Environmental Scoping Report 20 MW Solar PV Plant on ±50 ha near Naruchas (Rehoboth area), Namibia

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1. Executive Summary

JCM Power proposes to develop a 20 MW solar photovoltaic (PV) power plant near the Naruchas substation within the Rehoboth Townlands, situated approximately 18 km north of Rehoboth along the B1 national road en route to Windhoek. The project site falls within the Hardap Region and has been provisionally allocated through agreement with the landholder, with formal consent obtained from the relevant local authority for utilisation of the Rehoboth Townlands area. The development footprint is described as ~50 ha for project planning purposes, while the mapped polygon in the submitted spatial file indicates a footprint of approximately 46.87 ha, which is consistent with the nominal allocation for ECC application and reporting. The site is strategically located due to proximity to existing road access and grid infrastructure, favourable solar resource, and separation from densely populated areas and known sensitive environmental features. The supplied spatial data further indicates a short grid connection alignment, including an overhead line (OHL) section of approximately ~204 m, which will be confirmed in the detailed engineering design.

The purpose of this Environmental Scoping Study is to define the proposed activities and feasible alternatives; describe the receiving environment and identify key sensitivities; identify and screen potential environmental and social impacts at scoping level; confirm the scope of mitigation and management measures to be embedded in the Environmental Management Plan (EMP); document stakeholder engagement and issues raised; and provide sufficient information to support Environmental Clearance Certificate (ECC) decision-making in terms of Namibia's Environmental Management Act and the EIA Regulations. The scoping process has been structured to align with typical Namibia ECC submission expectations and incorporates good practice management measures consistent with internationally recognised standards, including reference to the IFC Environmental, Health and Safety (EHS) Guidelines where relevant.

The proposed project comprises a PV generation field (solar modules in arrays mounted on fixed-tilt or tracking structures), associated electrical infrastructure (inverters, transformers, medium-voltage reticulation, earthing and lightning protection), an on-site substation/switchgear arrangement, grid connection infrastructure to the point of interconnection, internal access roads and turning areas, security fencing and controlled access, and stormwater/erosion management measures. Construction activities are expected to include final survey and pegging, site establishment and laydown areas, selective vegetation clearance within the approved footprint, topsoil stripping and stockpiling where applicable, minor earthworks and road upgrades, installation of foundations and mounting structures, mechanical and electrical installation of PV modules and equipment, cable trenching and reinstatement, commissioning and grid synchronisation, and rehabilitation of disturbed areas not required for operations. During operation, the facility will be largely passive, with scheduled inspections and maintenance, vegetation management to prevent shading and reduce fire risk, drainage maintenance after storm events, limited waste generation, and environmental compliance monitoring. Decommissioning will involve dismantling and removal of PV equipment and infrastructure, maximising recycling and licensed disposal, reinstating drainage and landform stability, and rehabilitating the site to an agreed post-closure land use, supported by post-closure monitoring.

The receiving environment is characteristic of central Namibia's semi-arid interior, with hot summers, cool dry winters, and highly seasonal rainfall. The topography is generally gentle to moderately undulating, with drainage features that can convey intense runoff during storm events, making drainage continuity and erosion control a key design and construction consideration. Regionally mapped geology in the broader area includes metamorphosed sediments and igneous rocks with local alluvial/sandy cover, while hydrogeological screening indicates low to moderate groundwater potential and predominantly moderate groundwater vulnerability in the wider project setting. Groundwater quality data for the broader area is generally mapped as good to excellent (TDS-based groupings), indicating that groundwater remains a valued resource that should be protected from contamination. Vegetation in the wider area reflects a transitional setting, with the main vegetation type described as southern Kalahari vegetation, grading to dwarf shrub savanna to the south and highland shrubland to the north. A regional avifauna richness dataset indicates that the project area falls within a 171–200 species class, suggesting moderate bird diversity in the landscape. No known heritage resources are recorded in close proximity to the Naruchas substation at scoping level; however, a precautionary approach is applied through a Chance Finds Procedure should any heritage materials be encountered during ground disturbance. The current land use in the area is dominated by extensive livestock farming and road-based movement along the B1 corridor, with sensitive receptors primarily being nearby landholders/farmsteads, road users, and any locally important drainage or habitat features.

The scoping impact assessment applied a standard significance methodology where Significance = Consequence × Probability, and Consequence is determined by the combined consideration of severity, duration and spatial extent. The assessment indicates that the most material adverse impacts are concentrated in the construction phase, and are generally localised and manageable through standard mitigation measures. Key adverse issues include vegetation clearance and habitat disturbance within the footprint, soil disturbance with potential erosion and sediment mobilisation during rainfall events, dust generation and short-term air quality nuisance from construction traffic and earthworks, traffic and road safety risks associated with heavy vehicle movements, and pollution risks associated with accidental spills of fuel and oils. Operational impacts are comparatively limited due to the absence of process emissions; the main ongoing considerations relate to stormwater management, vegetation control, waste handling, visual change and sense of place (including visibility from the B1), and avifauna interaction where any overhead grid connection is retained. Decommissioning impacts are expected to be temporary and can be effectively managed through a formal decommissioning and rehabilitation plan. Positive impacts are significant and include long-term renewable electricity generation contributing to national energy security and reduced greenhouse gas emissions, as well as short-term socio-economic benefits through employment and local procurement during construction.

The study concludes that, with implementation of the recommended mitigation and monitoring measures through the EMP, most adverse impacts can be reduced to low or low–medium residual significance, while the renewable energy benefit remains strongly positive over the life of the project. Key commitments for ECC conditions and EMP implementation include strict footprint demarcation and avoidance of drainage-line vegetation where practicable, early installation and maintenance of stormwater and erosion controls, implementation of a Traffic Management Plan for the B1 interface, bunded storage and controlled handling of fuels and hazardous materials with spill response readiness, waste management via licensed service providers, application of a Chance Finds Procedure under the heritage framework, and avifauna-safe grid connection design measures where relevant. On this basis, the Environmental Scoping Study recommends that the project proceed for ECC decision-making, subject to adherence to the EMP and the finalisation of detailed engineering design and any outstanding specialist inputs required by the competent authority.

2. Introduction

2.1 Background

JCM Power proposes to develop a 20 MW solar photovoltaic (PV) power plant near the Naruchas substation within the Rehoboth Townlands in the Hardap Region, as part of its contribution to Namibia's increasing need for reliable, cost-effective and cleaner electricity generation. The project originates from JCM Power's engagement with the local landholding and administrative structures, through which the proponent was provisionally granted access to land by the farm owner for the purpose of establishing a utility-scale PV facility. The selected site is located approximately 18 kilometres north of Rehoboth, en route to Windhoek along the B1 national road, and was identified as suitable due to its strong solar resource potential, relatively open terrain, and convenient proximity to existing road and grid infrastructure that can reduce the extent of new linear disturbances

The land allocated for development is described at project level as approximately 50 hectares, which is considered sufficient to accommodate the PV arrays and mounting structures, internal access routes, electrical and control infrastructure, security measures and stormwater controls, as well as an on-site substation and the required grid connection works. Spatial outputs derived from the submitted mapping indicate a mapped PV footprint of approximately 46.87 hectares, with a site perimeter of approximately 3.11 km and an indicative extent of roughly 1.09 km north–south by 0.55 km east–west, which aligns well with the nominal 50 ha allocation for planning and ECC submission purposes. In line with Namibia's Environmental Management Act and EIA Regulations, this Environmental Scoping Study has been initiated to describe the proposed development and reasonable alternatives, characterise the receiving environment, identify key sensitivities and potential impacts, and define practical mitigation and monitoring measures through an Environmental Management Plan, thereby providing the competent authority with sufficient information to make an informed decision on the Environmental Clearance Certificate.

2.3 Purpose of the Scoping Study

The purpose of the scoping study is to provide a structured, decision-supporting assessment that defines the proposed project activities and identifies feasible alternatives (including the no-go option), describes the receiving environment and highlights key environmental and socio-economic sensitivities, and identifies the potential impacts that may arise during construction, operation and decommissioning. In doing so, the study applies an appropriate scoping-level significance approach to determine which issues require particular attention and to confirm the nature and extent of mitigation and management measures needed to avoid, minimise or remedy adverse effects. The scoping process also documents the stakeholder engagement undertaken, records key issues and comments raised by interested and affected parties, and demonstrates how these matters have been considered in project planning and the development of the Environmental Management Plan (EMP). Overall, the scoping study provides sufficient, clear and defensible information to enable informed decision-making by the Environmental Commissioner on the Environmental Clearance Certificate (ECC) application.

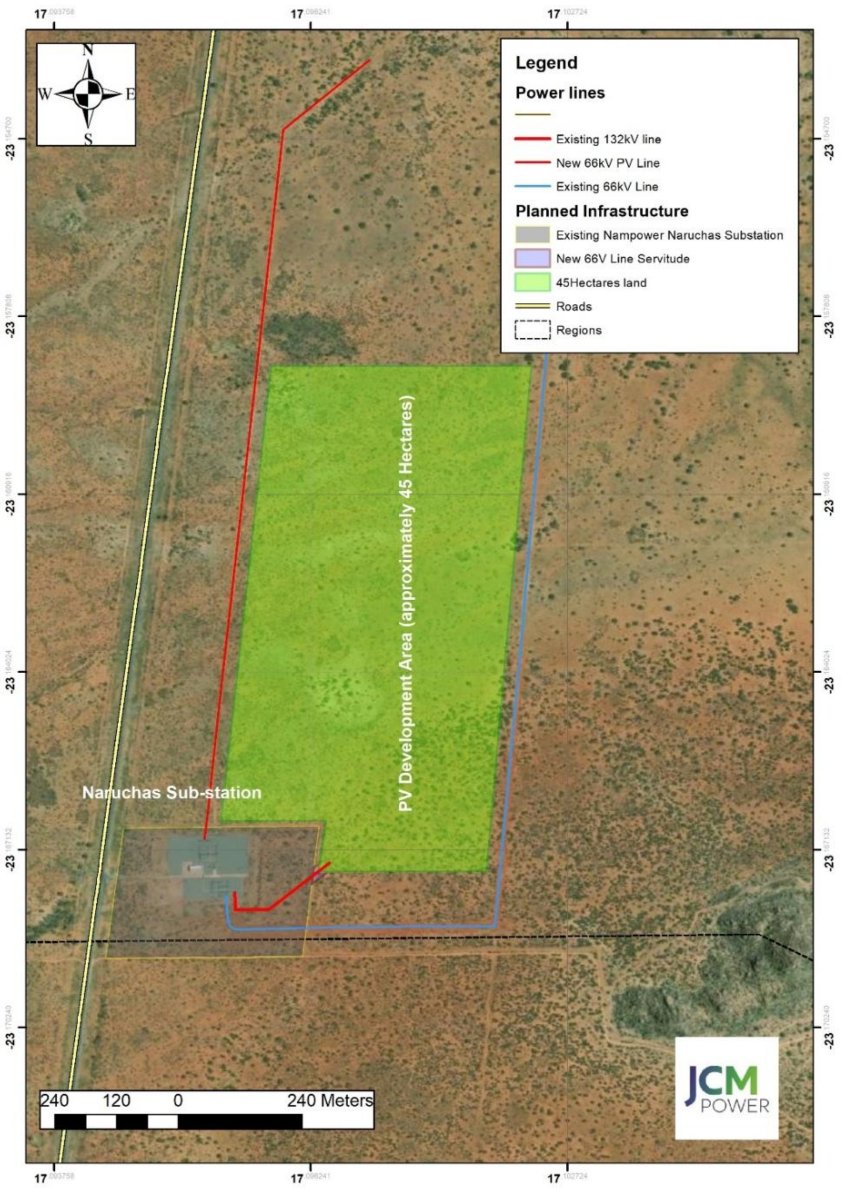


Figure 1. Location Map for the Naruchas solar power plant in close proximity to Rehoboth.

3. Policy, Legal and Institutional Framework

3.1 Applicable Legislation and Permitting Requirements

For the proposed 20 MW solar photovoltaic (PV) power plant near Naruchas, the project must comply with Namibia's applicable environmental, sectoral and local authority requirements. In practical terms, this means the project must be planned, assessed, authorised and implemented within the national legal framework, and in a way that aligns with the permitting expectations of the Environmental Commissioner and other competent authorities. The key legal instruments that guide this Scoping Study and the overall ECC application process include the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations, 2012 (GN 30 of 2012). These instruments require that listed activities are assessed and that an Environmental Clearance Certificate (ECC) is obtained prior to construction, and they also set the expectations for public consultation, disclosure of information, impact identification, mitigation planning and ongoing compliance through an Environmental Management Plan (EMP).

In addition to the environmental authorisation process, the project is also subject to energy-sector legislation and technical requirements linked to grid connection and electricity generation. This includes compliance with the Electricity Act and any associated technical standards, grid codes and connection procedures required by the relevant competent authority and/or utility. In effect, even if the project is environmentally acceptable, it still needs to meet the technical and safety requirements for connection to the existing electricity network, including approvals for the substation and any overhead line or cable connection required to reach the point of interconnection.

Because solar PV projects involve earthworks, stormwater changes and potential water use during construction (e.g., for dust suppression) and possibly during operations (e.g., panel cleaning in some cases), applicable water-related legislation must also be considered. This includes requirements related to pollution prevention, protection of water resources, and—where relevant—authorisations for water abstraction or storage. The project must ensure that runoff is managed responsibly, that natural drainage paths are not blocked, and that fuels, oils and chemicals are handled in a manner that prevents contamination of soils and groundwater. Where any formal water use or abstraction is proposed, the relevant permits or written authorisations would need to be obtained and documented.

The Labour Act and occupational health and safety requirements are also applicable, particularly because construction activities introduce worker health and safety risks, and because the project will involve contractors, heavy vehicles and site-based work. The proponent and its contractors will be expected to implement appropriate health and safety systems, training and induction, incident reporting, and safe working procedures as part of good practice and legal compliance. Worker welfare considerations such as sanitation, access to drinking water, and appropriate accommodation (if required) should also be managed in line with Namibian standards and best practice.

Heritage resources are protected under national heritage legislation, and therefore any potential archaeological or heritage materials encountered during site clearing, trenching or foundation excavation must be managed appropriately. Even where no known heritage sites occur within the footprint, the risk of chance finds cannot be excluded in Namibia. For that reason, this Scoping Study and the EMP should include a Chance Finds Procedure, which clearly sets out what must happen if artefacts, graves or heritage material are discovered during construction (including stop-work measures and notification of the relevant heritage authority).

Finally, the project must comply with any local authority planning and land-use permissions that may apply to the Rehoboth Townlands and the specific land parcel identified for development. This includes ensuring that land use is authorised, that consent and/or letters of support are documented, and that any zoning, servitude, wayleave, road access, or building-related approvals are obtained where applicable. These requirements are particularly important for infrastructure elements such as access points to public roads, the siting of the substation, and the routing of any overhead line or cable connection.

To demonstrate compliance in a clear and auditable way, a legal compliance matrix will be provided as an annexure to this report. The matrix will list the applicable legislation and key permit/authorisation requirements, indicate relevance to the project, describe the compliance actions required, and assign responsibilities for implementation and record keeping during construction and operation.

