4 and 6), the following colour codes were applied:

	Compliance/Completed
	In Progress/Ongoing
	Non-compliance
	Not (Currently) Applicable
	Changes made to the existing EMP

The EMP (see SLR, 2019c; also see International Finance Corporation (IFC), 2007a; b) is not a static document, and the document should be updated as Tristone Business Trust's activities progress.

Table 2: Compliance with the Actions Relating to Stakeholder Communication for the Operational Phase of Tristone Buisness Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia (*after SLR, 2019c*).

No	Issue	Management commitment	Compliance and Comments (see Maartens, 2022)	Compliance and Comments (October/November 2025)
1	Understanding who the stakeholders are	Maintain and update the TBT stakeholder register. Ensure that all relevant stakeholder groups are included.	Stakeholders include: • Staff complement of 26 people; • Suppliers (Agri-gro Namibia - pesticides, Kaap Agri Namibia – fertilizer and seed), John Deere - equipment, and WS Truter Transport); and • Customers (Hardap Co-Operative and Namib Mills Ltd). Due to the limited (and fixed) number of stakeholders, a register is not maintained and/or updated. Stakeholders' roles, responsibilities, capacity and contribution to development are known (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	Note that all registered Interested and Affected Parties (I&APs) were notified (using the Attendance Register of the Public Meeting held on 27 September 2018 at the Stampriet Boerevereniging (Farmers Association) Hall; see SLR, 2019a) that a (renewed) Environmental Clearance Certificate (ECC) has been issued and of their right to appeal on 09 February 2023 (see Maartens, 2023a). Mr Rainer Ling, Farm Cowdray, responded on 11 February 2023: ''*On behalf of the Mariental Streekslandbou-unie (MSLU) I want to acknowledge the receipt your circular to all interested and affected parties regarding the approved ECC to expand the proposed irrigation scheme. The MSLU wants to thank you for the transparent manner you have conducted application and the information to all stakeholders in an very sensitive issue, namely the sustainable use of our ground water resources*'' (see Maartens 2023b). Representatives from the Ministry of Agriculture, Water and Land Reform (MAWLR; now the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR)) visited the Farms on 08 May 2024. The boreholes (numbers vs permit numbers) and water metres (numbers and water level readings vs what is submitted on the quarterly returns) were inspected, and all was found to be in order. Representatives from the Ministry of Labour (Mariental Office) (now Ministry of Justice and Labour Relations) also visited the Farms and interviewed the staff on 19 July 2024; all was found to be in order. The Village Council in Stampriet distributed drought relief food to the staff on three occasions (see Maartens, 2024b).
2		Record partnerships with local suppliers and investors as well as their roles, responsibilities, capacity and contribution to development.		
3	Liaison with interested and affected parties	Devise and implement an appropriate stakeholder communication and engagement strategy.	There is no stakeholder communication and engagement strategy and complaints will be handled on an *ad hoc* basis. No additional issues and/or concerns were raised since SLR Environmental Consulting (Namibia) (Pty) Ltd (SLR) conducted the Public Consultation Process (and handled all the technical complaints) in 2018/19 (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	
4	Cooperative working relationship with stakeholders	Use appropriate communication channels to consult with, and disseminate information to, the identified stakeholder groups, where required.	Not applicable (N/A) Interested and/or Affected Parties (I&APs) may complain to the Department of Water Affairs (DWA), Ministry of Agriculture, Water and Land Reform (MAWLR) directly, who will then conduct a site visit/inspection.	
5	Managing perceptions, issues and/or complaints	Develop and implement a concerns/complaints (grievance) process for stakeholders. • Document complaints in an external communications register	N/A No additional issues and/or concerns were raised since SLR Environmental Consulting (Namibia) (Pty) Ltd (SLR) conducted the	

		• Acknowledge receipt of complaints and comments • Investigate and report on findings of issue to the complainant • Keep complete records of complaints, responses and actions taken.	Public Consultation Process (and handled all the technical complaints) in 2018/19 (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.). The Attendance Register of the Public Meeting held on 27 September 2018 at the Stampriet Boerevereniging (Farmers Association) Hall was made available to LM Environmental Consulting. The I&AP Database can be found under Appendix C to the Scoping Report (see SLR, 2019a). The Minutes of the Meeting and Issues and Response Report can be found under Appendix D to the Scoping Report (see SLR, 2019a).	Maartens (2025) indicated: Representatives from the Ministry of Labour (Mariental District) (now Ministry of Justice and Labour Relations) unexpectedly visited Farm Hartebeestloop once for a routine assessment of labour processes and administration; all were found to be in order. The Village Council in Stampriet again distributed drought relief food to the staff on three occasions (Mrs Octavia Bailey, Head of Administration & Payroll and Compliance Officer, Tristone Business Trust, pers. comm., 02 March 2025; see Maartens, 2025). Since February 2025, the following visits took place: i) a fitness inspection for the Farm was conducted by the fitness inspector; the inspection went well – awaiting the fitness certificate; ii) the Directorate Veterinary Services (DVS), MAFWLR, conducted several visits to the Farm in connection with veterinary permits and the export of cattle; all these visits were successful, Tristone Business Trust (TBT) currently holds all required licenses and permits for livestock; and the cattle were successfully exported; iii) the Namibia Power Corporation (Proprietary) Limited (NamPower) regularly visits the farm to take electrical meter readings and conduct repairs as required; iv) the Stampriet Police visited the farm to inquire whether a named person was employed by TBT; the person in question was not employed by TBT; and v) the Village Council did not have access to sufficient transport, and TBT took the responsibility of collecting the drought relief for workers from Stampriet (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 27 October 2025 and 24 November 2025).

Table 3: Compliance with the Actions Relating to the Protection of Ecological Systems for the Operational Phase of Tristone Buisness Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia (*after SLR, 2019c*).

