PROPOSED OSHIVELA PILOT PROJECT
ON PORTION 4 OF FARM BLOEMHOF 109
ERONGO REGION

ENVIRONMENTAL IMPACT ASSESSMENT SCOPING (INCLUDING IMPACT ASSESSMENT) REPORT

EXECUTIVE SUMMARY

Prepared for: Hylron Green Technologies (Pty) Ltd

January 2024

DOCUMENT CONTROL

Report Title	EIA SCOPING (INCLUDING IMPACT ASSESSMENT) REPORT FOR THE PROPOSED OSHIVELA PILOT PROJECT, ERONGO REGION
EIA Project Manager	Werner Petrick
Report Author	Werner Petrick
Specialist input	Dr John Kinahan (Archaeology)
	Mike and Ann Scott (Avifauna and Ecology)
	Sandra Muller (Groundwater and Surface Water)
	Dr Pierre Smit (Ecology and report review)
	Nicolette von Reiche (Soundscape) (Air Quality and Noise)
Client	HyIron Green Technologies (Pty) Ltd
Project Number	NSPHI20231
Report Number	1 (EXECUTIVE SUMMARY)
Status	I&AP Review
Issue Date	January 2024

EXECUTIVE SUMMARY

1. GENERAL INTRODUCTION

Hylron Green Technologies (Pty) Ltd (Hylron), a partnership of Namibian and German companies, has developed a technology to produce iron at zero emissions. In an airtight rotary kiln, hydrogen reacts with the oxygen contained in iron ore to produce "Direct Reduced Iron (DRI)". "Green hydrogen" is used for this process, meaning that the hydrogen is fully generated from renewable resources.

Hylron intends to develop the Oshivela Pilot Project, which will be the world's first industrial production of iron at zero emissions, on their farm (i.e. Portion 4 of Farm Bloemhof 109), which is located ~75 km north-east of Swakopmund, in the Erongo Region (refer to Figure 1).

Hylron considered acquiring the Shiyela Iron Project, thereby becoming the majority owner of Shiyela Iron (Pty) Ltd (Shiyela)[1]. However, due to increasing global interest in the Hylron technology and many requests to test the feasibility to use iron ores from different origins, Hylron did not yet further proceed with the acquisition and development of the Shiyela Project and now considers developing the Oshivela Pilot Project on Portion 4 of Farm Bloemhof 109, where Oshivela can be supplied with different iron ores.

Hylron's proposed Oshivela Pilot Project on the above-mentioned farm is the topic of this Environmental Impact Assessment (EIA) Scoping (including Impact Assessment) Report. This report has been compiled as part of the Environmental Clearance Certificate (ECC) application and associated Environmental Impact Assessment (EIA) process for the proposed Pilot Project. It includes an assessment of the environmental impacts that the proposed Project activities are likely to have. The proposed management and mitigation measures relating to the proposed Pilot Project are documented in an Environmental Management Plan (EMP) attached as Appendix G.

[1] Shiyela is the holder of the Mining Licence (ML) 176, which is located within the Namib-Naukluft National Park (NNNP), approximately 35 km northeast of Walvis Bay. Reptile Uranium Namibia (Pty) Ltd (RUN) is currently the majority owner of Shiyela Iron (Pty) Ltd. ML 176 contains the Shiyela Iron deposit, a magnetite-rich resource which has been discovered in 2008. Hylron, undertook an EIA (amendment) process in 2022 for the Shiyela Iron Project, aiming to mine the iron ore deposit and to 'build the Oshivela project at the Shiyela Mine' to utilize their proprietary technology, together with renewable energy, to produce a final product at zero emissions, i.e. DRI.