3.2 Standards and Good Practice

3.2.1 IFC Environmental, Health and Safety (EHS) Guidelines

In addition to meeting Namibian legal requirements, the project will be aligned with internationally recognised environmental and safety benchmarks to strengthen the credibility and defensibility of the assessment and the Environmental Management Plan (EMP). The primary reference framework in this regard is the International Finance Corporation (IFC) Environmental, Health and Safety (EHS) Guidelines. These guidelines are widely applied to infrastructure and energy projects as a practical "minimum good practice" standard, particularly where projects may interface with lenders, investors, or international performance expectations. The IFC General EHS Guidelines provide baseline measures for managing common project risks such as occupational health and safety, community health and safety, air emissions and dust, noise, traffic safety, waste handling, incident reporting, and emergency preparedness. For the Naruchas solar PV project, these requirements are most relevant during the construction phase, when heavy machinery, increased vehicle movement, and earthworks introduce the highest risk profile.

Where the project includes grid connection infrastructure—such as an on-site substation, overhead line or underground cable—the assessment will also reference the IFC EHS Guidelines for Electric Power Transmission and Distribution where applicable. This sector guidance is particularly useful for managing risks associated with electrical safety, working at heights (if overhead structures are installed), line routing and servitudes, vegetation clearance along corridors, collision risks for birds (where overhead lines exist), and public safety controls around high-voltage infrastructure. Referencing these guidelines ensures that the EMP contains clear, internationally accepted controls for high-risk activities and infrastructure elements that are common to power projects.

3.2.2 Industry Good Practice for Solar PV Construction

The project will also apply recognised industry good practice for utility-scale solar PV developments, with a specific focus on minimising disturbance and ensuring effective site management during construction. In practical terms, this includes limiting vegetation clearance to the approved footprint, demarcating no-go areas (especially around drainage features or sensitive habitat patches), stripping and storing topsoil correctly for rehabilitation, and maintaining strong housekeeping across the site to prevent litter, uncontrolled waste accumulation, and unnecessary soil disturbance. It also includes contractor induction and method statements that translate the EMP into on-the-ground actions, such as safe refuelling procedures, speed controls, dust suppression, and daily inspection routines. These good practice measures are essential in semi-arid environments where disturbed surfaces can remain exposed and unstable for extended periods if not rehabilitated promptly.

3.2.3 Stormwater and Erosion Control Good Practice

Stormwater management is a key good practice area for solar PV projects because panel rows, access roads, and compacted surfaces can unintentionally concentrate runoff, increasing erosion risk—particularly during intense rainfall events typical of Namibia's interior. Good practice stormwater management therefore aims to maintain natural drainage continuity, avoid blocking flow paths, and dissipate runoff energy so that erosion is prevented rather than repaired after the fact. Measures typically include diversion berms or cut-off drains where appropriate, appropriately sized culverts at road crossings, erosion protection at discharge points (e.g., riprap or energy dissipation structures), and sediment controls during construction such as silt fencing and temporary sediment traps. These controls are complemented by inspection and maintenance requirements, especially after rainfall events, to ensure that drainage infrastructure remains functional throughout the project life.

3.2.4 Hazardous Materials and Pollution Prevention Good Practice

Finally, the project will apply established good practice for hazardous materials management and pollution prevention, as solar PV construction and operation involve fuels, oils, lubricants, and electrical equipment that can pose contamination risks if mismanaged. Good practice requires that hazardous substances are stored in secure, bunded areas; that refuelling takes place in designated locations with drip trays and spill kits; and that all spills are responded to immediately through a documented spill response procedure. Waste oils, oily rags, used filters, and other hazardous wastes must be stored safely, labelled correctly, and removed by authorised service providers to licensed facilities. Embedding these measures into the EMP, along with clear responsibilities and monitoring records, ensures that risks to soil and groundwater are minimised and that the project remains compliant with both Namibian requirements and accepted international performance expectations.

4. Project Description

4.1 Project Overview

JCM Power proposes the development of a 20 MW solar photovoltaic (PV) power plant on a land parcel of approximately ~50 ha (mapped developable footprint in the supplied KMZ: ~46.87 ha) near Naruchas, approximately 18 km north of Rehoboth along the B1 road. The facility will comprise PV module arrays and associated electrical infrastructure required to generate electricity and deliver it to the grid via an on-site substation and a short overhead line/cable connection to the approved point of interconnection (final design subject to grid studies and utility requirements).

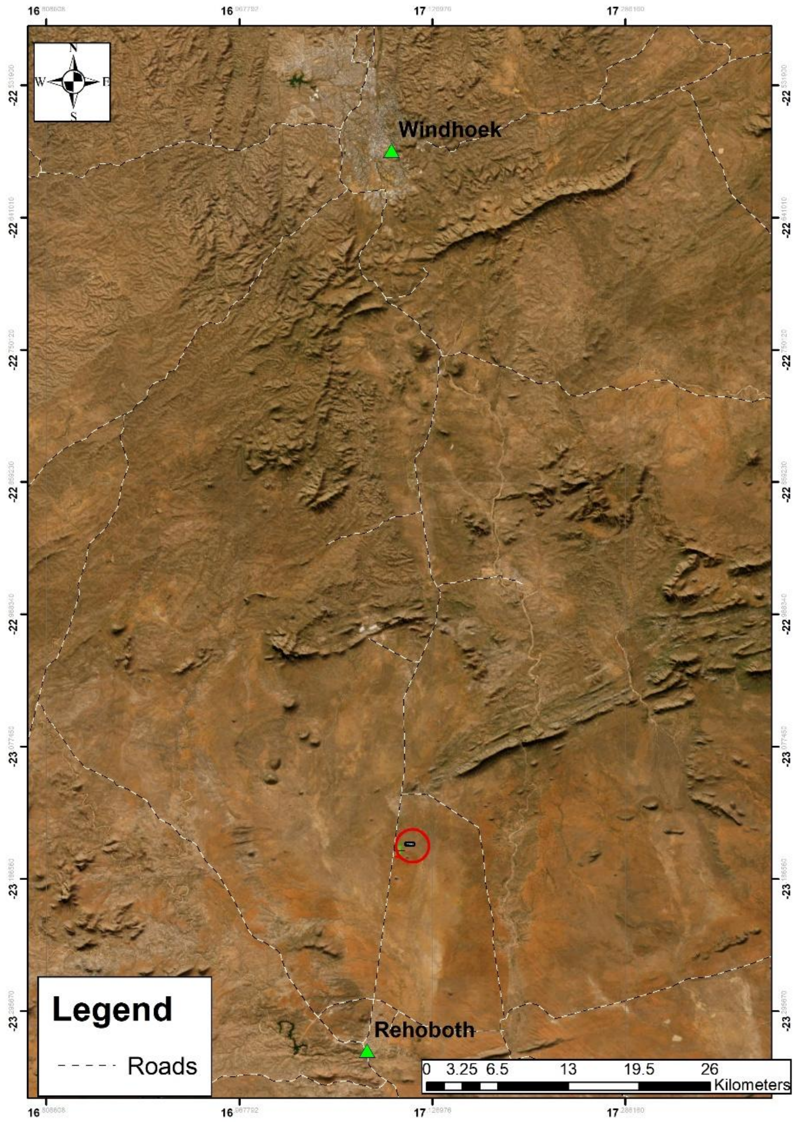


Figure 2. The overall location map showing the Naruchas sub-station in proportion to the two towns.

The project will be implemented in three principal phases: construction, operation and maintenance, and decommissioning/closure. The descriptions below reflect a typical 20 MW utility-scale PV development and will be finalised once detailed engineering is complete.

4.2 Project Components and Infrastructure

4.2.1 PV Generation Field

The core of the proposed development is the solar PV generation field, which will consist of PV modules arranged in arrays across the approved footprint. The panels will be mounted on either fixed-tilt frames or single-axis tracker structures, depending on the final engineering design and optimisation requirements. The mounting system will be secured using pile foundations or, where required by ground conditions, limited concrete footings. Electrical collection within the array field will be achieved through string cabling, and where applicable, combiner boxes will be used to consolidate outputs from panel strings before electricity is routed toward the inverter and transformer systems.

4.2.2 Electrical Equipment

Electricity generated by the PV modules is produced as direct current (DC) and must be converted to alternating current (AC) for grid export. This conversion will be undertaken using either string inverters distributed across the array field or central inverters, depending on the final plant configuration. Following conversion, the voltage will be stepped up through transformers—typically pad-mounted or containerised units—to levels suitable for distribution or sub-transmission export. The facility will also include medium-voltage (MV) reticulation, which may be routed predominantly via underground cabling, with limited overhead sections only where required. An earthing/grounding system and lightning protection will be incorporated to manage electrical safety risks, protect infrastructure, and ensure compliance with applicable technical standards.

4.2.3 Substation and Grid Connection

To enable grid export, the project will include an on-site substation and/or switchgear arrangement incorporating protection systems, metering and control equipment, and associated transformer bays as required by the utility connection design. A grid connection line or cable will link the solar plant to the point of interconnection (POI). The supplied project KMZ indicates a short overhead line (OHL) alignment of approximately ~204 m; however, the final routing, servitude requirements, and detailed design parameters will be confirmed in consultation with the relevant competent authority and/or utility and will be presented in the final engineering drawings and authorisation documentation.

4.2.4 Access and Internal Circulation

The site will be accessed from the B1 road and/or existing farm or townlands access tracks, subject to the necessary approvals. Internal access roads will be developed or upgraded to provide safe and reliable access to the PV arrays, inverter stations, transformer pads and substation for both construction and ongoing maintenance and emergency response. The layout will also include turning areas and laydown yards to accommodate delivery trucks, cranes/telehandlers, and construction support activities, especially during peak installation periods.

4.2.5 Buildings and Site Services

A small operations and maintenance (O&M) facility will be established on site, typically in the form of an O&M building or containerised control room, to support day-to-day operation, inspections and equipment storage. Security infrastructure will include perimeter fencing, access gates and controlled entry arrangements, and a guardhouse may be included if required by the proponent's security strategy. The facility will be equipped with communications and a SCADA system to enable remote monitoring of performance and faults. Where necessary, water storage may be provided for limited construction dust suppression and for firefighting contingency, subject to fire risk assessment outcomes and any local authority requirements.

4.2.6 Stormwater and Erosion Control Infrastructure

Stormwater management will form an important part of both project design and environmental performance, particularly given the semi-arid setting and potential for intense rainfall events. The project will incorporate perimeter drains and/or berms where required to manage runoff, maintain drainage continuity and reduce erosion risk. Energy dissipation measures such as riprap or gabions may be installed at discharge points to prevent scouring. Culverts will be used at road crossings and where any drainage pathways must be crossed. During construction, sediment control measures such as silt fencing and temporary sediment traps will be implemented to prevent off-site sedimentation and to protect the receiving environment.

4.2.7 Temporary Construction Facilities

During construction, temporary facilities will be established to support safe and orderly implementation. These may include a contractor site camp with offices, ablutions, storage and parking, as well as temporary material stockpile zones and waste storage areas. Temporary fencing and demarcation will be used to control access, protect no-go areas and sensitive features, and ensure that construction activities remain strictly within approved footprints and corridors.

4.3 Construction Activities

4.3.1 Pre-construction and Site Establishment

Construction will occur over a defined period to be confirmed by the appointed EPC contractor. The initial stage will involve final surveying and pegging of the approved development footprint and infrastructure corridors, followed by establishment of site offices, laydown yards, temporary services and access control measures. Environmental induction will be undertaken for all personnel, and the Environmental Control Officer (ECO), together with site HSE staff, will be mobilised early to ensure that environmental and safety requirements are embedded from the start. Sensitive areas and no-go zones—such as drainage lines, protected trees (if present), and erosion-prone zones—will be demarcated, and buffers will be established to prevent accidental disturbance.

4.3.2 Vegetation Clearance and Site Preparation

Vegetation clearance will be limited to areas strictly required for PV arrays, internal roads, the substation area, and cable routes. Where topsoil stripping is required, topsoil will be removed separately and stockpiled for later rehabilitation to improve re-vegetation potential and reduce long-term erosion risk. Minor grading or levelling may be undertaken to create safe construction platforms and to maintain drainage continuity, but excessive cut-and-fill will be avoided as far as reasonably practicable. Importantly, stormwater cut-off drains and sediment controls will be put in place before major earthworks commence, to reduce the risk of runoff concentration and sediment mobilization during storm events.

4.3.3 Civil Works and Foundations

Civil works will include construction or upgrading of access roads and internal tracks, followed by installation of the PV mounting foundations (pile driving and/or excavation and casting of limited footings depending on ground conditions). Earthworks will also be required to prepare transformer pads, inverter station bases and the substation platform. Cable trenching for underground electrical reticulation and earthing conductors will then be undertaken, with trenches backfilled and compacted to minimise subsidence and maintain stable surfaces.

4.3.4 Mechanical and Electrical Installation

Once civil works are sufficiently progressed, the mechanical and electrical installation phase will begin. This includes assembly and installation of mounting structures and PV modules, followed by installation of inverters, transformers, switchgear and protection systems. String wiring and MV reticulation will connect the array field to the substation. The grid connection line or cable to the POI will then be installed, including any poles or structures in the case of an overhead connection. All installation activities will be managed under strict safety controls due to high-risk electrical work and heavy lifting operations.

4.3.5 Commissioning and Handover

The final stage involves electrical testing, protection coordination and commissioning to ensure safe and compliant operation. Grid synchronisation and performance testing will be conducted in collaboration with the relevant utility. Temporary works not required for operation will be removed, and disturbed areas not needed for long-term access or infrastructure will be rehabilitated. Rehabilitation typically includes re-spreading of topsoil where available, re-contouring to natural landform where feasible, and implementing re-vegetation and erosion stabilisation measures suited to the site conditions.

4.3.6 Typical Construction Inputs and Outputs

Construction will require materials such as steel piles and frames, aggregate for roads, limited concrete, electrical cabling, poles (if an overhead line is installed) and fencing materials. Equipment will typically include graders, compactors, pile drivers, excavators, cranes/telehandlers and heavy transport trucks. Waste streams are expected to include packaging, scrap metal, general waste, used oils and filters (managed as hazardous waste), and surplus spoil or topsoil stockpiles. Short-term nuisance impacts may include dust, noise, increased traffic movements, and temporary visual disturbance during the construction phase.

4.4.1 Facility Operation and Monitoring

During operation, the solar PV facility will be largely passive, generating electricity during daylight hours with output dependent on solar irradiation and weather conditions. Plant performance and faults will be tracked through remote monitoring systems such as SCADA and telemetry, supported by routine on-site inspections. Security will be managed through controlled access, perimeter fencing and gates, and where required, patrols or security staff, to protect infrastructure and ensure public safety.

4.4.2 Routine Maintenance and Vegetation Management

Routine maintenance will involve periodic inspection of PV modules, mounting structures, inverters, transformers and switchgear, together with tightening, cleaning and replacement of components as required. Vegetation management will be undertaken to prevent shading of panels, maintain access, and reduce fire risk. This will primarily be achieved through mechanical trimming or controlled clearing. Herbicide use, if proposed at all, would only be applied under strict approval and control measures and in accordance with the EMP.

4.4.3 Panel Cleaning

Panel cleaning methods will be selected based on soiling rates, operational needs and water availability. Depending on site conditions, cleaning may be undertaken through dry brushing, air blowing or limited water-based cleaning. Where water is used, volumes are typically modest and will be managed to prevent runoff concentration, erosion and localised pooling.

4.4.4 Waste and Hazardous Materials Management

Operational waste volumes are expected to be low and will mainly consist of general waste and packaging arising from maintenance activities. Hazardous wastes such as oils, filters, oily rags and any damaged electrical components will be handled in accordance with best practice and Namibian requirements, using secure storage, clear labelling, and removal by licensed service providers supported by appropriate manifests. Any damaged PV modules will be stored safely and returned to suppliers or recycling systems where feasible, to minimise landfill disposal.