No	Issue	Management commitment	Compliance and Comments (see Maartens, 2022)	Compliance and Comments (October/November 2025)
1	Pesticide use	Chemicals should not be used as the main form of pesticide control; use should form part of an integrated pest management (IPM) approach. IPM is an approach to pest management that blends all available management techniques - nonchemical and chemical - into one strategy. Use pesticides only when pest damage exceeds an economic or aesthetic threshold.	The main pests include: warthogs (these are caught in traps/shot); bat-eared fox; mice; springhare; Cape ground squirrel; guinea fowl; and pigeons. All the irrigation areas are game-proof fenced; the fences are electrified (personal observation). All pesticides are obtained from Agri-gro Namibia (pesticides for e.g. borers, wool and cut worms, and red spider mites, and including herbicides (weed management), fungicides, insecticides, and acaricides), who advise (based on the specific crops that are grown and site visits/inspections) on the type of pesticides to be used (Mr Byron Briedenhann, The Briedenhann Group, and Mr Werner Mouton, Manager: Agronomic, pers. comm.).	Ongoing (see Maartens, 2023a; b; 2024a; b; and 2025)
2	Pesticide use	Follow an Integrated Pest Management (IPM) strategy and prepare a **Pest Management Plan (PMP)**. Consider the following alternatives to using pesticides: rotate crops; use pest-resistant crop varieties; use mechanical weed control and/or thermal weeding; use beneficial organisms to perform the biological control of pests (e.g. insects, birds, mites, microbial agents); protect natural enemies of pests (i.e. provide favourable habitats to house pest predators); use animals to graze areas and manage plant coverage; or use mechanical controls (i.e. traps, barriers, light and sound to kill/relocate/repel pests). Maintain a pesticide logbook: e.g. field observations, weather data, time and dosage of treatment, and effectiveness and apply pesticides based on these	Crops are rotated, the best cultivars for the area are chosen (Genetically Modified Organisms (GMO) are not allowed in Namibia), beneficial organisms to perform the biological control of pests are used (e.g. insects, birds – owls, birds of prey, bat-eared foxes, and Cape foxes (asse, cama fox or the silver-backed fox) eat the mice, mites, microbial agents); protect natural enemies of pests (i.e. provide favourable habitats to house pest predators – owl boxes are provided at Farm Hartebeestloop); use animals to graze areas and manage plant coverage; or use mechanical controls (i.e. traps - warthogs, barriers, light and sound to kill/relocate/repel pests). The information is contained in the spray programme for pesticides (supplied by Agri-grow Namibia).	Ongoing. Beneficial organisms to perform the biological control of pests are used (e.g. insects, birds – owls, birds of prey, bat-eared foxes, and Cape foxes (asse, cama fox or the silver-backed fox) eat the mice, mites, microbial agents). Natural enemies of pests are protected (e.g. owl boxes are provided at Farm Hartebeestloop), animals are used to graze areas and manage plant coverage, and mechanical controls are used (i.e. traps - warthogs) (see Maartens, 2022; 2023a; b; 2024a; b; and 2025).

		criteria. Ensure that only the minimum effective dose is applied. Avoid the use of pesticides that fall under the World Health Organization (WHO) Recommended Classification of Pesticides by Hazard Classes 1a and b, and by Hazard Class II. Also those that are listed in Annexes A and B of the Stockholm Convention (except under the conditions noted in the convention). Avoid using any pesticide on the FSC (Forest Stewardship Council) Lists of highly hazardous pesticides (2019). Only use pesticides that are manufactured under license, registered and approved by the appropriate authority and in accordance with the FAO's International Code of Conduct on the Distribution and Use of Pesticides. Only use pesticides that are labelled in accordance with international standards and norms. Select application technologies and practices designed to reduce unintentional drift or runoff (as per IPM program) and under controlled conditions. Pesticide application equipment to be maintained and calibrated in accordance with manufacturer's recommendations. Store pesticides in their original packaging in a dedicated, dry, cool, frost-free, well aerated, locked area, with proper signage, and with access limited only to authorised personnel. Also ensure that spill containment measures are in place. Ensure that the personnel applying pesticides are properly trained; mixing and transfer of pesticides to be done in	No powdered (only liquid) pesticides are used. The pesticides are administered via the pivot towers (the drippers can be adjusted in order to prevent any drift). See Section 3.2.1 (Maartens, 2022). Pesticides are only mixed outdoors. Ongoing. Ongoing (Mr Byron Briedenhann, The	

		ventilated and well-lit areas using containers designed/dedicated for the task. Contaminated containers to be handled and treated as hazardous waste (see Hazardous Materials Management). Personnel that apply pesticides should use the correct Personal Protective Equipment (PPE). Purchase and store only the required amounts of pesticides.	Briedenhann Group, and Mr Werner Mouton, Manager: Agronomic, pers. comm.).	
3	Pesticide use	Bio-degradable and / or environmentally acceptable chemicals and pesticides will be used as far as possible.	All pesticides are obtained from Agri-gro Namibia (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	Ongoing (see Maartens, 2022; 2023a; b; 2024a; b; and 2025).
4	Pesticide use	TBT will follow international standards of best practice in the use of pesticides in agriculture. This will include: • Select and use chemicals with low toxicity outside target groups (i.e. highly specific), short half-lives and high levels of adsorption to reduce leaching issues. • The eco-toxicity of each chemical will be confirmed using an independent database such as the Pesticide Action Network (PAN) Pesticide Database. • Use optimal, not maximal doses. • Apply herbicides and fungicides with boom sprayers or during planting. • Apply for as short periods as possible and select days that are not windy. • Ensure that there is no overspray that drifts into the adjacent indigenous habitats or into areas of human habitation.	Agri-gro Namibia advises on pesticide use and supplies all pesticides. There are game in the area and this is taken into consideration. The PAN Database is a North American Database (see https://www.pesticideinfo.org/). Agri-gro Namibia does not sell pesticides: i) that are not registered for the crops planted / to be planted; ii) for which the half-life of the pesticide(s) is longer than the client's crop season (to ensure that the pesticides do not kill the new crops in the new planting season) and iii) that are not registered / safe for use in Namibia (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.). Ongoing (using maximal doses would not be cost-effective). The pesticides are administered via the pivot towers (the drippers can be adjusted to prevent any drift). Ongoing (applying pesticides during windy conditions would not be cost-effective). Ongoing (see Maartens, 2022: Figure 10).	Ongoing (see Maartens, 2022; 2023a; b; 2024a; b; and 2025).
5	Pesticide use	Given that most of the chemicals will be applied through the irrigation system, using an optimal water management approach based on measured soil	Ongoing; soil moisture levels are measured every six months (the soil is highly permeable and diluted solutions of pesticides are used; leaching would thus be limited) (Mr Byron	Soil moisture levels were previously measured by deducting the dry mass of soil from the wet mass, for given samples. Over time, the employees have developed an intuition for the moisture percentage