4.4.5 Environmental Monitoring, Reporting and Compliance

Environmental monitoring will be undertaken in line with EMP requirements and ECC conditions. This will include regular inspections for erosion, sediment movement and drainage integrity, checks on waste storage areas, and observations of any fauna interactions with fencing or infrastructure. Records will be maintained to demonstrate compliance, including inspection checklists, incident registers and corrective action reports, and these will be made available for auditing and regulatory review as required.

4.5 Decommissioning and Closure

Decommissioning will occur at the end of the solar PV facility's operational life, typically after approximately 20–30 years, or earlier if the plant becomes non-viable due to technical, commercial, or regulatory reasons. The purpose of decommissioning is to remove project infrastructure in a safe and environmentally responsible manner, rehabilitate disturbed areas to an agreed post-project land use, and ensure that any residual environmental risks are eliminated or reduced to acceptable levels. While this scoping study provides a conceptual closure description, a detailed Decommissioning and Rehabilitation Plan (or Closure EMP) will be prepared closer to the time of closure, informed by the final plant configuration, the condition of the site at that time, and the prevailing legal and technical requirements.

Decommissioning would generally begin with a structured planning and permitting stage. This includes confirming closure objectives with the landholder and relevant authorities, identifying which components will be removed versus any elements that may remain by agreement (for example, certain access tracks if useful to the landholder), and appointing competent contractors to undertake dismantling, transport, and waste management. A decommissioning risk assessment would typically be completed to address hazards such as electrical isolation, working at heights (if required), heavy lifting, transport safety, and the handling of potentially hazardous materials.

The physical dismantling phase would then involve complete electrical isolation and removal of generation and electrical infrastructure. PV modules would be removed from the mounting structures, and the mounting frames and foundations would be dismantled. Electrical equipment such as inverters, transformers, switchgear, protection systems, and control components would be removed from the site, along with the substation infrastructure to the extent required. Cabling would be removed where feasible, particularly where removal does not cause disproportionate environmental disturbance; where underground cables are deeply embedded or removal would cause extensive disturbance, cutting and capping in situ may be considered, subject to approval and confirmation of long-term safety and environmental acceptability. Any grid connection infrastructure (overhead line or cable) would also be removed unless agreed otherwise with the competent authority and landholder.

Waste management and recycling are central to responsible PV decommissioning. Materials such as aluminium frames, steel supports, copper cabling, and selected electrical components are generally recyclable and would be segregated and routed to appropriate recycling facilities where available. PV modules would be handled and stored carefully to avoid breakage and potential exposure to module constituents, and then returned to suppliers, specialist recyclers, or approved disposal pathways depending on what is feasible in Namibia at the time of closure. Hazardous wastes—such as transformer oils, lubricants, batteries (if any), and contaminated materials from spill events—would be managed through licensed service providers and disposed of at authorised facilities in accordance with legal requirements and best practice, with appropriate records retained.

Rehabilitation would focus on restoring stable landform and minimising long-term erosion and visual scarring. Disturbed areas would be re-contoured as needed, compacted surfaces ripped where appropriate to improve infiltration and promote natural regeneration, and stockpiled topsoil (if available and viable) would be re-spread. Erosion control measures, such as contouring, stone packing, mulching, erosion blankets, or gabions at vulnerable points, would be implemented where required. Re-vegetation would be undertaken using locally appropriate species or, where feasible, natural regeneration supported by grazing management and temporary protection of rehabilitated areas. Closure monitoring would be carried out over an agreed period to confirm that rehabilitation objectives are being met, that erosion is stable, and that no residual pollution risks remain.

5. Description of the Receiving Environment

5.1 Regional Setting and Site Context

The proposed project area is located within the administrative boundaries of the Hardap Region, approximately 18 km north of Rehoboth and en route to Windhoek along the B1 main road, within the Rehoboth Townlands near Naruchas. The receiving environment is characterised by a semi-arid setting typical of central Namibia, with episodic rainfall events, sparse natural vegetation, and land uses dominated by extensive farming/rangeland and transport infrastructure. The proposed solar development footprint is approximately ~50 ha (mapped footprint ~46.87 ha) and includes a short grid connection corridor as indicated in the project map.

5.2 Climate, Rainfall and Wind Regime

The mean daily maximum temperature (red solid line) is highest in late spring–summer, sitting around 33°C in January, 32°C in February, and rising again to about 33–34°C in November–December. Temperatures cool steadily into winter, with the lowest mean daily maxima of about 23°C in June–July, before warming again from August onward. The mean daily minimum temperature (blue solid line) follows the same seasonal pattern but shows much colder winter nights: minima are around 20°C in January–February, dropping to about 10°C in May, reaching the coldest period in June–July at roughly 6°C, and then increasing to 12°C in September and 16–19°C by October–December. The dashed lines reinforce this range by indicating that "hot days" can exceed the mean maxima in summer, while "cold nights" in winter can drop close to 0°C (or just above), which is important for construction planning (early morning cold exposure) and for understanding daily thermal cycling effects on materials.

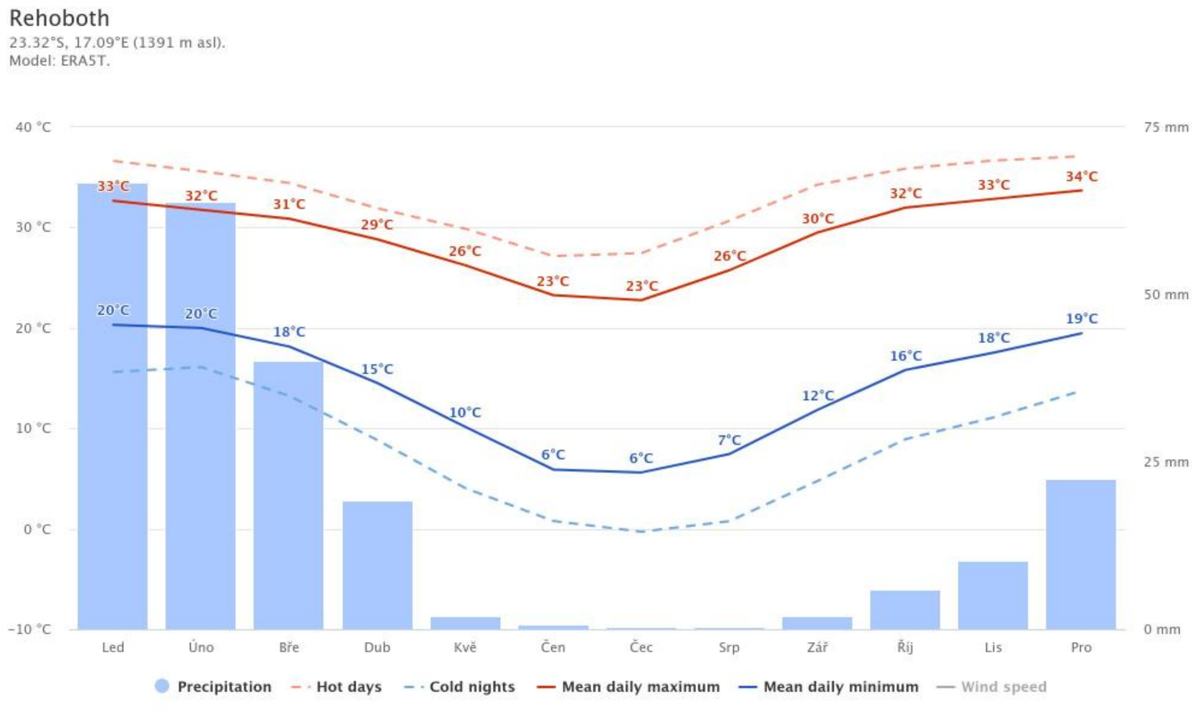


Figure 3. Map shows a very clear hot-summer / cool-winter pattern for Rehoboth (≈1391 m asl), with strong seasonality in both temperature and rainfall. (source: https://www.timeanddate.com/weather/namibia/rehoboth/climate).

Rainfall (blue bars, right-hand axis) is shown as highly seasonal, with most precipitation concentrated in the summer months (largest bars in January–March, and again increasing toward December), while the dry season is pronounced from roughly May to September, where rainfall is close to zero. For the solar PV project, this pattern has practical implications: dust generation and windblown fines are most likely during the long dry season (especially with earthworks and traffic on unpaved surfaces), whereas the wet-season rainfall—although limited to fewer months—tends to occur in events that can produce runoff and erosion, meaning stormwater controls and sediment measures need to be installed early and maintained before the first heavy rains.

Air Quality in the Rehoboth–Naruchas Area

Baseline air quality context

The Naruchas solar PV site is located in a largely rural, semi-arid setting where regional ambient air quality is typically good for most of the year, but can be temporarily affected by windblown dust and episodic smoke/dust events. In this environment, the main pollutant of practical relevance is usually particulate matter, especially $PM_{2.5}$ (fine particles) and PM_{10} (coarser dust), because these are strongly influenced by dry conditions, exposed soils, vehicle movement on unpaved surfaces, and seasonal biomass burning (where it occurs). This is consistent with real-time public air-quality platforms for Rehoboth, which generally report conditions ranging from Good to Moderate/Fair, with $PM_{2.5}$ commonly flagged as the dominant pollutant.

AQI and $PM_{2.5}$ levels (public, indicative data)

Publicly available dashboards (which rely on nearby monitors, models, or blended datasets depending on location coverage) show that Rehoboth's air quality can fluctuate over short periods. For example, IQAir's Rehoboth page presents real-time AQI categories and a $PM_{2.5}$ concentration estimate, and similarly AccuWeather and Plume Labs provide AQI-style reporting with $PM_{2.5}$ as a key driver. These sources indicate that short-term $PM_{2.5}$ concentrations may occasionally exceed health-based guideline values, particularly during dusty or stagnant conditions, even if the general background is often acceptable. From a health-benchmark perspective, the WHO Global Air Quality Guidelines (2021) recommend an annual mean $PM_{2.5}$ guideline of 5 $\mu g/m^3$ and a 24-hour $PM_{2.5}$ guideline of 15 $\mu g/m^3$; these values are useful as screening references when discussing potential sensitivity and mitigation needs.

Existing sources of air emissions in the project area

In the Naruchas–Rehoboth corridor, routine air emissions are expected to be dominated by fugitive dust rather than industrial stack emissions. Typical local contributors include vehicle movement on gravel roads/tracks, wind erosion from exposed surfaces, small-scale domestic burning (where relevant), and occasional regional dust episodes. There are no indications (at scoping level) of major industrial sources in the immediate project footprint that would drive sustained elevated pollutant concentrations; however, the dry season and windy periods can elevate dust levels even in low-activity settings, which is important for construction planning and community nuisance prevention.

Construction phase air quality impacts

The construction phase is the period with the highest air-quality risk because it introduces vegetation clearance, earthworks, trenching, stockpiles, and increased traffic. The likely impacts are short-term dust plumes (PM_{10}) and elevated fine particulates ($PM_{2.5}$) close to active work areas and along access routes, particularly during dry and windy conditions. Dust may affect worker health, visibility and road safety, nuisance at nearby receptors, and deposition on vegetation in the immediate vicinity. In line with international good practice, dust is typically treated as the primary construction-related air pollutant for projects of this nature.

Operational phase air quality impacts

During operation, a solar PV facility is largely passive and does not involve combustion-based emissions. Operational air-quality effects are therefore expected to be low and localised, mainly linked to intermittent maintenance traffic, occasional vegetation management, and (if water-based) panel cleaning activities that may create minor local disturbance. The main ongoing air-quality risk is usually dust from internal tracks if surfaces remain loose and vehicles travel frequently, and smoke/particulates from veldfire (external risk) if it occurs in the broader area.

Mitigation and management measures

Air-quality management for this project should focus on preventing and controlling dust at source. Key measures typically include: (i) limiting clearing and earthworks to the approved footprint and phasing works to reduce exposed areas; (ii) implementing dust suppression on active work fronts and haul routes where necessary (water bowsers or other appropriate methods), while avoiding over-watering and runoff/erosion; (iii) enforcing speed limits on unpaved roads and ensuring loads are covered; (iv) stabilising stockpiles and rehabilitating disturbed areas progressively; (v) scheduling high-dust activities to avoid extreme wind conditions where feasible; and (vi) maintaining good housekeeping and rapid clean-up of spilled fine material. These measures align with widely used good international practice approaches for managing fugitive dust.

Monitoring

Given that continuous regulatory-grade monitoring is often limited outside major urban/industrial nodes, monitoring at scoping level is typically based on inspection checklists, dust observation logs, and a complaints/incident register, supported by photographic records. If sensitive receptors are identified close to access routes or the work area (e.g., homesteads, road users, workers at fixed points), the EMP can include trigger-based monitoring, such as deploying a handheld particulate meter during peak activities or using simple dust deposition gauges at agreed points for a defined construction period.

5.3 Topography, Surface Drainage and Hydrology

The broader area is generally characterised by gently undulating terrain typical of central Namibian interior landscapes. Drainage is often dominated by ephemeral flow paths, which may only convey water after rainfall events. Even in landscapes that appear flat, subtle micro-topography can control runoff concentration, leading to localised erosion, rilling, or sediment deposition. Natural drainage lines, shallow swales, and low-lying areas should be treated as potential sensitivity features, particularly in the context of a solar PV layout that introduces compacted tracks, panel drip-lines, and altered surface roughness.

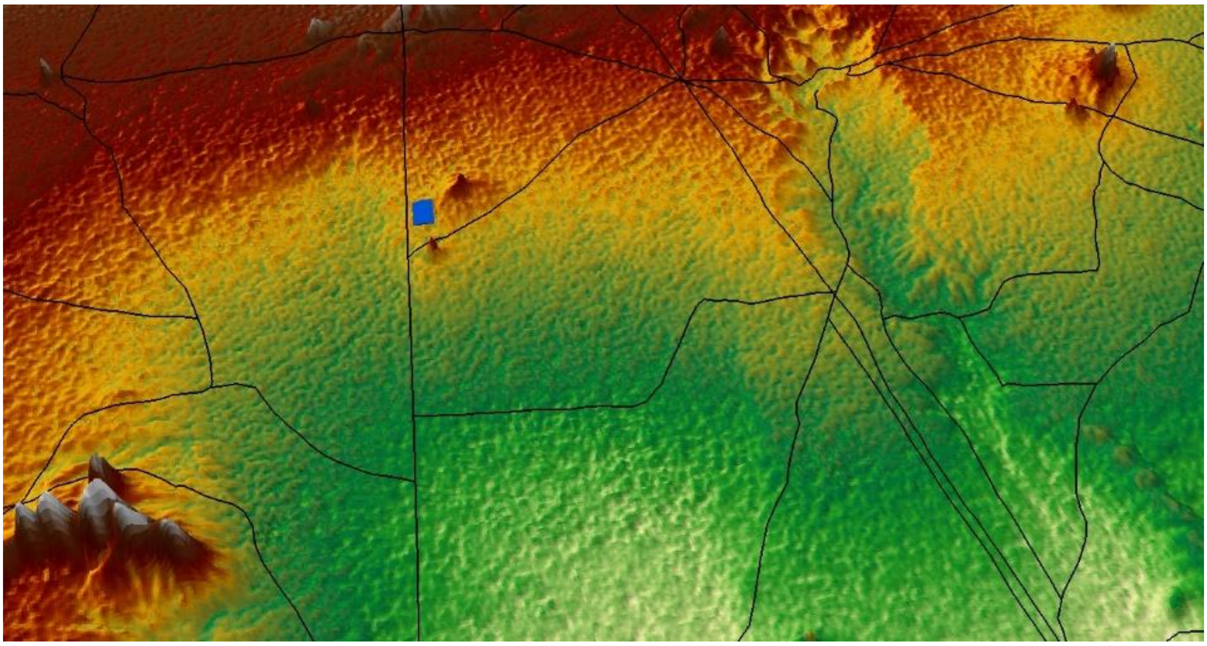


Figure 4. The regional topographical profile of the Naruchas substation (shown as a blue rectangle).

The topographical map is based on a digital elevation model (DEM) and shows a clear regional elevation gradient across the wider Naruchas–Rehoboth area. Elevations in the mapped extent range from approximately 1,344 m (lowest) to 2,044 m (highest) above sea level, as indicated in the legend. The higher-lying terrain is shown by the brown to dark brown colours and is concentrated mainly toward the northern part of the map, where there are pronounced hills/ridges and steeper relief. In contrast, the green to light-green zones represent lower-lying plains and broad valley floors, which dominate the southern and south-eastern parts of the map, including the wider Rehoboth setting. Overall, the area represents a transition from higher uplands in the north to lower plains in the south.

Site-specific topography

The JCM site (red polygon) is positioned on a gently undulating mid-slope/plain zone, sitting in the transition between the lower plains (green) and the rising ground to the north (yellow–orange). This is typically favourable for solar PV development because it suggests moderate elevations with generally gentle slopes, reducing the need for extensive cut-and-fill and lowering erosion risk compared to steeper hill terrain. Visually, the site does not appear to be located on the steepest ground or within the major incised valleys; instead it is on a relatively stable landscape surface, which is usually suitable for panel arrays, internal access tracks and a substation footprint—provided that local micro-topography and drainage flow paths are respected in the final layout.

Drainage and runoff implications

The DEM shading also highlights likely drainage patterns. The lower-lying green corridors and linear depressions visible especially toward the eastern side of the map are typical indicators of drainage lines or shallow valleys, which will concentrate runoff during rainfall events. Given the higher ground to the north and north-east, it is reasonable to expect runoff to move from these upslope areas toward the lower plains, with flow concentrating along these natural low points. For the solar PV project, this means the key topographical sensitivity is not steep slopes, but rather runoff concentration and erosion risk if roads, berms, panel rows, or cable trenches accidentally intercept or redirect natural drainage. In scoping terms, the project should therefore maintain drainage continuity, avoid placing permanent infrastructure in obvious low-flow paths, and ensure that road crossings include appropriately sized culverts and erosion protection at discharge points.

From a practical environmental management perspective, the topography suggests that the site is generally feasible, but the design must prioritise stormwater and erosion control. This includes keeping array rows aligned to avoid creating "runoff channelling," installing cut-off drains and energy dissipation where needed, and ensuring disturbed surfaces are stabilised quickly during construction. The main topography-driven risks for construction are localized erosion, sediment movement, and water ponding in micro-depressions—especially during intense rainfall events. These risks can be effectively managed through standard PV good practice (early stormwater controls, phased clearing, sediment barriers, and post-storm inspections) and should be captured clearly in the EMP.

5.4 Geology, Soils and Land Capability

Regional and site-scale geological context

The geology map indicates that the proposed JCM Power PV footprint at Naruchas (adjacent to the Naruchas substation) is situated in an area where unconsolidated to semi-consolidated surficial deposits dominate the surface expression. In other words, the mapped project polygon is largely underlain by "Undifferentiated surficial sediments (Qs)", which is typical of the Rehoboth–Hardap interior where Kalahari-type sandy cover, colluvium/alluvium, and locally developed calcrete horizons can blanket the underlying bedrock. Practically, this means that across most of the PV array field, bedrock exposure is expected to be limited, with soils and near-surface materials likely consisting of sandy to gravelly horizons with variable calcrete development.

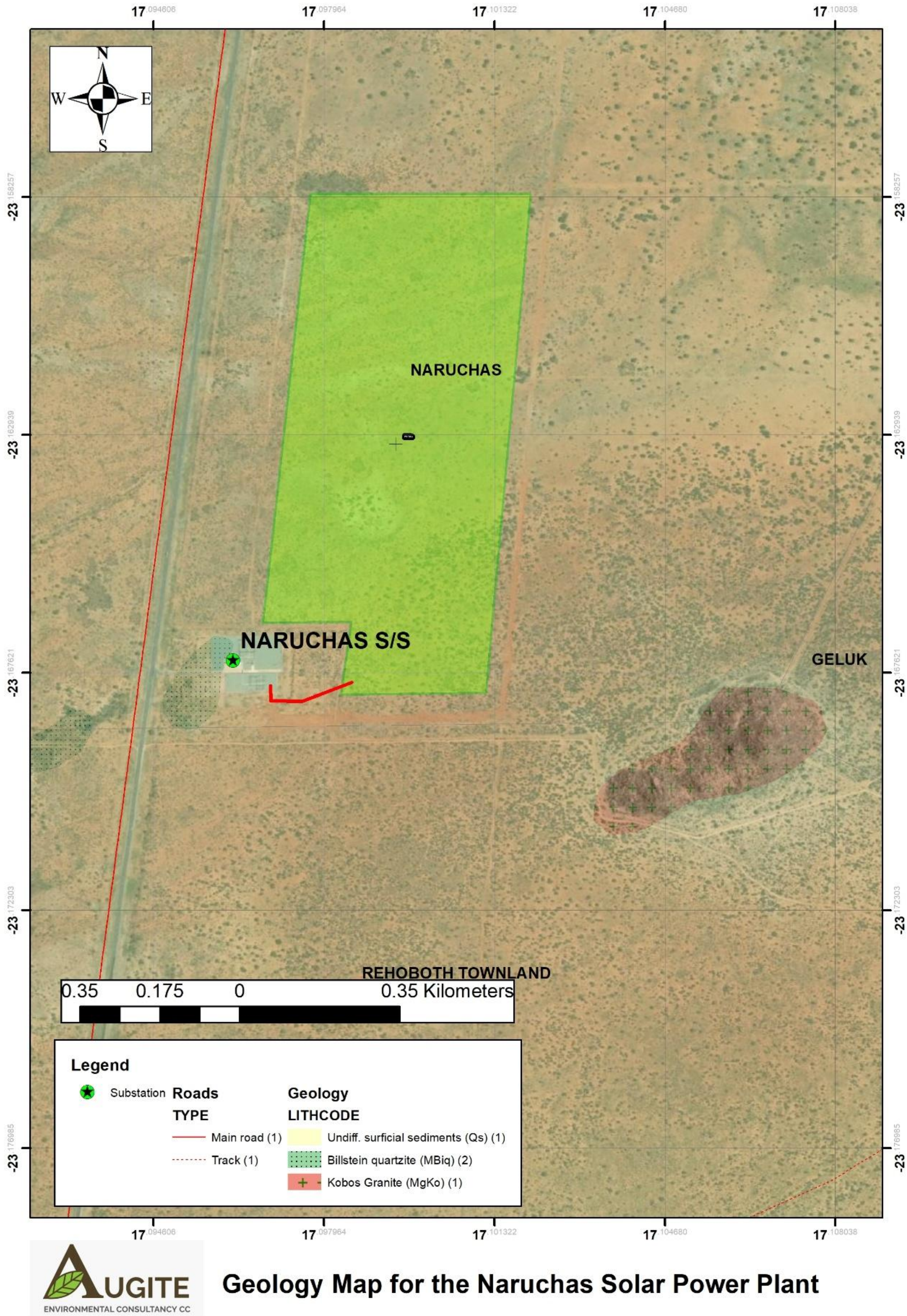


Figure 5. The geological map of the Naruchas sub-station showing the different lithologies found within the area.

Key mapped units and their distribution

Three lithological units are shown on the map. The first, and most important for the project, is Undifferentiated surficial sediments (Qs), which appear to cover the majority of the development footprint. The second unit, Billstein quartzite (MBiq), occurs as small localised patches near the south-western portion of the broader mapped area, close to the existing substation and immediate vicinity. These quartzite occurrences suggest that shallow bedrock or resistant quartzite ridges/knolls may be present locally, potentially creating harder ground conditions over short distances. The third unit, Kobos Granite (MgKo), is mapped as a discrete body to the east/south-east of the site area (near the "Geluk" label) and appears to be outside the PV footprint, indicating that granite is likely not a dominant surface unit within the main project area, but it may influence local geomorphology and drainage patterns in the surrounding landscape.

Figure 6. The Kobos Granite outcrop which appears as persistent hills with the area.

Engineering and constructability implications

From a constructability perspective, a PV facility on predominantly surficial sediments is generally favourable because it often allows for pile-driven foundations and relatively straightforward trenching for underground electrical reticulation. However, the presence of local quartzite patches near the substation area is important: quartzite is hard and resistant, so where it is shallow it can lead to refusal during pile driving, increased pre-drilling requirements, and more difficult trenching conditions. In addition, the broader “Qs” cover commonly includes calcrete or cemented horizons in this region; these can also create hard layers at shallow depth that affect foundation installation and increase earthworks effort. For ECC purposes, the key point is that the geology suggests no major geohazards, but variable near-surface hardness may occur, so a targeted geotechnical investigation should confirm soil thickness, calcrete development, and any shallow bedrock zones—especially around the substation platform, inverter/transformer pads, and the grid connection alignment.

Soils, erosion potential, and stormwater behaviour

Surficial sandy/gravelly sediments typically have moderate infiltration but can be susceptible to wind erosion when disturbed and to rill/gully erosion where runoff becomes concentrated along disturbed tracks, trenches, and compacted surfaces. The quartzite areas, by contrast, tend to form more resistant surfaces with higher runoff potential and localised flow concentration around rockier ground. For the project layout, this means the main geology-driven sensitivity is not contamination risk from the bedrock itself, but rather surface stability and erosion control: the EMP should emphasise phased clearing, rapid stabilisation of disturbed ground, careful placement of roads across natural drainage, and energy dissipation at culverts or discharge points.

Borrow materials and rehabilitation considerations

The mapped units also inform materials management. Quartzite, if encountered as float or shallow rock, can provide durable aggregate; however, any use of borrow material would need to be formally authorised and managed to avoid creating new impacts. For rehabilitation, the dominance of surficial sediments suggests that topsoil and finer horizons are the key resource for successful site restoration. Topsoil should therefore be stripped separately (where present), kept clean of calcrete rubble and construction waste, and re-spread during progressive rehabilitation to support natural re-vegetation.

Scoping conclusion

Overall, the geology map indicates a PV site primarily on surficial sediment cover (Qs) with minor local quartzite influence near the substation area and granite occurring outside the main footprint. At scoping level, this supports the conclusion that the site is geologically suitable for a solar PV development, provided that the final design accounts for potential local hard-ground conditions (quartzite/calcrete), and that construction is paired with robust erosion and stormwater controls.

Hydrogeological Setting and Interpretation: Naruchas Substation / Proposed PV Site

Aquifer vulnerability

The hydrogeological sensitivity screening indicates that the Naruchas substation / proposed PV site is located within an area mapped predominantly as moderate groundwater vulnerability, with the high vulnerability class occurring further north in the wider Windhoek area. At scoping level, a moderate vulnerability classification implies that the aquifer system has some natural protection (e.g., overburden characteristics and/or depth to groundwater), but remains susceptible to contamination where pollutants are released at surface and can infiltrate, particularly along disturbed ground, preferential pathways, or areas of runoff concentration. As such, groundwater protection remains a relevant consideration for the project, even though the site is not mapped within the highest vulnerability class.

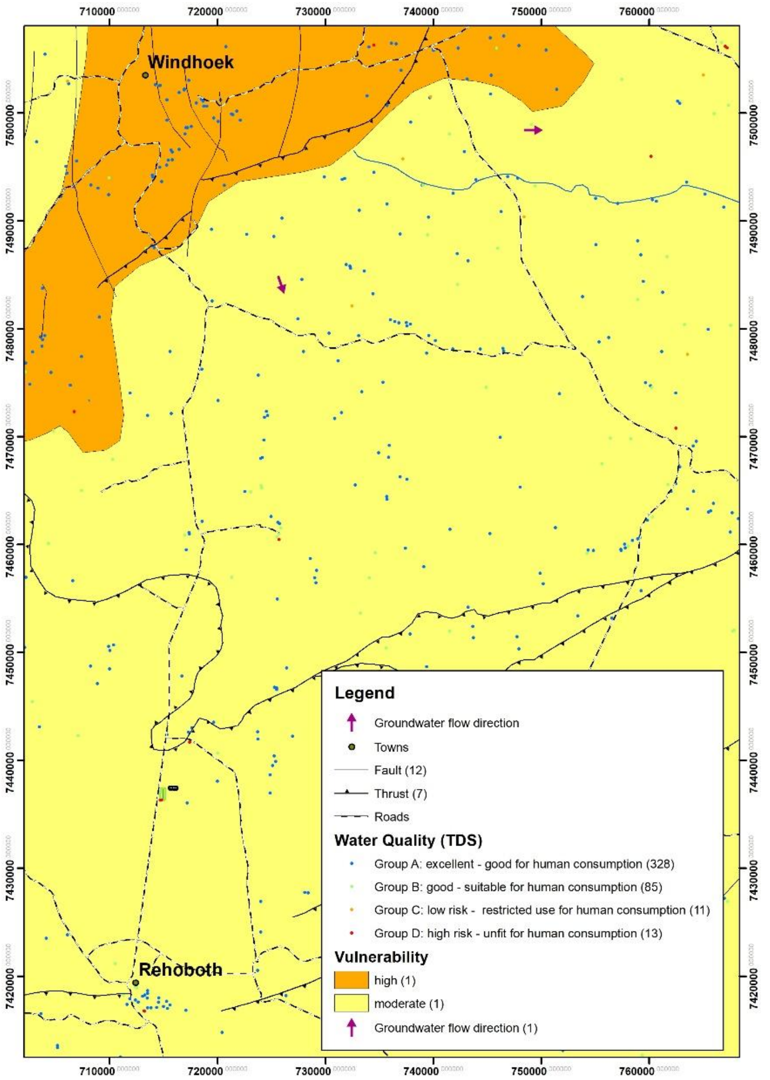


Figure 7. Hydrogeological sensitivity screening for the Naruchas substation / proposed solar PV site, showing groundwater vulnerability classes, groundwater flow direction, mapped faults/thrusts, and water point quality groupings (TDS-based) in the wider Rehoboth-Windhoek area.

Groundwater flow and structural controls

The mapped groundwater flow direction arrows show a consistent regional hydraulic gradient, indicating the likely direction of groundwater movement across the broader catchment. The presence of mapped faults and thrust structures suggests that groundwater occurrence and movement may be influenced by structural controls, with fractures and discontinuities potentially acting as preferential pathways for groundwater flow and, in some settings, enhanced transmissivity. While this is a regional screening layer and does not replace site-specific hydrogeological testing, it supports a defensible scoping conclusion that groundwater behaviour in the area is not purely matrix-controlled and that structural features may locally influence flow paths and connectivity.

Groundwater quality

The water quality dataset presented on the map (Total Dissolved Solids; TDS) indicates that groundwater in the broader Rehoboth–Naruchas landscape is generally of good quality, with most water points classified in Group A (excellent—good for human consumption) and Group B (good—suitable for human consumption). Smaller numbers of points occur in Group C (restricted use) and Group D (high risk/unfit), demonstrating that localised poorer-quality groundwater does occur, potentially reflecting site-specific factors such as lithology, evaporative concentration, local salinity, or well characteristics. For scoping purposes, this pattern supports the interpretation that groundwater may be a valuable resource in the receiving environment and should be protected from project-related contamination.