		moisture levels will also mean that leaching and runoff will be limited.	Briedenhann, The Briedenhann Group, pers. comm.).	of the soil - developed by constantly comparing results to visual cues and sensation. The moisture levels are still managed, but on a more informal basis (daily and visually) and are no longer documented, as the process is self-sustaining and TBT has developed a best practice for irrigation (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 27 and 28 October 2025). The *Best Practice Procedure: Soil Moisture Percentage, Water-Holding Capacity & Pesticide Application on Pivot Irrigation Fields* (no author or date) was made available to LM Environmental Consulting on 21 November 2025.
6	Pesticide use	Strictly control and allow for direct application of herbicides to minimise effects on native ecosystems.	Ongoing; the pesticides are administered via the pivot towers (the drippers can be adjusted to prevent any drift) (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	Ongoing Orbitor sprayers are currently being installed (the installation has taken place on 37 hectares, and the remainder will be installed before the end of 2025). The design reduces the wind drift and evaporative loss (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 21 November 2025).
7	Dust generation	Avoid as far as possible ploughing if the soil is dry and/or if there are high winds (exceeding 24 km/h). Planting should occur shortly after ploughing.	N/A; tillage cannot be practised; the irrigation areas are burnt after harvesting (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	Tillage is practised. Tillage and ploughing are done when there is an adequate degree of moisture in the soil and no soil practices are undertaken during high winds (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 21 November 2025).
8	Dust generation	Do not till on fallow and bare ground when average wind speeds exceed 40 km/h.	N/A	Ongoing (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 21 November 2025).
9	Dust generation	Cover piles of fertilizer, compost, or soil. Use surface coverings like wood chips, mulch, or plastic sheeting to help stabilize soil.	N/A; the fertiliser is stored in a shed (until use).	N/A; the fertiliser is stored in a shed (until use) (see Maartens, 2022).
10	Dust generation	Use cover crops like grasses and legumes to help reduce wind erosion.	Ongoing	Ongoing; lucerne and oats were planted (recent crop rotation) on all the areas where white maize or wheat could not be planted (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 21 November 2025).
11	Dust generation	Use physical barriers such as fences,	N/A	N/A

		straw bales, large trees to minimize flow of dust.		
12	Dust generation	Carry out visual dust monitoring and use water or dust suppressants when substantial dust is blowing offsite.	The area is generally dusty (red Kalahari dunes) and it is not feasible to use water (or any other dust suppressants) for suppressing the dust.	N/A; the area is generally dusty (red Kalahari dunes), and it is not feasible to use water (or any other dust suppressants) for suppressing the dust.
13	Avifauna	Make the top-most lines on all types of electrical lines visible to birds.	N/A; no dead/electrocuted birds have been observed to date (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	N/A
14	Avifauna	Confirm that there are no White-backed vulture *Gyps africanus* nests in the trees proposed to be cleared (if any) to accommodate the proposed transmission line; should such nests occur, then these should be avoided at all cost and the proposed transmission line route be adapted to reflect this		No White-backed vulture *Gyps africanus* and/or Sociable Weaver *Philetairus socius* nests were observed during the re-location of the powerline (see Maartens, 2023a; b; 2024a; b; and 2025).
15	Solar PV Plant (end of life and pollution of the biophysical environment)	Remove all the components and recycle/dispose of the components as per the manufacturer's requirements (e.g. ReneSolar and EnerSol for the panels).		Not yet applicable

Table 4: Compliance with the Actions Relating to the Protection of Groundwater for the Operational Phase of Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia (*after SLR, 2019c*).

No	Issue	Management commitment	Compliance and Comments (see Maartens, 2022)	Compliance and Comments (October/November 2025)
1	Groundwater quality	The irrigation scheme will comply with the GAP codes and standards.	It is uncertain as to which GAP codes and standards SLR (2019c) are referring to? It is advised that Tristone Business Trust adhere to all Namibian Legislation (including the groundwater abstraction permit conditions), and Best Practice Guidelines (e.g. the International Finance Corporation's (IFC's) Environmental, Health, and Safety (EHS) Guidelines for Annual Crop Production (2007b)).	It is advised that Tristone Business Trust (TBT) adhere to all Namibian Legislation (including the groundwater abstraction license conditions), and Best Practice Guidelines (e.g. the International Finance Corporation's (IFC's) Environmental, Health, and Safety (EHS) Guidelines for Annual Crop Production (2007b)).

2	Groundwater quality	With regards to the storage and handling of pesticides, TBT will: • Provide appropriate storage on-site (well-marked, closed and covered storage area(s), on impermeable substrate and with containment measures that can contain 110% of the total volume stored). • Regular monitoring and maintenance of storage facilities for early detection of any potential leakages. • Mixing or handling of materials within designated areas to minimise unnecessary spills to the environment. • Immediate clean-up of any accidental spills. • Disposal of used containers and waste packaging in a suitable and approved manner.	Ongoing The containers are rinsed properly and re-used (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	Ongoing
3	Groundwater quality	With regards to the storage, handling and use of hydrocarbons, TBT will: • Provide appropriate storage on-site (well-marked, closed and covered storage area(s), on an impermeable substrate and with containment measures that can contain 110% of the total volume stored). • Regular monitoring and maintenance of storage facilities for early detection of any potential leakages. • Handling of hydrocarbons and maintenance of equipment and machinery within designated areas with containment measures to minimise unnecessary spills to the environment. • Immediate clean-up of any accidental spills. • Disposal of used containers and	Ongoing It is advised: i) that the diesel tanks be put into a bunded enclosure with a net capacity of at least 120% of the net capacity of the tank (Environment Protection Authority (EPA), 2004); and that ii) Tristone Business Trust applies to the MME for a Consumer Installation Certificate for the fuel installation at Farm Hartebeestloop No. 202.	Ongoing; see below.

		waste packaging in a suitable and approved manner.		