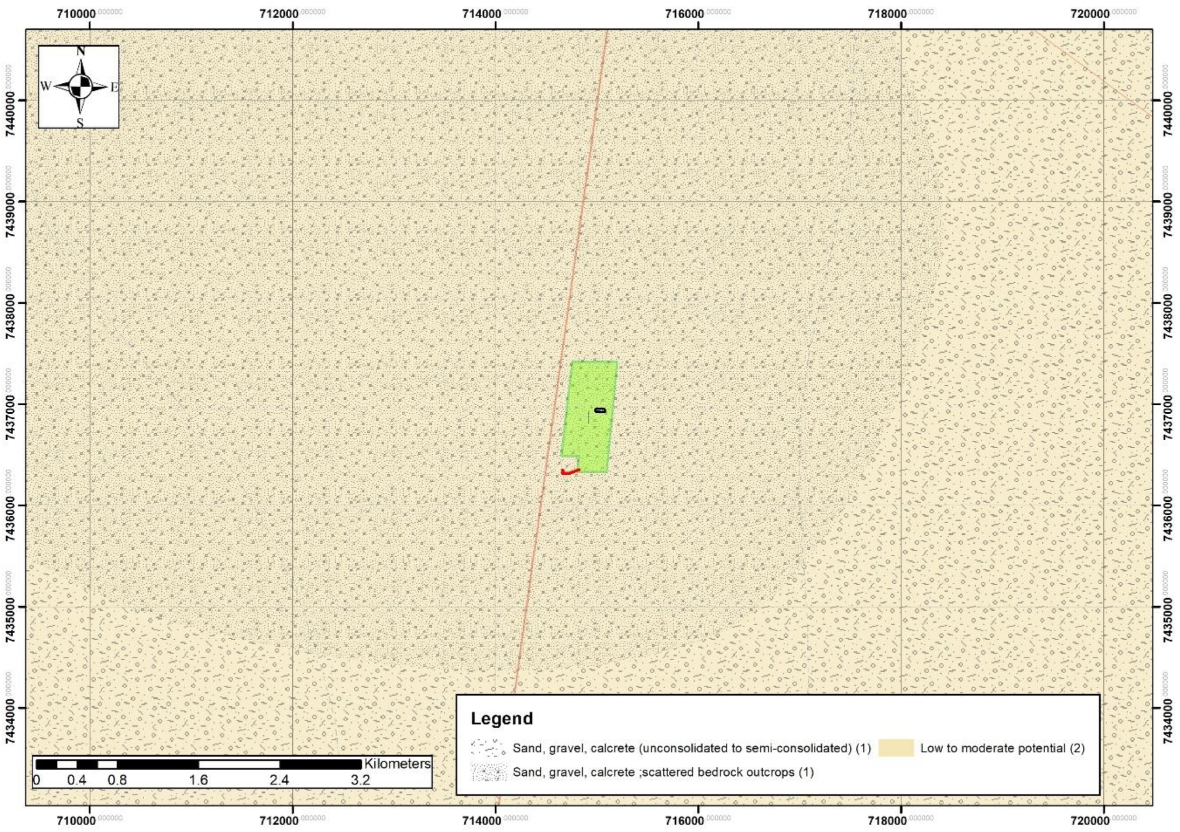


Figure 8. The hydrogeological map of the Naruchas sub-station showing the types of aquifer lithogies that can be observed in the area.

Project implications and mitigation

The hydrogeological risk profile for a 20 MW solar PV facility is expected to be low to moderate, primarily because PV generation does not produce process effluents and operational water demand is typically limited. The main exposure pathways relate to construction and maintenance activities, including fuel and oil storage/handling, refuelling, equipment servicing, waste storage, and any accidental spills. Given the moderate vulnerability setting and the presence of potential preferential flow pathways, the EMP should apply standard groundwater protection measures, including: bunded and secure storage of fuels/chemicals; designated refuelling areas with drip trays; spill kits and trained personnel; prompt clean-up and removal of contaminated material; prohibition of uncontrolled discharge to ground; and formal waste management using licensed service providers. In addition, stormwater controls should be implemented early to prevent runoff from mobilising contaminants and to maintain natural drainage continuity. If water abstraction is proposed for construction dust suppression or operational panel cleaning, this should be confirmed during detailed planning and aligned with applicable water-use permitting requirements and best practice water management measures.

5.5 Biodiversity: Vegetation, Flora, Fauna and Sensitive Habitats

Around the Naruchas substation and the proposed PV site, the Atlas of Namibia indicates that the area falls within a vegetation transition zone, where three broad vegetation types occur over relatively short distances. To the south, vegetation grades into Dwarf Shrub Savanna, which is typically characterised by low, sparse woody cover dominated by hardy dwarf shrubs and grasses adapted to arid conditions, shallow soils, and periodic drought. This vegetation type generally reflects more open, semi-arid savanna structure, with patchy ground cover that can be sensitive to overgrazing and disturbance because recovery is slow in low-rainfall environments.

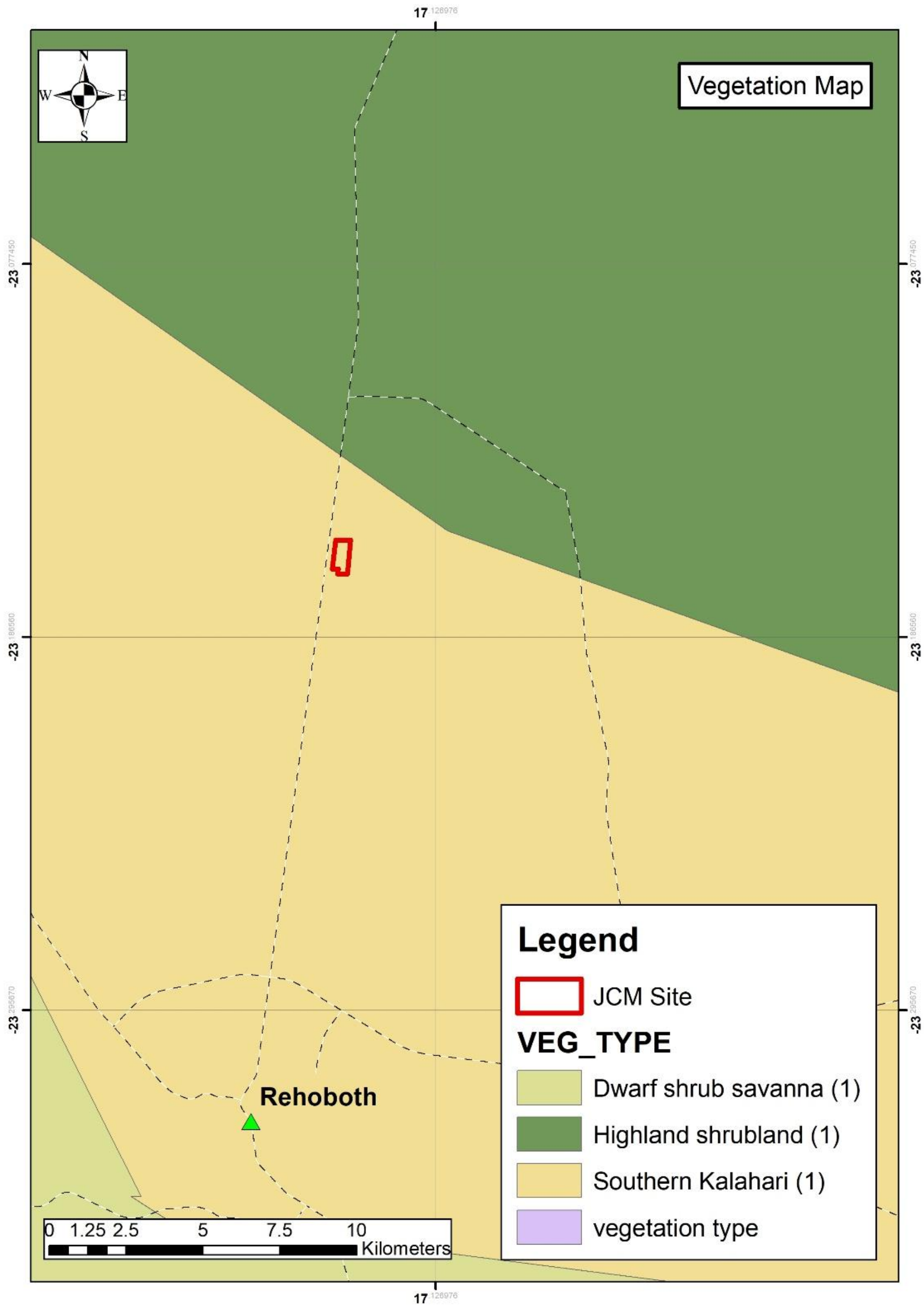


Figure 9. Map showing different vegetation types in the area.

The dominant vegetation type across the project area is described as Southern Kalahari vegetation, which forms the main regional matrix surrounding the substation. This vegetation is commonly associated with sandy to sandy-calcareous substrates and is typically expressed as open shrub savanna with scattered small trees and thorny shrubs, interspersed with perennial and annual grasses. In the Rehoboth–Naruchas landscape, this unit often presents as a gently undulating plain with widely spaced shrubs and occasional denser patches in micro-habitats such as slight depressions, drainage lines, or areas with better moisture retention. From an environmental management perspective, Southern Kalahari vegetation is generally not "dense" in a forest sense, but it is ecologically important as habitat for arid-adapted fauna and because its soils and ground cover can be vulnerable to wind erosion once disturbed.

Figure 10. An aerial view of the different vegetation types in the area.

Toward the northern part of the broader area, the vegetation transitions into Highland Shrubland, reflecting the influence of higher elevation terrain and slightly different climatic and soil controls. Highland shrubland typically supports a more robust shrub component and sometimes a greater diversity of woody species compared to the more open southern dwarf shrub savanna. This shift is often linked to changes in topography and drainage, where upland areas may have rockier or more structured soils and slightly cooler conditions, producing a distinct shrubland signature relative to the plains.

In practical terms for the scoping assessment, this setting means the project is located within a regional ecotone rather than a single uniform vegetation unit. The key sensitivity is therefore likely to be localised patches—such as denser shrub clumps, drainage-line vegetation, or any protected tree species—rather than broad, continuous sensitive habitat across the entire footprint. Accordingly, site layout and the EMP should prioritise micro-siting to avoid drainage features and denser patches, limit clearing strictly to approved footprints, strip and store topsoil for rehabilitation, and implement progressive rehabilitation to support natural regeneration and reduce erosion risk.

Avifauna

The bird population map provides a regional indication of avifaunal species richness in the wider Rehoboth–Naruchas landscape, with the legend classifying areas by the estimated number of bird species likely to occur. The proposed Naruchas substation / solar PV site falls within the 171–200 species class, which indicates a moderate level of bird diversity at the scale represented by this dataset. This suggests that the receiving environment can support a relatively diverse assemblage of arid- and savanna-adapted birds typical of central Namibia, but that the project area is not mapped as one of the highest richness "hotspots" (which are shown in the higher classes of 201–230 and >230).

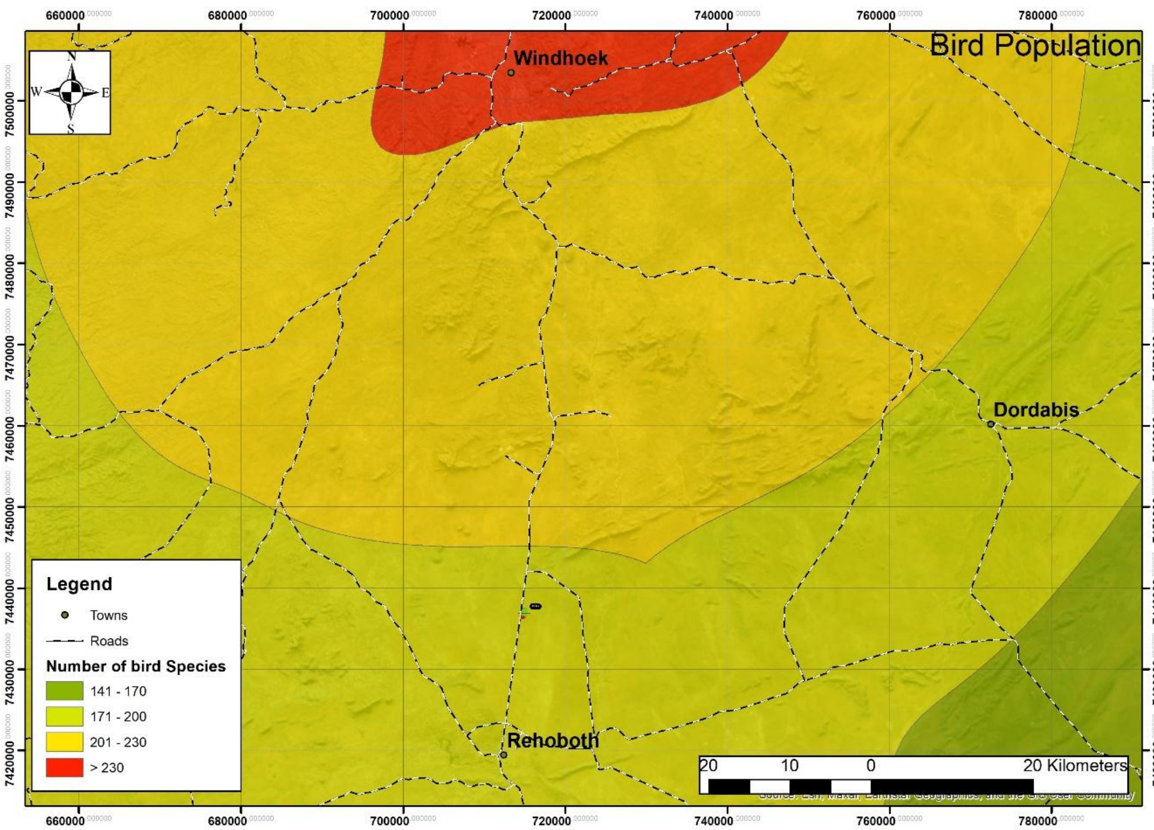


Figure 11. The map showing the various bird population density in the Naruchas area.

From a scoping perspective, this supports an overall conclusion of moderate avifaunal sensitivity, where potential impacts are expected to be largely localised and manageable through standard mitigation measures. The most relevant avifauna-related risks for the project are likely to be short-term disturbance and habitat modification during construction, and—

where overhead grid infrastructure is required—potential collision risk along the grid connection route. In this regard, the project KMZ indicates a short overhead line segment of approximately ~204 m, and while the associated collision risk is expected to be low due to the limited length, it should still be addressed through appropriate design and operational controls such as avoiding routing through drainage-line corridors where birds concentrate, conducting pre-construction checks for nesting or sensitive species, and applying bird flight diverters/line markers on relevant spans where an overhead connection is confirmed.

5.6 Current Land Use, Socio-Economic Setting and Sensitive Receptors

The Naruchas substation and proposed solar PV site are located within the broader Rehoboth–Hardap interior landscape, where land use is primarily shaped by the area's semi-arid conditions and long-standing rural livelihoods. The dominant land use in the surrounding area is typically extensive livestock farming (cattle, sheep and goats) undertaken on large properties, supported by low-intensity grazing across open savanna and shrubland. In addition to agriculture, the B1 corridor functions as a strategic transport spine linking Rehoboth to Windhoek, meaning that road-based movement of goods and people forms part of the local socio-economic setting. Settlement patterns outside Rehoboth are generally sparse, with isolated farmsteads and small clusters of infrastructure (such as substations and road-related facilities) occurring along access routes.

From a socio-economic perspective, Rehoboth serves as the nearest urban/service centre, providing access to employment, municipal services, trade and social amenities for surrounding rural communities and farm workers. The local economy in the wider area is therefore characterised by a combination of rural agricultural activity and town-based services, with livelihoods influenced by rainfall variability, grazing conditions, and access to infrastructure. A 20 MW solar PV development has the potential to provide short-term employment opportunities during construction, limited longer-term operational jobs, and local procurement benefits (e.g., transport, security, minor services), although the operational phase is generally low-labour compared to construction.