Around 40 litres of petrol and 6,000 litres of diesel (three tanks of 2,200 litres each; each tank contained no more than 2,000 litres of diesel at any time) were stored at Farm Hartebeestloop No. 202 (see Maartens, 2022).

LVW Boerediens in Mariental delivers fuel to the Farm (Mrs Octavia Bailey, Head of Administration & Payroll and Compliance Officer, Tristone Business Trust, pers. comm.).

Maartens (2022; 2023a) advised: i) that the diesel tanks be put into a bunded enclosure with a net capacity of at least 120% of the net capacity of the tank (Environment Protection Authority (EPA), 2004); and that ii) Tristone Business Trust applies to the Ministry of Mines and Energy (MME) for a Consumer Installation Certificate for the fuel installation at Farm Hartebeestloop No. 202.

In August 2023, the tanks were moved and TBT commenced with the construction of a bunded enclosure (see Maartens, 2023b). Work was completed in December 2023 (see Maartens, 2024a; b).


a)

b)

Figure 3: Pictures showing: a) the three (3), 2,200-litre diesel storage tanks at Farm Hartebeestloop No. 202 (*Source: L Maartens, 06 June 2022*); and b) the completed bunded enclosure (December 2023) (*Source: Tristone Business Trust, 07 August 2023*).

TBT applied to the MME for a Consumer Installation Certificate for the fuel installation at Farm Hartebeestloop No. 202; the Consumer Installation Certificate (Certificate Number CI/2911/2024) was issued by the MME (now Ministry of Industries, Mines and Energy (MIME)) on 14 October 2024 (see Maartens, 2025: Annexure A).

4	Groundwater quality	Crops that are adapted to the climate and soil conditions and that do not require excessive volumes of pesticides and fertilizers will be planted.	The best cultivars for the area are chosen (Genetically Modified Organisms (GMOs) are not allowed in Namibia).	Ongoing; crops include white maize, lucerne, cow peas, and oats (see Maartens, 2022; 2023a; b; 2024a; b; and 2025).
5	Groundwater quality	An optimal water management plan that records and controls the volumes of water used, measures soil moisture levels to limit leaching, and includes efficient irrigation methods will be implemented.	Ongoing; soil moisture levels are measured every six months (the soil is highly permeable and diluted solutions of pesticides are used; leaching would thus be limited) (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	A formal **Water Management Plan** is not in place. Soil moisture levels are still managed, but on a more informal basis (daily and visually) and are no longer documented (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 27 and 28 October 2025).
				Returns – Abstraction for Irrigation Purposes (including rainfall (mm), water meter readings (m^3), and water level readings (meters below surface) – are submitted to the MAFWLR every quarter (see Maartens, 2023a; b; 2024a; b; and 2025). Irrigation is limited as far as possible - the only irrigation that takes place is based on the crop needs. During periods of high rainfall, or colder conditions, irrigation is reduced or ceased until such time that the soil moisture levels warrant the irrigation of fields (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 21 November 2025).
6	Groundwater quality	High sodium levels at Osirekare, Okongona and Grunfelde can cause salinization and crust formation on the irrigated lands. Gypsum should be considered to mitigate these effects.	Irrrigation activities on Portion 1 of Farm Breedestraat No. 204 (Oserikare), Farm Okongona No. 203, and Portion 3 (a Portion of Portion 2) of Farm Fricourt No. 199 (Grunfeld) ceased.	N/A
			Soil and water samples are collected twice a year (around March, and again in October) and then analysed by Dr Chris Schmidt from Kynoch Fertilizers in South Africa in order to develop a fertilizer programme (gypsum is used) (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	Ongoing; see below. Water samples are not collected twice a year (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 21 November 2025).

In November 2022, four (4) boxes containing 78 soil samples were sent to the *Grond en Omgewingslaboratorium*, Potchefstroom, South Africa (SA) for routine soil / plant / roots analyses for plant nutrient concentrations; chemical water analyses were carried out (six samples) by the Namibia Water Corporation's (NamWater) Laboratory in October 2022. The results were made available to LM Environmental Consulting (25 January 2023). Dr Chris Schmidt from Kynoch Fertilizers in South Africa developed the fertiliser programmes for lucerne, maize and cow peas for 2022/23 (see Maartens, 2023a).

During April 2023, 21 soil samples (taken at three depths at each of the seven fields) were sent to Dr Dries Bloem, *Grond en Omgewingslaboratorium*, Potchefstroom, SA for routine soil / plant / roots analyses for plant nutrient concentrations; chemical water analyses were carried out (seven samples) by Analytical Laboratory in May 2023. The results were made available to LM Environmental Consulting (26 July 2023). Agra Namibia developed the fertiliser programmes for lucerne, maize and cow peas for 2022/23 (see Maartens, 2023b).

During the period from August 2023 to January 2024, soil samples were collected by SGS - Precision Farming Services for analysis, crop planning / management, and land development. The results were made available to LM Environmental Consulting (05 February 2023). YARA provided the seed and soil correction programme and AgriGro Namibia provided the pesticide and herbicide programme (see Maartens, 2024a).