Sensitive receptors in the project context include both human receptors and land-use receptors. The most immediate receptors are the farm owners and residents and/or lawful occupiers of properties in the vicinity of the substation and the project footprint, as they may experience direct nuisance effects during construction, including increased dust, noise, traffic, and temporary visual disturbance. Other sensitive receptors include farm workers and visitors, livestock and grazing areas (as economic receptors), and users of local access tracks who may be affected by road safety risks and traffic increases during construction. The Rehoboth Townlands administration and adjacent land users also represent key institutional receptors, particularly where land tenure, access permissions, and ongoing land-use compatibility are relevant. In addition, the B1 road corridor itself can be considered a sensitive receptor environment due to traffic safety considerations, especially if construction involves abnormal loads or frequent heavy vehicle movement, which may require route management, signage and timing controls.

At scoping level, the principal land-use and socio-economic sensitivities are therefore linked to maintaining safe access and movement, preventing nuisance impacts to nearby landholders and residents, avoiding unnecessary loss of grazing land beyond the approved footprint, and ensuring that the project does not restrict lawful land-use activities in the surrounding area. These issues can generally be managed through standard measures, including clear stakeholder engagement with farm owners and affected parties, traffic management planning, dust suppression and speed controls, good construction housekeeping, and the maintenance of access arrangements where required. If you provide the names/locations of the nearest farmsteads and any known receptors (e.g., distances to the closest homesteads, water points, or grazing camps), I can tighten this section into a more site-specific receptor description suitable for the final ESR.

5.7 Heritage and Archaeological Context

From a heritage and archaeological perspective, the baseline review for the Naruchas substation and proposed PV footprint indicates that no known or recorded heritage sites occur within, or in the immediate vicinity of, the development area at scoping level. The landscape is largely characterised by open semi-arid plains with limited visible historical structures or declared monuments in the project footprint, and there are no mapped or formally identified archaeological constraints that would, at this stage, be expected to preclude the proposed development. However, as is standard practice in Namibia, the absence of known sites does not eliminate the possibility of encountering previously unrecorded heritage material during ground disturbance, particularly during vegetation clearance, trenching, excavations for foundations, and any earthworks associated with the substation and grid connection.

Accordingly, the project will be implemented in a manner that is compliant with the National Heritage Act, 2004 (Act No. 27 of 2004), and the Environmental Management Plan (EMP) will include a Chance Finds Procedure. In the event that any archaeological artefacts, fossils, historical objects, graves, or other heritage features are observed during construction, work in the immediate area will be stopped, the discovery will be secured and left in situ, and the relevant heritage authorities will be notified for guidance on appropriate management measures. Construction activities will only resume once the competent authority has provided written direction on how the find must be handled (e.g., recording, avoidance, controlled removal, or formal permitting where required). This approach ensures that heritage resources—if present—are protected and managed responsibly, while allowing the project to proceed in a controlled and legally compliant manner.

5.8 Visual Environment and Sense of Place

The visual environment in the Naruchas substation area is characterised by an open, semi-arid savanna landscape with gentle undulating plains, low shrub cover and long-distance views typical of central Namibia. The sense of place is largely defined by wide horizons, a natural, rural character, and the presence of linear infrastructure elements such as the B1 national road and existing electricity infrastructure (including the Naruchas substation). Within this setting, the proposed solar PV development introduces a new, engineered land use that contrasts with the surrounding natural tones and textures, particularly because PV arrays create a coherent, geometric pattern and a distinct dark surface that can be visually apparent from elevated viewpoints and road corridors.

Figure 12. An aerial image showing the presense of other solar power plants in Namibia, and how the visibility will be impacted after the construction.

From the B1, visibility of the project will depend on the exact setback from the road reserve, local micro-topography, and the degree of screening provided by existing vegetation. Given the relatively flat terrain shown in the topographical outputs, the project is likely to be visible from sections of the B1, especially where the road alignment provides direct line-of-sight toward the site and where vegetation cover is sparse. However, the presence of the existing substation and associated infrastructure means the area already has an element of industrial/utility character, which generally reduces the sensitivity of the immediate receiving visual environment compared to a pristine or formally protected landscape. In practical terms, motorists and road users may experience the solar facility as a new visual feature in the landscape—most noticeable during the construction phase due to vehicle activity, exposed soil, laydown areas and temporary structures—while the operational phase impact is typically more stable and less dynamic.

Potential visual impacts associated with the PV facility include (i) changes to landscape character through the introduction of a large, uniform infrastructure footprint; (ii) visual contrast between the PV arrays, security fencing and access roads and the surrounding natural savanna; and (iii) temporary construction-related visual intrusion from earthworks, dust, material stockpiles and construction traffic. A specific issue sometimes raised for solar projects is glint and glare—sunlight reflecting off panel surfaces. Modern PV modules are designed to absorb light rather than reflect it, and are typically coated with anti-reflective materials;

nonetheless, some reflection can still occur under certain sun angles. For this project, the main receptor for potential glare is expected to be road users on the B1 (and potentially nearby landholders), so it is good practice to confirm the array orientation and consider a basic glare screening assessment if required by stakeholders or authorities.

At scoping level, the overall visual impact is expected to be localised and most relevant to B1 road users, nearby landholders, and any sensitive viewpoints that may occur within direct line-of-sight of the site. Mitigation is typically straightforward and can reduce visual contrast and perceived dominance. Recommended measures include maintaining an appropriate setback from the B1 and property boundaries where feasible, avoiding unnecessary vegetation clearing outside the footprint, using non-reflective, neutral-toned finishes for fencing and ancillary structures, minimising night lighting and ensuring any security lighting is downward-directed and motion-activated, and rehabilitating disturbed areas promptly to reduce the duration of bare ground and construction scarring. If the project is highly visible from the B1, selective retention of existing shrubs or establishment of a low-height indigenous screening belt (where feasible and water-neutral) can further soften the view without creating additional ecological impacts.

5.9 Summary of Environmental Sensitivities and Constraints

Overall, the Naruchas substation and proposed 20 MW solar PV site occur within an open, semi-arid landscape where the key environmental sensitivities are generally localised rather than extensive, but still important to manage through careful layout and construction control. The primary constraints relate to topography-driven drainage and stormwater behaviour, where shallow flow paths and low-lying corridors can concentrate runoff during intense rainfall events, creating a risk of erosion and sediment movement if panel rows, roads, trenches or berms intercept or redirect natural drainage. The predominantly surficial sandy to gravelly sediments (with possible calcrete or local hard-ground conditions) are generally suitable for PV foundations and trenching but can be vulnerable to wind erosion and dust generation when disturbed, especially during the long dry season; this makes phased clearing, dust suppression and progressive rehabilitation essential.

Biodiversity sensitivity is expected to be moderate, with vegetation described as a transitional mosaic between Southern Kalahari vegetation, dwarf shrub savanna to the south, and highland shrubland to the north; within this setting, the most sensitive features are likely to be denser shrub patches, drainage-line vegetation and any protected tree species, rather than broad habitat constraints across the entire footprint. Socio-economic sensitivities are linked mainly to nearby farm owners/residents and land uses, including grazing areas and access routes, as well as traffic safety and nuisance effects (dust, noise and visual intrusion) experienced by road users along the B1 during construction. The visual environment is characterised by a strong rural sense of place with long-distance views, and the facility is likely to be visible from sections of the B1 depending on setbacks and screening, although the presence of existing substation infrastructure reduces the pristine character of the immediate setting. No known heritage or archaeological sites have been identified in the immediate project area at scoping level; however, because chance finds remain possible during excavations, a formal Chance Finds Procedure is required. In summary, the project appears feasible within the receiving environment, provided that the final layout avoids drainage features where practicable, stormwater and erosion controls are implemented early, disturbance is strictly limited to approved footprints, and construction-phase nuisance effects are actively managed through the EMP.

5. Alternatives Considered

Introduction

In accordance with the Environmental Management Act, 2007 and the EIA Regulations, 2012, the scoping process must consider reasonable and feasible alternatives to the proposed development. Alternatives are assessed to demonstrate that the preferred option represents the most practical approach for achieving the project purpose while avoiding or minimising environmental and social impacts. For a 20 MW solar PV project, alternatives typically relate to location and layout, technology and infrastructure choices, and the no-go alternative.

1) No-Go Alternative

The no-go alternative assumes that the proposed 20 MW solar PV facility and associated grid connection infrastructure are not developed. Under this scenario, the existing environment and current land uses would remain largely unchanged, and there would be no project-related construction disturbance, vegetation clearance, stormwater modification, traffic increases, or visual change. However, the no-go alternative would also mean that the expected benefits—such as renewable energy generation, contribution to energy security, potential local employment during construction, and broader socio-economic benefits—would not be realised. The no-go alternative is included as a baseline against which other alternatives are compared.

2) Site Location Alternative(s)

For this project, the preferred site is located near the Naruchas substation due to proximity to grid infrastructure and road access. Nevertheless, reasonable site alternatives can include:

- Alternative Site A (preferred): The identified footprint near the Naruchas substation.
- Alternative Site B (if feasible within the same landholding): A shifted footprint within the broader available land parcel, selected to reduce interaction with drainage lines, denser vegetation patches, or sensitive receptors while maintaining constructability and grid access.
- Alternative Site C (regional alternative, if screened): An alternative location within the broader Rehoboth/Hardap corridor with similar solar resource and access, but potentially different constraints (often screened out if grid access or land availability is inferior).

At scoping level, alternative sites are typically screened using practical criteria such as proximity to the point of interconnection, access from the B1, topography/slope, drainage/erosion risk, biodiversity sensitivity, land tenure compatibility, and stakeholder acceptance.

3) Layout and Micro-siting Alternatives

Even where the site is fixed, layout alternatives are important and often the most effective way to reduce impacts. These include:

- Array layout micro-siting: Adjusting panel block placement to avoid natural drainage paths, rocky outcrops, or denser vegetation patches and to maintain buffer zones around sensitive features.
- Access road routing: Selecting internal road alignments that minimise cut-and-fill, reduce erosion risk, and avoid concentrating runoff.
- Substation/inverter placement: Locating electrical infrastructure on stable ground with minimal flood/erosion risk and shortest feasible cable routes.

4) Technology Alternatives

The project may consider technology options that influence footprint disturbance, visual profile, and stormwater behaviour, including:

- Fixed-tilt mounting vs single-axis trackers: Trackers can increase energy yield but may require different foundation density and may influence site grading and runoff behaviour.
- String inverters vs central inverters: This affects equipment distribution, cabling/trenching extent, maintenance access, and the number of equipment pads.

5) Grid Connection Alternatives

Grid connection alternatives can significantly influence impacts, especially where new servitudes or overhead lines are required. Options may include:

- Overhead line (OHL) vs underground cable: Underground cabling typically reduces visual impact and bird collision risk but increases trenching disturbance and may have higher costs or technical constraints.

- Alternative routing within the corridor: Minor route shifts to avoid sensitive features, reduce landholder disruption, and minimise new disturbance.
- Point of interconnection (POI) options (if more than one exists): Where the utility provides multiple feasible POIs, the preferred POI is typically the one that minimises new infrastructure and environmental disturbance.

6) Construction Alternatives

Construction-phase alternatives focus on reducing nuisance and environmental disturbance, such as:

- Phased clearing and progressive rehabilitation versus full upfront clearing.
- Dry panel cleaning approaches versus water-based cleaning (where feasible) to reduce water demand.
- Seasonal scheduling: Planning major earthworks outside peak rainfall months where practical to reduce erosion/sediment risk.

Naruchas Solar PV (20 MW) – Impact Assessment Tables (Coloured)

Colour scheme: Professional Navy headers with banded rows; Risk matrices use RAG (Low/Medium/High) colour coding.

Table 2. Criteria for Assessing Impacts (Part A: Definitions and Criteria)

Item	Definition / Criteria
Definition of SIGNIFICANCE	Significance = Consequence × Probability
Definition of CONSEQUENCE	Consequence is a function of Severity/Nature, Spatial Scale (Extent) and Duration.
Severity/Nature – H	Substantial deterioration (death, illness or injury). Recommended level will often be violated. Vigorous community action. Irreplaceable loss of resources.
Severity/Nature – M	Moderate/measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints. Noticeable loss of resources.
Severity/Nature – L	Minor deterioration (nuisance or minor deterioration). Change not measurable / remains in current range. Recommended level will never be violated. Sporadic complaints. Limited loss of resources.
Severity/Nature – L+	Minor improvement. Change not measurable / remains in current range. Recommended level will never be violated. Sporadic complaints.
Severity/Nature – M+	Moderate improvement. Will be within or better than recommended level. No observed reaction.
Severity/Nature – H+	Substantial improvement. Will be within or better than recommended level. Favourable publicity.
Duration – L (Short-term)	Quickly reversible; less than project life.
Duration – M (Medium-term)	Reversible over time; lasts for the life of the project.
Duration – H (Long-term)	Permanent or persists beyond closure.
Spatial Scale – L (Site)	Localised – within the site boundary.
Spatial Scale – M (Local)	Fairly widespread – beyond the site boundary.
Spatial Scale – H (Regional/National)	Widespread – far beyond the site boundary; regional/national.

Table 3. Determining Consequence (Part B)

Consequence is determined from Severity, Duration and Spatial Scale as per the matrices below.

Severity = L

Duration \ Spatial scale	L (Site)	M (Local)	H (Regional/National)
H (Long-term)	Medium	Medium	Medium
M (Medium-term)	Low	Low	Medium
L (Short-term)	Low	Low	Medium

Severity = M

Duration \ Spatial scale	L (Site)	M (Local)	H (Regional/National)
H (Long-term)	Medium	High	High
M (Medium-term)	Medium	Medium	High

L (Short-term)	Low	Medium	Medium

Severity = H

Duration \ Spatial scale	L (Site)	M (Local)	H (Regional/National)
H (Long-term)	High	High	High
M (Medium-term)	Medium	Medium	High
L (Short-term)	Medium	Medium	High

Table 4. Determining Significance (Part C: Probability × Consequence)

Significance is derived from the Consequence rating and the Probability (likelihood of exposure/occurrence).

Probability \ Consequence	L	M	H
H (Definite/Continuous)	Medium	Medium	High
M (Possible/Frequent)	Medium	Medium	High
L (Unlikely/Seldom)	Low	Low	Medium

Table 5. Interpretation of Significance (Part D)

Significance	Decision guideline
High	It would influence the decision regardless of any possible mitigation.
Medium	It should have an influence on the decision unless it is mitigated.
Low	It will not have an influence on the decision.

Note: H = high, M = medium and L = low. "+" denotes a positive impact.

Naruchas 20 MW Solar PV – Scoping Impact Assessment (Colour-Shaded Table)

Shading convention: Low = green; Medium = amber; High = red; Positive Medium+ = blue; Positive High+ = green.