Maartens (2024b) noted that for the period February to July 2024, 24 soil samples were taken for analysis by Dr Dries Bloem from GEOLAB. The results were made available to LM Environmental Consulting (29 August 2024). Dr Chris Schmidt from Kynoch subsequently adjusted the fertiliser programmes for the various fields (Mrs Octavia Bailey, Head of Administration & Payroll and Compliance Officer, Tristone Business Trust, pers. comm.).

During the period August 2024 to January 2025, soil samples from Hartebeestloop West only were collected for analyses by Dr Dries Bloem from GEOLAB. The results were made available to LM Environmental Consulting (02 March 2025). Dr Chris Schmidt from Kynoch adjusted the fertiliser programmes for the various fields in November 2024 (Mrs Octavia Bailey, Head of Administration & Payroll and Compliance Officer, Tristone Business Trust, pers. comm., 02 March 2025; see Maartens, 2025).

On 24 October 2025, 36 soil samples (taken at surface, 30 cm, 60 cm, and 90 cm depths) were sent to Dr Dries Bloem, *Grond en Omgewingslaboratorium*, Potchefstroom, SA. The samples were collected from Farms Hartebeestloop, Steyn's Halt, Witpan and Dikbos for standard analysis, as well as for P Olsen (plant-available inorganic phosphate (PO_4-P)), Sulfate-Sulfur (SO_4-S), soil salinity and the concentration of soluble salts (EG), Calcium (Ca), Magnesium (Mg), Potassium (K), Sodium (Na) in the saturated paste extract, and Zinc (Zn), and Copper (Cu) (micronutrients essential for plant growth) (Mrs Octavia Bailey, Head of Administration & Payroll and Compliance Officer, Tristone Business Trust, pers. comm., 28 October 2025).

Chemical water analyses were carried out by the Analytical Laboratory Services in November 2022, and again in May 2023. The results were made available to LM Environmental Consulting (30 October 2025). During 2025, Luzerne was planted; maize will again be planted in December, and water samples may again be collected and sent for analyses in 2026 (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 10 November 2025).

7	Groundwater quality	Special management for salinity control may be required. A 90% relative yield of moderately salt tolerant crops can be maintained by using a low frequency irrigation system.	N/A (a low frequency irrigation system is highly technical and not feasible for use at present) (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	N/A
8	Groundwater quantity	Abstraction permits must be obtained from DWAF and conditions of the permit which include installation of water meters, maintenance of equipment to prevent leakages and monthly water level readings must be adhered to and documented.		See below:

9	Groundwater quantity	Permits must be renewed every two years supported by an updated impact assessment by a hydrogeologist.	During the past three years, no updated impact assessment by a hydrogeologist has been carried out. However, Dr Diganta Sarma, Hydrogeologist (Namib Hydrosearch), is currently conducting an assessment, i.e. the development of a numerical groundwater flow model of the Auob Aquifer (Stampriet Transboundary Aquifer System (STAS)), including detailed work over the abstraction areas. Abstraction scenarios are being generated for evaluation of impacts to the aquifer. The model is being developed by incorporating some of the input to a model developed under the GGRETA project. Additional data were sourced from the Geohydrology Division, DWRM (Directorate Water Resource Management), MAWLR, over the area of interest (farm areas). Data collection, processing, conceptual model development and model grid development were completed, and the observation data (water levels and pumping) processed. Model calibration was completed and the further processing and pumping scenarios are currently being simulated. The abstraction requests will be evaluated on this basis and recommendations provided. Upon completion, the findings will be reported to the Geohydrology Division, DWRM, MAWLR (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm.).	See below:

Dr Diganta Sarma, Hydrogeologist (Namib Hydrosearch), finalised the regional scale numerical groundwater flow model of the Auob Aquifer, STAS (Stampriet Transboundary Aquifer System), for Tristone Business Trust (TBT) in October 2022 (Sarma, 2022).

The following recommendations were made:

i) "To investigate the level of depletion of groundwater levels in the Auob a hydrocensus of the western STAS basin around Stampriet is recommended. The hydrocensus will be aimed at verifying pumping rates, illegal pumping, loss through free flow and leakage from boreholes, water levels and signs of declining groundwater levels.
ii) One borehole (WW1265) in the TBT farms is recommended for monitoring of groundwater levels.
iii) Introduction of appropriate irrigation management practices with continuous soil moisture monitoring to avoid over irrigation and water losses. Irrigation methods such as flood irrigation should be discontinued.
iv) Include groundwater level monitoring in addition to monthly pumping records as a necessary condition for all abstraction permits. Groundwater level can be recorded at least once every month in all bulk water abstraction schemes and can be used to update the model.

v) Establish additional groundwater level monitoring points and measure hydraulic parameters in the east and south of the STAS Basin.
vi) Improve the information on the aquifer geometry by capturing the available information in borehole completion reports and past reports.
vii) Improve the understanding of the Auob recharge areas and hydraulic connection with the overlying aquifer units. The area to the northwest of Stampriet is the primary area to investigate and use of additional measurements of radiogenic isotopes or chemical tracers is recommended.
viii) Measurement of hydraulic parameters of individual aquifer and aquitard units of the Auob so that the units can be treated separately in future models.
ix) Update the model as data and conceptual understanding improves. The current model can be updated and rerun every second year with added monitoring data."

The report accompanied the Groundwater Abstraction Permit Application for TBT.

The MAWLR, in a letter dated 25 October 2022, requested the following (that):
i) "TBT must apply a phased approach to the implementation of the irrigation scheme in order to give the Geohydrology Division time to observe the impacts of abstraction in the up-gradient.
ii) Namib Hydrosearch must provide the localised impacts of the abstraction as predicted by the model.
iii) Namib Hydrosearch must provide a groundwater level and quality monitoring plan for TBT and produce the final report."

Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, provided feedback on the above-mentioned letter on 28 October 2022:
i) "The phased / staggered approach was submitted to selective parties via e-mail on 05 October 2022;
ii) Dr Diganta Sarma was the appointed Hydrogeologist (Namib Hydrosearch) and initiated the following project based on the recommendations discussed:
    a. Regional scale numerical groundwater flow model of the Auob Aquifer, STAS, Namibia, October 2022
    b. The aforementioned report is a technical report accompanying the groundwater abstraction permit application
    c. The final modelling report was submitted to Water Affairs, Geohydrology Division on the 19th of October 2022 via e-mail – Mr. Bertram Swartz was copied into the e-mail correspondence
    d. Kindly find attached a copy of the modelling report for your easy reference – the content of the report is large and extensive and was also forwarded to you via e-mail.
iii) Dr Sarma included the aforementioned aspects as part of the modelling report submitted to Water Affairs."

The MAWLR subsequently granted the abstraction of 400,000 m^3/annum from Steyn's Halt Portion A of Farm De Duine No. 198 on 17 January 2023 (see Maartens, 2023a).

Permit numbers 10423, 10475, 10450 and 10474, and 10331 expired on 29 September 2023. Applications for the renewal of the permits were submitted to the DWA, MAWLR on 05 June 2023; the Deputy Director: Policy and Water Law Administration, Mr James Mouton, acknowledged receipt on 22 June 2023 (see Maartens, 2023b).

On 19 January 2024 (see Maartens, 2024a: Annexure A), TBT was informed that ''new permits'' will not be issued (*on 29 August 2023, the Water Resources Management Regulations were Gazetted and the Water Resources Management Act No. 11 of 2013 was implemented*) and that the permits (and amounts that may be abstracted) will remain valid for 18 months, i.e. until February 2025. However, in the meantime, Clients need to apply for water licenses and (new application) forms were made available (see Maartens, 2024b).

Mrs Annelise Wierenga, Hydrogeologist, Namibia Borehole Testing Specialists CC, advised TBT that she will apply for the conversion to abstraction licenses (from permits) after the "roadshow marketing project" of the MAWLR in March 2025 (Mrs Octavia Bailey, Head of Administration & Payroll and Compliance Officer, Tristone Business Trust, pers. comm., 02 March 2025). The applications for the conversion to abstraction licenses (from permits) were submitted to the DWA, MAFWLR, by Mrs Annelise Wierenga on 02 October 2025 (Mrs Octavia Bailey, Head of Administration & Payroll and Compliance Officer, Tristone Business Trust, pers. comm., 27 October 2025).

A summary of the current water abstraction per farm area (and including the size of the farm areas, irrigation areas, permit and borehole numbers) is provided in Table 5 (see SLR, 2019a, b, c and Maartens, 2022 for the historical information / a sequence of events).

Table 5: Summary of the current water abstraction per farm area (and including the size of the farm areas, irrigation areas, permit and borehole numbers).

Farm	Size (ha)	Irrigation Area (ha)	Crops	Permit Number (Expiry)	Borehole Serial Number(s)	Abstraction (m^3/annum)
Dikbos Portion 1 of Farm Eerstbegin No. 197	4,890	Two crop areas: 14 and 7 ha (21 ha)	Maize, Wheat, Lucerne, Oats and Teff	10423 (~~29 September 2023~~ February 2025)	WW 32118 WW 40316	400,000
Witpan Portion B of Farm De Duine No. 198	5,085	One crop area: 14 ha		10475 (~~29 September 2023~~ February 2025)	WW 41056 (WW727 not in use)	300,000
Remaining Portion / Remainder of Farm **Hartebeestloop** No. 202	6,190	Four crop areas (41 ha)		10450 (~~29 September 2023~~ February 2025)	WW 37690	260,000
Portion 1 of Farm **Hartebeestloop** No. 202	7,235	23 ha		10474 (~~29 September 2023~~ February 2025)	WW 37688	300,000
Remaining Portion of Farm Hartebeestloop No. 202 and Portion 1 of Farm Hartebeestloop No. 202 (to **convey** water over the boundary)*				10331 (~~29 September 2023~~ February 2025)	WW 37690	*200,000*
Steyn's Halt Portion A of Farm De Duine No. 198	5,100	Two proposed crop areas: 15 ha each	Maize, Wheat, Lucerne, Oats and Teff	11692 (31 December 2025)	WW 205418 WW 205419 (WW 1265)**	400,000
Total						**1,660,000** *(and excluding water from permit number 10331)*

*The 200,000 m^3/annum do not to form part of the total water abstraction (Mrs Octavia Bailey, Head of Administration & Payroll and Compliance Officer, Tristone Business Trust, pers. comm.).

**Monitoring Borehole

The Tristone Business Trust applies the following approach to groundwater level monitoring (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 28 October 2025):
''The centre pivots are fitted with irrigation nozzles that require a set pressure to distribute spray evenly. If the irrigation nozzles are over- or under-pressurised, then water is not applied uniformly on the fields, resulting in wilting crops due to surplus/deficit moisture. To manage this, the centre pivots are fitted with pressure gauges that measure the inlet pressures. The pivots are further fitted with pressure relays that only activate once a minimum inlet pressure is reached - if it is not reached, the pivot cannot function. The minimum inlet pressure is 1.8 bar, and the recommended pressure for the nozzles is specified as 2.1 bar.

The (test) pumping data from the boreholes are used to determine the borehole capacity (yield) in cubic metres per hour (m^3/h). The latter is used to specify the pump size and depth of installation for TBT's irrigation boreholes - to allow for a set flow rate (m^3/h) to the pivots.

By monitoring the centre pivot pressure gauges, which are done almost daily during periods of irrigation, TBT can identify any changes in groundwater level. If the water table drops/rises by two (2) metres, then the centre pivot pressure gauge will either rise/fall by 0.2 bar. Once there is a drop in excess of three (3) meters, the pivot will shut off entirely (as the minimum inlet pressure will not have been met).

In doing the above, TBT has tied its irrigation practices directly to the groundwater level in such a way that any material change in groundwater levels will render the irrigation practices obsolete. To date, TBT has not experienced any groundwater level change as no changes to the pray packages, pumps, or pressure settings have been required. There have been a handful of low-pressure instances, but a quick investigation into the flow rate on the borehole water meter confirmed that these were due to pipe leaks, which were immediately repaired. In addition to this, TBT has so far placed five (5) of the boreholes ''online'', allowing staff to view the water pressure settings from a smartphone - this allows for water pressure tracking even though someone is not physically in front of the pressure gauge to view the reading on the dial.''