Low	Medium	High	Medium+ (positive)	High+ (positive)

Activity / Aspect	Potential impact	Phase	Severity	Duration	Spatial	Consequence	Probability	Significance (pre-mitigation)	Key mitigation / management	Residual significance
Vegetation clearance, site preparation	Loss of vegetation cover; habitat disturbance; fragmentation within footprint	Construction	M	M	L	Medium	H	Medium	Micro-site to avoid denser patches/drainage vegetation; limit clearing to approved footprint; demarcate no-go areas; topsoil strip & store; progressive rehabilitation	Low–Medium
Earthworks, tracks, trenching	Soil disturbance leading to erosion and sediment movement (especially after storm events)	Construction	M	M	M	Medium	M	Medium	Early stormwater controls; maintain natural drainage continuity; erosion protection at culverts/outfalls; stabilise disturbed areas quickly; post-rain inspections	Low
Panel rows/roads altering runoff	Concentration/diversion of runoff causing localised flooding/scour	Construction/Operation	M	M	M	Medium	M	Medium	Drainage-aware layout; avoid low flow paths; cross-drainage at roads; energy dissipation; maintain drains/culverts	Low
Vehicle movement on unpaved surfaces	Dust (PM10/PM2.5) nuisance to nearby receptors and road users	Construction	M	L	M	Medium	H	Medium	Speed limits; dust suppression on active fronts/haul roads; cover loads; minimise disturbed areas; schedule works	Low

									around high winds where feasible	
Construction plant and deliveries	Noise and vibration nuisance to nearby receptors	Construction	L–M	L	M	Low–Medium	M	Low–Medium	Working hours control; well-maintained equipment; silencers; locate noisy activities away from receptors where possible	Low
Heavy vehicles and abnormal loads	Traffic safety risks (collisions, reduced visibility, road damage)	Construction	M	L–M	M	Medium	M	Medium	Traffic Management Plan; signage/flagmen where needed; delivery scheduling; driver induction; interface plan for public road users	Low–Medium
Fuel, oils, lubricants; refuelling and servicing	Spill risk contaminating soil and potentially shallow groundwater	Construction/Operation	H	M	M	High	L–M	Medium–High	Bunded storage; designated refuelling with drip trays; spill kits & training; prohibit servicing on bare ground; contaminated soil removal & licensed disposal	Low–Medium
Waste generation (packaging, scrap metal, general refuse)	Littering, pests, visual nuisance; poor housekeeping	Construction/Operation	L	M	L–M	Low–Medium	M	Low–Medium	Waste segregation; covered bins; regular removal; licensed disposal; housekeeping audits	Low
Hazardous waste (used oils/filters, oily rags, damaged electrical components)	Improper handling leading to pollution and safety risks	Construction/Operation	M	M	L–M	Medium	M	Medium	Secure labelled hazardous storage; manifests; licensed handlers; emergency response plan	Low
Overhead line / grid connection (if OHL retained)	Bird collision/electrocution risk (typically low but present)	Operation	M	M	L–M	Medium	L	Low–Medium	Prefer undergrounding where feasible; if OHL, fit bird flight diverters/markers; design to avifauna-safe standards; monitor incidents	Low
Presence of PV arrays and fencing	Visual change / altered sense of place; visibility from the road corridor	Operation	L–M	M	M	Medium	H	Medium	Neutral, non-reflective finishes; manage night lighting (downward, motion-sensor); keep disturbance neat; rapid	Low–Medium

									rehab of scars; retain buffers where feasible	
Security fencing and activity	Fauna movement impediment (small mammals/reptiles), entrapment risk	Construction/Operation	L–M	M	L	Low–Medium	M	Low–Medium	Wildlife-friendly fencing measures where appropriate (no snare wire; ground clearance where safe); escape points; daily checks during construction	Low
Ground disturbance	Chance finds (archaeology/graves) causing damage and delays	Construction	H	H	L	Medium–High	L	Medium	Chance Finds Procedure; stop-work buffer; notify competent authority; manage per instructions	Low
Employment and procurement	Short-term local jobs and business opportunities	Construction	M+	L–M	M	Medium+	H	Medium+	Local hiring targets where feasible; transparent recruitment; contractor local procurement	Medium+
Renewable generation	Displacement of fossil-based electricity; GHG reduction and energy security benefit	Operation	H+	H	H	High+	H	High+	Maintain high availability; good O&M; grid compliance	High+
Decommissioning and removal	Temporary disturbance, waste generation, and reinstatement risk	Decommissioning	M	L–M	L–M	Medium	M	Medium	Decommissioning Plan; maximise recycling; remove infrastructure; rehab and monitoring; manage hazardous materials	Low–Medium

Impact Assessment Summary

At scoping level, the dominant adverse impacts for the Naruchas 20 MW solar PV facility are expected to occur during the construction phase and are generally localised and manageable through standard good practice and EMP controls. The top adverse issues are: (i) vegetation clearance and habitat disturbance within the approved footprint; (ii) soil disturbance with associated erosion and sediment mobilisation following storm events; (iii) dust generation from earthworks and construction traffic, with potential nuisance to nearby receptors and B1 road users; (iv) traffic and road safety risks associated with heavy vehicle movements and abnormal loads; and (v) accidental spills of fuels and oils with potential to contaminate soils and, under certain conditions, shallow groundwater.

Operational impacts are comparatively low because the facility has no process emissions; however, visual change and sense of place effects (including visibility from the B1) remain relevant, and avifauna interactions should be addressed where any overhead line section is retained. The principal positive impacts include: (i) generation of renewable electricity with long-term regional/national benefits through improved energy security and reduced greenhouse gas emissions; (ii) short-term employment and local procurement opportunities during construction; and (iii) indirect local economic stimulation through contracted services (e.g., security, transport, minor supplies). Key commitments/conditions for ECC consideration include strict footprint demarcation and avoidance of drainage-line vegetation, early implementation and maintenance of stormwater/erosion controls, a traffic management plan for the B1 interface, bunded fuel and hazardous material management with spill response capacity, waste management via licensed service providers, a Chance Finds Procedure in terms of the National Heritage Act, and (where applicable) avifauna-safe grid connection design (including bird flight diverters/line markers or undergrounding where feasible). With these measures in place, the majority of adverse impacts are expected to reduce to Low or Low–Medium residual significance, while the renewable energy benefit remains High+ over the operational life.

Overall Socio-Economic Benefits and Issues

Socio-economic context and pathway of influence

The proposed 20 MW solar PV facility near the Naruchas substation (Rehoboth area) will interact with the local and regional economy primarily through construction activity, temporary employment and procurement, and the longer-term benefits associated with renewable electricity generation and improved grid stability. Socio-economic effects are therefore expected to be most pronounced during the construction phase, with a smaller but still important benefit profile during operation, and short-lived effects again during decommissioning.

Potential Direct Benefits (Most attributable to the project)

Construction employment and skills transfer

A key direct benefit is the creation of temporary jobs during construction, including general labour, security, drivers, equipment operators, artisans, and supervised technical roles. Even where specialist contractors are required, there are typically opportunities for local hiring from Rehoboth and surrounding areas for general works, site access control, cleaning, basic logistics, and certain civil tasks. This generates direct income and can have short-term poverty-alleviation effects for households. Where training and induction are implemented properly (HSE training, basic construction competency, traffic safety), the project can also contribute to skills transfer that remains useful beyond the project.

Local procurement and contractor spend

The project can inject direct spend into the local economy through procurement of goods and services such as accommodation, catering, fuel, minor construction materials, plant hire, transport, waste services, security services, and small tools/consumables. With transparent procurement and an intent to source locally where feasible, this can support small and medium businesses and stimulate additional employment indirectly (see below).

Long-term energy contribution

During operation, the facility produces electricity without fuel inputs, contributing to energy security, diversification of supply, and reduced reliance on higher-carbon generation. While this benefit is experienced most strongly at regional and national scale, there can also be localised benefits through improved reliability or reduced constraints on the network, subject to how the power is dispatched and integrated by the grid operator.

Potential Indirect Benefits (Secondary and multiplier effects)

Local economic multiplier and service sector stimulation

Construction projects typically generate indirect benefits through increased demand for local services: informal trade, food supply, transport, accommodation, and minor repairs. Wages earned by workers can circulate locally, producing a short-term economic multiplier effect.

Regional value chain opportunities

Although PV panels and major electrical equipment are often imported or sourced from outside the local area, there are still indirect value chain opportunities in transport and logistics, warehousing, civil works sub-contracting, and O&M support services. Over time, projects like this can contribute to a broader renewable-energy ecosystem, potentially improving the business case for local service providers to scale and specialise.

Potential community support initiatives

Where the proponent elects to implement small community initiatives (e.g., safety awareness, local school support, local procurement programmes), these can improve local acceptance and create small but tangible indirect benefits. These are not assumed as guaranteed outcomes unless committed in writing.

General Socio-Economic Issues and Potential Concerns (Risks to manage)

Employment expectations and perceived inequity

A common socio-economic risk is unmet expectations: communities may assume long-term employment, while solar PV operations are typically low-labour once commissioned. If recruitment is perceived as unfair or opaque, this can lead to grievances. The project should therefore communicate clearly about job numbers, duration, skill requirements, and recruitment procedures, and implement a fair process.

Temporary in-migration and social pressure

Construction can attract job seekers from outside the immediate area, increasing pressure on local services and potentially contributing to informal settlement, conflict, or social tension. The significance depends on workforce size, duration, and accommodation arrangements. A worker code of conduct, controlled site access, and grievance mechanisms reduce this risk.

Road safety and transport disruption

Construction deliveries (including abnormal loads) and increased traffic on access roads can create safety risks for road users and local residents. Poorly managed logistics can also affect farming operations. A robust Traffic Management Plan and interface management with the B1 corridor are therefore essential socio-economic safeguards.

Nuisance impacts affecting livelihoods (dust/noise/visual)

Dust and noise can temporarily affect farmsteads, workers, and road users, and dust deposition can influence grazing quality in the immediate vicinity if not controlled. Visual intrusion may affect sense of place for nearby landholders and travellers. These issues are typically manageable but should be addressed proactively through EMP measures and responsive engagement.

Land-use compatibility and loss of grazing land

The PV footprint will convert a portion of land (nominally ~50 ha; mapped ~46.87 ha) from its current use to an energy infrastructure use. Even if this is small in the context of surrounding land, it can still represent a localised loss of grazing area or restrictions on access. Clear boundary demarcation, access arrangements, and agreements with landholders (including rehabilitation commitments) are essential.

Worker welfare, labour conditions, and OHS

Construction projects can create risks of labour disputes if working conditions are not properly managed. Compliance with Namibia's labour and OHS requirements, adequate welfare facilities, and strong contractor oversight reduce both harm and reputational risk.

Socio-Economic Management Commitments

To maximise benefits and reduce risks, the proponent and contractors should commit to:

- A transparent local recruitment approach with clear eligibility criteria and communication of job duration.
- A grievance mechanism accessible to landholders and communities, with documented response timelines.
- A Traffic Management Plan (routing, scheduling, signage, speed limits, driver induction, abnormal load control).
- Dust/noise controls as per the EMP, and proactive engagement with nearby landholders during high-activity periods.
- Contractor requirements for worker welfare, OHS training, and a code of conduct.
- Local procurement targets where feasible and tracking/reporting of local spend during construction.

7. Stakeholder Engagement Process and Key Issues

Include:

- Authority notifications and consultation.
- Newspaper notices, site notices, stakeholder letters.
- I&AP registration, comment sheets, issues-and-responses table.

Key issues to anticipate and address:

- Land access, grazing disruption, fencing alignment.
- Visual impacts and glint/glare concerns (near roads/homesteads).
- Dust and construction nuisance.
- Job opportunities and local business participation.
- Water use (if any) for dust suppression/panel cleaning.
- Biodiversity and drainage line protection.

Overall Conclusion (Environmental Scoping Study – Naruchas 20 MW Solar PV Facility)

The Environmental Scoping Study concludes that the proposed 20 MW solar photovoltaic (PV) power plant near the Naruchas substation, within the Rehoboth Townlands in the Hardap Region, is environmentally feasible at scoping level, provided that the project is implemented in strict accordance with the recommended mitigation measures and the Environmental Management Plan (EMP). The project is located on an allocated area of approximately ~50 ha (with a mapped footprint of ~46.87 ha) and benefits from strategic siting due to proximity to the B1 road corridor and existing grid infrastructure, thereby limiting the need for extensive new linear infrastructure and reducing the overall development footprint.

Baseline screening indicates that the receiving environment is typical of central Namibia's semi-arid landscapes, with key sensitivities and constraints being localised rather than pervasive. The most important environmental considerations relate to stormwater management and drainage continuity, potential soil erosion and sediment mobilisation following rainfall events, construction-phase dust and traffic safety (including the B1 interface), and spill prevention associated with fuels and oils during construction and maintenance. Biodiversity sensitivity is assessed as low to moderate, based on the transitional vegetation context and the mapped avifaunal richness class of 171–200 bird species in the broader area. No known heritage resources were identified within the project footprint at scoping level; however, given the possibility of chance finds during excavation, the project must implement a formal Chance Finds Procedure in accordance with the National Heritage Act.

The scoping impact assessment indicates that the majority of adverse impacts are expected during construction and are typically short-term to medium-term and localised, with pre-mitigation significance generally ranging from low to medium, and in a few cases medium to medium–high (notably for spill risk and traffic safety). With the application of standard good practice and specific project commitments—particularly strict footprint demarcation, early stormwater and erosion controls, a Traffic Management Plan, bunded hazardous material storage and spill response, and licensed waste management—most adverse impacts are expected to reduce to low or low–medium residual significance. Operational impacts are comparatively limited and largely relate to ongoing stormwater maintenance, visual change and sense of place (including visibility from the B1), and potential avifauna interaction where any overhead grid connection is retained; these can be effectively managed through design refinement and routine operational controls. Decommissioning impacts are expected to be temporary and manageable, provided that a formal decommissioning and rehabilitation plan is implemented and post-closure rehabilitation success is verified.

Importantly, the project delivers clear positive outcomes, including the long-term generation of renewable electricity with regional and national benefits for energy security and greenhouse gas emission reduction, as well as short-term socio-economic benefits through employment and local procurement during construction. Based on the information available at scoping level, and subject to incorporation of the mitigation and monitoring measures presented in the report (including the Annexure impact register and socio-economic mitigation plan), it is recommended that the project proceeds to the ECC decision-making stage, with the EMP forming an enforceable set of commitments and with any outstanding specialist inputs (as required by the competent authority) being finalised to support the Environmental Clearance Certificate application.

Recommendations (Environmental Scoping Study – Naruchas 20 MW Solar PV Facility)

It is recommended that the proposed 20 MW Naruchas Solar PV Facility proceeds to the ECC decision-making stage, as the project is considered environmentally feasible at scoping level, provided that all management measures in the Environmental Management Plan (EMP) are adopted as binding commitments for the proponent and contractors. The EMP should be treated as the primary instrument to translate the scoping findings into enforceable on-site controls during construction, operation and decommissioning, with clear accountability assigned to the proponent, the EPC contractor and the appointed environmental personnel.

It is further recommended that the final project layout and development footprint be confirmed and then tightly controlled through strict demarcation of the approved disturbance area, including the PV block, substation footprint, internal roads, laydown areas and any grid connection corridor. The project should apply a clear "limits of disturbance" approach, supported by visible pegs and signage, to prevent unnecessary clearing and off-road driving. Where practicable, micro-siting should be used to avoid drainage-line corridors, denser vegetation patches and any locally sensitive areas identified during the site walkdown, thereby reducing habitat loss and minimising the risk of erosion and sediment mobilisation.

Given the semi-arid setting and the likelihood of intense rainfall events, stormwater management and erosion control should be prioritised as a critical design and construction requirement. It is recommended that stormwater and sediment controls be established before major earthworks commence, and that internal roads and PV blocks be designed to maintain natural drainage continuity through appropriate cross-drainage measures (such as culverts or drifts at flow paths). Routine post-rain inspections should be implemented, with timely corrective actions to address scouring, rilling, blocked drains or sediment accumulation, and with records retained to demonstrate ECC compliance.