Returns - Abstraction for Irrigation Purposes are submitted to the MAWLR (now MAFWLR); the returns for 2022 (four quarters), 2023 (four quarters), and the first, second, and third quarters were made available to LM Environmental Consulting on 25 January 2023, 26 July 2023, 05 February 2024, 29 August 2024, and 02 March 2025, respectively (see Maartens, 2025).

Table 6: Compliance with the Actions Relating to Socio-Economic Conditions for the Operational Phase of Tristone Business Trust's Irrigation Scheme Expansion Project, Stampriet, Hardap Region, Namibia (*after SLR, 2019c*).

No	Issue	Management commitment	Compliance and Comments (see Maartens, 2022)	Compliance and Comments (October/November 2025)
1	Enhancing positive impacts	TBT will ensure that the irrigation scheme is operated in a manner that ensures the sustainable use of resources while maximising the production potential and economic value of the scheme.	The irrigation scheme is operated in a sustainable and efficient manner (it is aimed to produce the maximum tonnage of produce per cubic metre of water) (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	Ongoing
2		Local labour will be used and on-going skills training will be undertaken.	Twenty six people (20 males and six females) are currently employed by Tristone Business Trust. Apart from one person who has been working on the farm for five years, the other people have	Tristone Business Trust (TBT) currently employs four staff at the irrigation scheme ("crop and feed production"). Mr Jaco Willson was employed as the Farm Manager, Farm Hartebeestloop No. 202, for the

			all been on the farm for between 10 and 18 years. Sometimes a contractor is employed, who then brings in temporary workers during harvesting / to fix fence lines. On the job training is provided by the two Farm Managers (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	period between 01 January 2023 and 30 October 2024. On 01 January 2025, Mr Werner Mouton was appointed as Crop Manager. Me Elizme van der Walt's contract ended on 08 Januarie 2025. Me Marisa Jordaan is not the full-time Stud Manager anymore (since 31 October 2024), but does act as an administrative consultant monthly. Apart from one person who has been working on the farm for five years, the other people have all been on the farm for between 10 and 18 years. Sometimes a contractor is employed, who then brings in temporary workers during harvesting / to fix fence lines (see Maartens, 2022; 2023a; b; 2024a; b; 2025).
3	Social and Environmental Performance - Occupational and Community Health and Safety and Security	Adhere to all Namibia's Health and Safety Regulations (Labour Act, 1992: Regulations Relating to the Health and Safety of Employees at Work). Ensure that an **HIV/AIDS Policy and Programme** and **Health and Safety Plan** is in place. A SHE (Safety, Health, Environment) Representative to be appointed once the staff complement reaches 20. Occupational Health and Safety Training to be provided to all employees. Ensure that qualified first aid can be provided at all times. Comply with all safety regulations re. electricity supply. Ensure that employees are trained in the use of appropriate firefighting equipment and ensure that such equipment is on hand at all times. Provide and ensure the active use of PPE. Make suitable arrangements, as far as practicable, for the maintenance of health, the prevention and overcoming of outbreaks of disease (e.g. Tuberculosis (TB)) and of adequate first aid services. Prevent communicable disease (e.g. Sexually Transmitted Infections (STIs) such as HIV transmission): provide surveillance and active screening and treatment of employees; prevent illness among employees (through health awareness and education initiatives); ensure ready access to medical treatment, confidentiality and appropriate care, particularly with respect to migrant workers; and promote immunization.	Ongoing (see Maartens, 2022; 2023a; b; 2024a; b; and 2025). An HIV/AIDS Policy, dated 07 February 2023, was made available to LM Environmental Consulting. Not currently applicable (N/A). On-the-job training mainly is provided. A "Staff Training Policy", dated 02 February 2023, was made available to LM Environmental Consulting. Ongoing Ongoing Firefighting equipment is on hand (ten bottles, plus three firefighters that are maintained to combat any fires); the bottles were serviced by CHUBB National United Security Services in August 2024 and again in January 2025. Personal Protective Equipment (PPE) is worn by the staff. A document entitled "Staff PPE", dated 02 February 2023, and indicating how staff PPE is assigned was made available to LM Environmental Consulting.

		Implement measures to protect the entire team (including contractors) against the SARS-CoV-2 Virus that causes COVID-19. Train employees in the COVID-19 regulations. Provide adequate handwashing and hand sanitizing facilities; maintain the required physical distance and wear a face mask if applicable. Stay up-to-date on current COVID-19-related regulations in the Region and Country. Ensure that security arrangements are in place.	Staff who fall ill, are taken to the Doctor in Mariental. A “Communicable Disease Policy”, dated 02 February 2023, was made available to LM Environmental Consulting. Security arrangements are in place.

2.3 Compliance: Monitoring and Reporting

To illustrate Tristone Business Trust's compliance with the proposed "monitoring and reporting" (see SLR, 2019c), the following colour codes were applied:

	Compliance/Completed
	In Progress/Ongoing
	Non-compliance
	Not (Currently) Applicable
	Changes proposed

Type	Parameter	Frequency	Compliance / Comments (Maartens, 2022)	Compliance / Comments (October/November 2025)
Monitoring boreholes (not used for pumping), intersecting both, the Kalahari and Auob aquifers, will be established downstream of the irrigation scheme, near the southern border of the site. If monitoring points become damaged or redundant then they can be replaced with new points.			See below (proposed changes)	
			It is advised that water levels in all existing boreholes tapping the Auob and Rietmond aquifers in the farms be monitored. The water levels can be taken in a minimum interval of once every month (two times a month is preferred). The data should include date and time, water level measuring point (e.g. top of casing), water level, and time since pumping stopped. Water levels are to be taken after the borehole has been allowed to recover overnight (12 hours) (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm.).	One Auob Formation monitoring borehole was to be monitored (water level), and a borehole was selected based on available data from the Geohydrology Division. This borehole was not monitored. If this borehole cannot be located, a monitoring point (Auob Formation) will be identified to the south of the irrigation scheme (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm., 01 December 2025).
				An alternative borehole was monitored (in Hartbeespoort Farm). The data will have to be analysed by a Hydrogeologist, and this borehole may then be accepted as an alternative monitoring borehole (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm., 01 December 2025).
				The Rietmond boreholes (Okongona Farm) are to be included in the monthly water level monitoring scheme (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm., 01 December 2025).
Abstraction of groundwater for irrigation	As per the Department of Water Affairs (DWA), Ministry of Agriculture Water and Land Reform (MAWLR's) conditions to the abstraction permits			Returns (production boreholes) – Abstraction for Irrigation Purposes (including rainfall (mm), water meter readings (m^3), and water level readings (meters below surface) – are submitted to the MAFWLR every quarter (see Maartens, 2023a; b; 2024a; b; and 2025). The data are to be shared with a Hydrogeologist so that it can be plotted and checked that there is no unexpected decline indicating unsustainability (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm., 01 December 2025).

Production and monitoring boreholes	Water quality (pesticides, fertilisers and ~~hydrocarbons~~); data to be analysed for trends and where required additional mitigation to be implemented in consultation with a specialist	Annually	A full water analysis is done at the beginning of each crop season (production boreholes). The Kalahari aquifer boreholes' water quality are tested annually (Mr Byron Briedenhann, The Briedenhann Group, pers. comm.).	The need for hydrocarbon analysis can be waived as all production boreholes are powered by grid electricity (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm., 01 December 2025). Chemical water analyses were carried out by the Analytical Laboratory Services in November 2022, and again in May 2023. The results were made available to LM Environmental Consulting (30 October 2025). No analyses were carried out in 2024. The number of boreholes for monitoring of pesticides and fertilisers can be limited to boreholes close to or within the irrigation field (pivots) to be sampled (to be discussed and approved by a Hydrogeologist) (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm., 01 December 2025).
Monitoring boreholes	Water levels (to determine changes in groundwater levels due to pumping from the irrigation scheme); data to be analysed for trends and where required additional mitigation to be implemented in consultation with a specialist.	Monthly	Discharge from the boreholes are to be recorded and reported in cubic meters over a period with records of start date and time of the readings (water meters record in different units and some need multiplication of the figures by a constant; care should be taken to report in cubic meter units only). The need for additional monitoring boreholes (also see above) can be waived for now if all borehole discharge and water levels are monitored (see above). The need for additional monitoring boreholes can be assessed again after two years of monitoring (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm.).	See above
~~Production boreholes~~	~~Regular pump testing of active boreholes (to confirm the aquifer capacity and sustainable long term abstraction rates)~~			Regular test pumping of production boreholes is not necessary. Test pumping can be done only if production borehole efficiency is suspected to have declined (low yield) (Dr Diganta Sarma, Hydrogeologist, Namib Hydrosearch, pers. comm., 01 December 2025).

Monitoring programme that caters for both the presence and abundance of different pests (fungi as well as invertebrates) and the effects of different management options to be implemented			Mr Byron Briedenhann (Chief Financial Officer, Tristone Business Trust) noted (21 November 2025): Certain crops are susceptible to, or create a beneficial environment for, pests and adverse microbes. Due to this knowledge being well studied, we obtain a pesticide program that mitigates these risks actively and therefore we eliminate the pests early. For non-routine infestations we apply our discretion. Sporadic inspections of the crop fields are done and if infestations are identified, we will either chemically or mechanically deal with these infestations. Where the presence of pests is not regarded as an infestation, and the problem is expected to be resolved naturally by beneficial organisms, the weather or even if the infestation is present at a time where it will do no damage to the crops, the practice would be to not unnecessarily apply chemicals to the field.	
Monitor electrical lines regularly and install markers if there is any bird mortality			See below (proposed changes)	
~~Bird collisions (with transmission lines)~~	~~As per Shaw (2010) and/or making use of the NamPower/Namibia Nature Foundation (NNF) Strategic Partnership Forms~~	~~Monthly, and then three-monthly~~		N/A anymore (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 24 November 2025).
The Environmental Manager / Officer will conduct weekly inspections (and) quarterly internal audits against the commitments in the EMP. The audit findings will be documented for both record-keeping purposes and for informing continual improvement.				Ongoing (Mr Byron Briedenhann, Chief Financial Officer, Tristone Business Trust, pers. comm., 30 October 2025).
In addition, an independent professional will conduct an EMP performance assessment every six months. The EMP performance assessment will measure compliance with the provisions of the EMP and the adequacy of the EMP relative to the on-site activities.			See below (proposed changes)	See Maartens (2023a; b; 2024a; b; and 2025)
The bi-annual report required by the MET will be submitted every six months				
Environmental Management Plan	Environmental performance / corrective measures to be taken as or when required	Bi-Annual Environmental Reports to be submitted to the Directorate of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT)		

3 Conclusions and Recommendations

Tristone Business Trust has been operating an irrigation scheme on seven farm areas around 40 kilometres south-east of Stampriet, in the Hardap Region, Namibia, since 2005.

The following is recommended (that):

i. the Water Resources Management Act 11 of 2013 and Water Resources Management Regulations 2023 are complied with;
ii. the recommendations regarding the monitoring boreholes be implemented (see Section 2.3); and
iii. a Hydrogeologist be appointed to look at the data/trends (production and monitoring boreholes and including water quality; see Section 2.3) and make (additional) recommendations as needed.

It is advised that Tristone Business Trust and their employees and contractors should implement and observe the Environmental Management Plans on an ongoing basis. Environmental performance should be regularly monitored (so that the lessons learnt can be incorporated into the improvement of the Environmental Management Plans over time) and corrective measures taken as or when required.

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