As construction activities represent the main period of potential nuisance and community concern, it is recommended that the EPC contractor implements strong dust, noise and traffic management controls. Dust mitigation should include speed limits on unpaved surfaces, dust suppression on active work fronts where necessary, covering of loads, and minimising the total disturbed area at any one time. Noise should be managed through well-maintained equipment, control of unnecessary idling, and responsive management of complaints. In addition, a Traffic Management Plan should be implemented for the interface with the B1 corridor and local access routes, covering delivery scheduling, signage, abnormal-load procedures, driver induction and safe site access controls.

Pollution prevention measures should be implemented as a priority, particularly in relation to fuels, oils, lubricants and hazardous materials that may be used during construction and maintenance. It is recommended that all fuel and chemical storage areas be bunded and secured, that refuelling and servicing occur only in controlled areas using drip trays and spill kits, and that personnel are trained in spill prevention and emergency response. Waste management should be formalised through waste segregation, safe temporary storage, and removal by licensed service providers, with waste manifests retained for hazardous waste streams.

In relation to biodiversity, the scoping screening indicates moderate avifaunal richness in the broader landscape and a generally low to moderate sensitivity profile within the project area, but good practice remains necessary. It is recommended that the project continues to avoid sensitive micro-habitats where feasible, implements speed controls to reduce fauna mortality, and maintains good housekeeping to prevent entrapment risks. Where grid connection infrastructure is confirmed, undergrounding should be considered where technically feasible; if an overhead line section is retained, it should incorporate avifauna-safe design measures and line marking (bird flight diverters/line markers) where appropriate, with incident monitoring forming part of routine environmental inspections.

Although no known heritage resources were identified near the site at scoping level, it is recommended that a formal Chance Finds Procedure be included in the EMP and applied during all ground disturbance activities. This should require immediate stop-work, securing of the area, and notification of the competent authority should any archaeological materials, graves or culturally significant objects be encountered, with work resuming only once clearance has been provided.

From a socio-economic perspective, it is recommended that the project maximises local benefits and reduces grievance risk through transparent recruitment and procurement practices, with local hiring prioritised where feasible and selection criteria clearly communicated. A functional grievance mechanism should remain active throughout construction and operation, with documented response times and close-out actions, and regular communication should be maintained with nearby landholders and relevant authorities regarding the construction schedule, traffic arrangements and any potentially disruptive activities.

Finally, it is recommended that the proponent makes a clear closure commitment by preparing a Decommissioning and Rehabilitation Plan prior to the end of the project life. Decommissioning should prioritise recycling and responsible disposal of materials (including panels, steel and cabling), reinstatement of drainage patterns, and rehabilitation of disturbed areas to a stable condition suitable for the agreed post-closure land use. Rehabilitation performance should be verified through post-closure monitoring, typically spanning at least one to two rainy seasons, to confirm stability and to correct any erosion features or residual risks.

Appendix

Tuesday 3 February 2026 NEW ERA

WORLD NEWS 17

Restricted resumption… Ambulances wait in line at the Egyptian side of the Rafah border crossing with the Palestinian Gaza Strip, in north-eastern Egypt on the first day of the evacuation of some 50 Palestinian, at the Rafah crossing yesterday. Photo: Nampa/AFP

Gaza's Rafah crossing makes limited reopening

RAFAH - Gaza's key Rafah border crossing was reopened to Palestinians yesterday, an Israeli security official said, but Egyptian state-linked media said only 50 people would be allowed to cross in each direction in the early days.

The resumption of operations comes after Israeli forces seized control of the gateway to Egypt in May 2024 during the war with Hamas.

A partial resumption of operations began on Sunday in a tightly restricted pilot phase that did not involve people traveling, following months of appeals from aid groups.

"As of this time, and following the arrival of the EUBAM teams on behalf of the European Union, the Rafah crossing has now opened to the movement of residents, for both entry and exit," the Israeli official said, referring to a European border assistance mission.

Egyptian state-linked media reported that 50 people were expected to cross in each direction in the first days of the reopening.

AlQahera News, which is linked to state intelligence, reported, citing an unnamed source, that "fifty people will depart Egypt for Gaza and fifty people will come from Gaza, in the first days of the operation".

A source at the border told AFP a few dozen people arrived on the Egyptian side on Monday, awaiting entry into Gaza.

However, Israeli state broadcaster Kan reported that around 150 people were expected to leave Gaza for Egypt on Monday, including 50 patients.

The report said around 50 others were also expected to enter the territory, adding that the crossing would be open for about six hours daily.

"The Rafah crossing is a lifeline," said Mohammed Nassir, a Palestinian who had his leg amputated after being injured early in the war.

"I need to undergo surgery that is unavailable in Gaza but can be performed abroad."

AFP images from Sunday showed ambulances queued up on the Egyptian side, preparing to receive medical evacuees, who were expected to be the first groups allowed out.

An official at Gaza's health ministry, which operates under Hamas authority, said about 200 patients were waiting for permission to leave the territory.

– *Nampa/AFP*

Iran denies receiving Trump 'ultimatum'

TEHRAN - Iran yesterday denied it had received an ultimatum from president Donald Trump to reach a nuclear agreement, after the US leader said he had given the Islamic Republic a deadline to enter talks and threatened military action.

Asked at a news conference whether Iran had received a precise ultimatum from the United States, foreign ministry spokesperson Esmaeil Baqaei said Iran "is a country that always acts with honesty and seriousness in diplomatic processes, but it never accepts ultimatums.

For that reason, such a statement cannot be confirmed."

Meanwhile, Iranian authorities have arrested four foreigners of undisclosed nationalities for "participation in riots", state television reported yesterday.

"These individuals were apprehended during a raid on their hideout" in Tehran province, national television said, without specifying the date of the arrests.

"During a search of one suspect's bag, four homemade stun grenades, used during the riots and unrest in the area, were discovered," it added.

Iran also yesterday said it had summoned European ambassadors stationed in Tehran after the EU's designation of the Islamic Revolutionary Guard Corps as a terrorist group.

On Sunday and yesterday, "representatives of all EU member states that have an embassy in Tehran were summoned to the foreign ministry", foreign ministry spokesman Esmaeil Baqaei said.

"This is the smallest of measures," before other moves are announced, Baqaei told a foreign ministry press briefing that AFP journalists attended.

– *Nampa/AFP*

Police issue over N$560 000 in traffic fines in a month

JUSTICIA SHIPENA
Staff Writer

Traffic fines worth N$562 250 were issued during a nationwide crime prevention operation conducted from 30 January to 2 February.

Inspector general of the Namibian Police, Joseph Shikongo, released the results of the month-end operation, code-named "Walya Shakakodhi Tala Pombada", which was carried out across all 14 regions.

Khomas issued traffic summons worth N$114 750 and arrested 15 suspects.

Otjozondjupa followed with N$124 750 in traffic fines and confiscated eight firearms, the highest number of firearms seized in a single region.

The operation was launched in response to rising cases of robbery, drug dealing, stock theft, poaching, illegal hunting, and financial and online crimes reported in different parts of the country. It aimed to reduce crime during the month-end period, increase police visibility, raise public awareness, and ensure that Namibia remains safe for citizens and visitors.

Police conducted foot and vehicle patrols in urban and rural areas, enforced road traffic laws, monitored liquor outlets, and carried out ATM surveillance in malls and shopping centres.

In total, 212 suspects were arrested for minor and serious offences.

Police confiscated drugs valued at N$90 840 and illicit goods, including cigarettes, fuel and alcohol, worth N$163 813. Suspected stolen property valued at N$84 500 was recovered.

Twelve stock theft cases were reported. Fifteen unlicensed firearms were confiscated and two firearms were seized for safekeeping, bringing the total firearms removed from circulation to 17.

Hardap recorded 51 arrests, the highest number of suspects arrested in one region, and confiscated five firearms.

Oshana arrested 46 suspects and seized illicit goods valued at N$18 555.

Ohangwena recorded the highest value of confiscated illicit goods at N$126 000. Omusati confiscated drugs worth N$44 240, the highest drug value among the regions.

Kunene recovered stolen property worth N$82 000, the highest value of recovered goods in one region.

Zambezi issued traffic summons worth N$40 000 and confiscated one firearm.

Shikongo said the operation faced challenges such as poor mobile network coverage in some areas, a shortage of patrol vehicles and limited manpower. He said the operation achieved its objectives and will continue in all regions.

Speaking during a debriefing parade at the Israel Patrick Iyambo Police College on Tuesday, Shikongo also announced the temporary transfer of the Tourism Protection Subdivision from the regional command structure to the Office of the Inspector-General with immediate effect.

He said the move aims to strengthen command and control, improve national coordination and ensure a uniform approach to protecting tourists and tourism sites across the country.

Officers will be appointed and transferred to serve under the subdivision based on experience, professionalism and suitability for tourism protection duties.

The Tourism Protection Subdivision is tasked with safeguarding tourists, tourism infrastructure and the country's tourism industry.

Shikongo also raised concern over the arrest of 13 police officers since January 2026 on various charges.

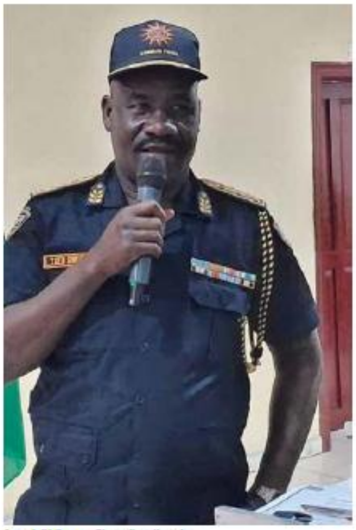
Three officers were arrested for possession of cannabis and remanded in custody, while one officer has an outstanding case involving attempted murder, kidnapping and assault and is out on bail.

Three officers were arrested on corruption and extortion charges, with two remanded in custody and one granted bail. Another three officers were arrested under the Anti-Corruption Act and the Stock Theft Act and were granted bail.

Three officers were arrested for corrupt use of office and extortion and remain in custody.

A student constable was arrested for forgery and contravening the Education Act and was granted bail.

Shikongo said the arrest of police members is regrettable and undermines the integrity and image of the force.



Joseph Shikongo - *Photo: Contributed*

CALL FOR PUBLIC PARTICIPATION

Environmental Impact Assessment (EIA) for a 20 MW Solar Power Plant near [illegible] Sub station, in the vicinity of Rehoboth (Khomas Region)

Notice is hereby given to all Interested and Affected Parties (I&APs) that an application for an Environmental Clearance Certificate (ECC) will be submitted to the Environmental Commissioner in terms of the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 2012).

Project description

A 20 MW Solar Power Plant is proposed on an allocated area of approximately [illegible] ha, located [illegible] north of Rehoboth and [illegible] south of Windhoek along the B1 road. The site is accessible via the B1 tarred road from Rehoboth or Windhoek, with a smaller portion accessible via an informal gravel road. The proponent intends to construct and operate a solar power plant that will generate up to 20 MW of electricity.

Proponent

JCM Power Corporation

Invitation to register and comment

All I&APs are invited to **register as stakeholders and submit written comments on or before [illegible] February 2026**

Registration and enquiries (EIA Practitioner)

Augite Environmental Consulting
Dr. K [illegible]
Email: [illegible]
Cell: [illegible]

Please include your full name, contact details, and any project-related comments/concerns when registering.

AUGITE
JCM

Shoprite sales grow by N$9.2bn in six months

Staff Writer

Shoprite Group reported higher sales for the six months ended 28 December 2025, with merchandise sales from continuing operations rising 7.2% to about N$ 136.8 billion.

This compares with restated sales of N$127.6 billion in the same period last year. The increase represents an extra N$9.2 billion in sales during the interim period.

The group's Supermarkets South Africa segment contributed most of the growth.

The segment accounted for 84.3% of total group sales and recorded sales growth of 7.1%, adding N$7.7 billion over six months.

The group said its pricing approach continued to support affordability. Internal selling price inflation averaged 0.7% for the period, well below official food inflation of 4.7%. Selling price inflation eased through the half year and moved into deflation during the November to December 2025 trading period.

Like-for-like sales in Supermarkets South Africa increased by 1.9%, reflecting the lower selling price inflation.

Within the segment, Shoprite and Usave, including Shoprite LiquorShop, grew sales by 5.1%. Internal selling prices showed deflation of 0.1% at Shoprite and 0.7% at Usave. Shoprite LiquorShop increased sales by 10.1%.

Checkers and Checkers Hyper, including Checkers LiquorShop, reported stronger sales growth of 8.9%. Internal selling price inflation averaged 1.9% at Checkers and 1.1% at Checkers Hyper.

Checkers LiquorShop grew sales by 12.7%.

Supermarkets South Africa expanded its footprint over the past year, opening a net 262 stores to reach 2,747 outlets. These included 50 Shoprite, 42 Usave, 32 Checkers, four Checkers Hyper and 81 LiquorShop stores. New-format stores accounted for 53 net openings. Petshop Science added 45 stores, bringing its total to 173.

Outside South Africa, supermarkets non-South Africa increased sales by 12.1% in rand terms and contributed 8.4% to total group sales. In constant currency terms, sales rose by 9.5%.

The Shoprite Group said its pricing strategy continued to support customer affordability. - *Photo: Contributed*

When a personal loan makes sense

NATASHA WINKLER

Personal loans often get a reputation they do not deserve. They are blamed for overspending, financial stress and long repayment cycles. The truth is simpler.

A personal loan is a tool, and like any tool, it only causes harm when it is used for the wrong job.

There are moments when a well-priced, well-managed loan can protect your stability, create opportunities and save you money over the long term. The key is to pause before signing and ask the right questions.

The first question is about purpose. Is this a need, a want or an emergency.

Needs are the essential parts of life that keep everything else moving. A car repair that gets you safely to work. A medical gap that cannot wait for payday.

A fridge that stops working when you have a family to feed. Emergencies are the surprises that cannot be postponed. Wants are the nice-to-have items that can be saved for. Loans are made for needs and emergencies; they are rarely the answer for wants. When you use debt for a want, you pay a premium that steals from your future self.

The second question is about cost. A loan should never be taken in isolation. Compare the interest rate, fees and repayment term to your

Natasha Winkler

other options. If the loan replaces more expensive forms of debt, overdrafts, store accounts, and revolving credit, you may end up paying far less overall. Consolidating costly debt into one structured loan with a fixed term can create a clear finish line and reduce the pressure of scattered repayments. The aim is not just affordability today but efficiency over time.

The third question is about impact. A good loan should make your life better, safer or more stable. Repairing a leaking roof before the rainy season can prevent thousands in damage later. Funding a short course that boosts your earning power can change your income path. Settling an overdue bill that could escalate into legal action is not indulgence; it is protection. When a loan strengthens your position rather than weakening it, it becomes part of a healthy financial strategy.

The final question is discipline. Borrowing is a commitment you make to your future self. Only take on an amount you can repay comfortably. Set the debit order for the day your salary arrives. Do not pair the loan with new spending that cancels out the benefit. If the numbers feel tight, the solution is not a bigger loan; it is a smaller plan. The loan should create breathing room, not pressure. Honesty in this step is what separates smart borrowing from stressful borrowing.

A personal loan is not a life raft or a lifestyle upgrade. It is a bridge: a temporary structure to help you cross a difficult patch or reach an opportunity you cannot access on your own. Used with intention and discipline, it strengthens your financial footing. Used carelessly, it becomes the very hole you were trying to escape. The difference is not the product; it is the purpose.

Keep your future self in the conversation and choose the path that brings you closer to stability, not further from it.

***Natasha Winkler is the finance managing director at Old Mutual Namibia.**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SPAR
VOLKSWINKEL
ENTRANCE
EXIT
TRADING HOURS
ON SUNDAYS
08H00 - 14H00