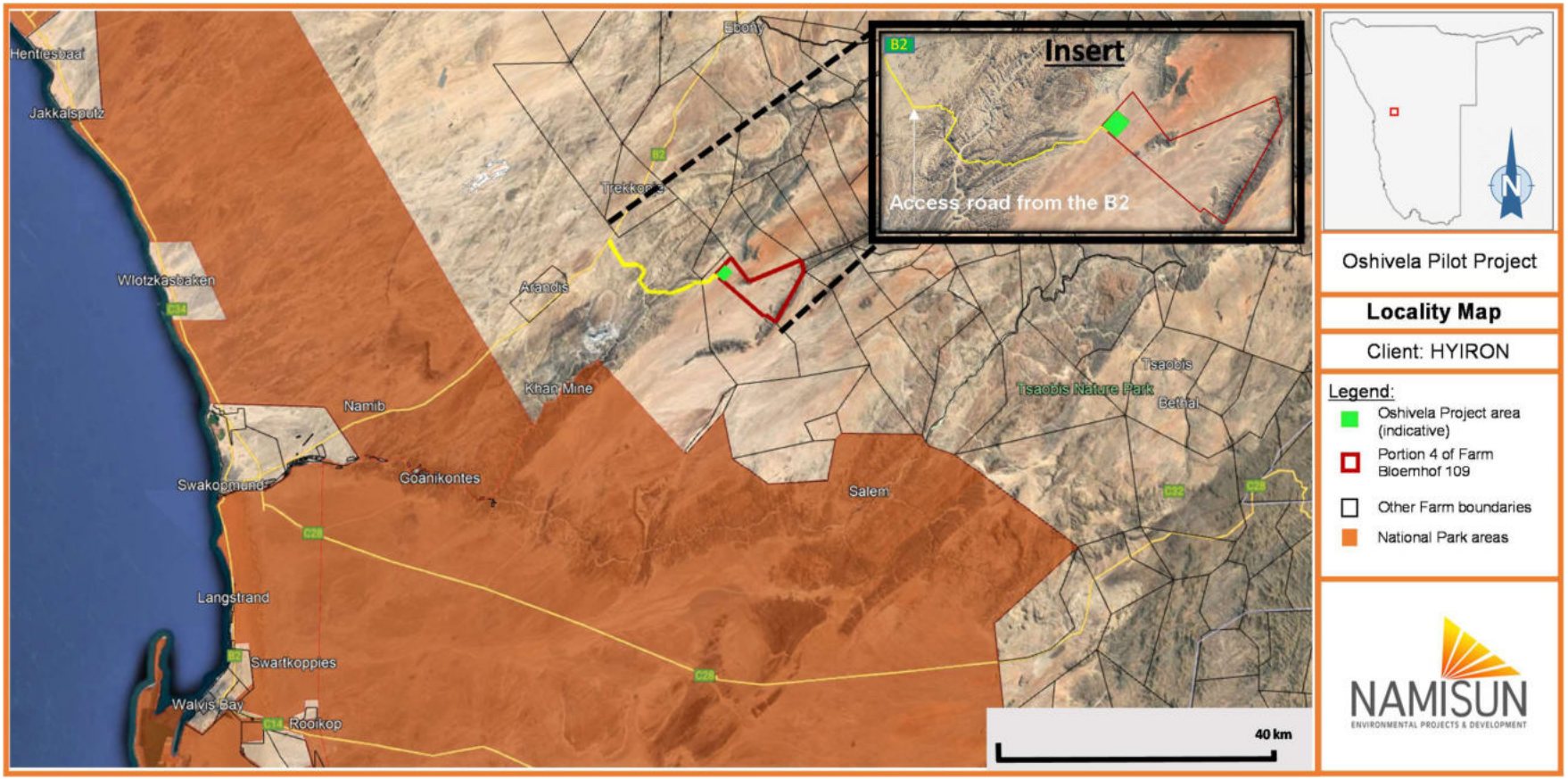

FIGURE 1: LOCATION OF THE PROPOSED OSHIVELA PILOT PROJECT ON PORTION 4 OF FARM BLOEMHOF 109 (Ref: Google Earth)

2. ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

EIAs are regulated by the Directorate of Environmental Affairs (DEA) of the Ministry of Environment, Forestry and Tourism (MEFT) in terms of the Environmental Management Act, No. 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966) and its associated regulations were promulgated in January 2012 (Government Gazette No. 4878) in terms of the above-mentioned Act. Prior to the commencement of the proposed Oshivela Pilot Project activities, an application for an environmental clearance will be submitted in terms of this Act and the associated EIA Regulations to the Ministry of Mines and Energy (MME) (Energy Directorate), as the competent authority. MME will review the application and relevant reports and submit their comments to the MEFT for their final review and decision.

The above-mentioned EIA application and this report focuses only on the proposed Pilot Project to prove various concepts and the feasibility of a possible bigger project. Furthermore, ongoing monitoring of relevant environmental aspects will be undertaken during the pilot stage. Should HyIron find all relevant aspects of the Oshivela Pilot Project to be feasible, they will consider upscaling to a production of 40 tons per hour of sponge iron (with the final product being between 90 and 99% purity), generated with net zero CO_2 emissions. However, a separate EIA (application) process will have to be conducted for any future upgrades.

It is thought that this report and EMP (attached in Appendix G of the EIA Scoping (including Impact Assessment) Report) will provide sufficient information for MEFT to make an informed decision regarding the proposed Oshivela Pilot Project, and whether an ECC can be issued or not.

The EIA process includes an internal screening phase; a scoping phase, which includes an impact assessment; and an EMP. During the internal screening exercise, Namisun identified the need for various specialist studies, also taking the assessments (where relevant) that have been completed for the proposed Shiyela Project[2] into consideration. Information in this report has therefore been augmented by considering the aspects and potential impacts assessed for the Shiyela Project[2]; various site visits to the proposed Oshivela Pilot Project Site on Portion 4 of Farm Bloemhof 109 and surroundings; specialist studies; and input from comments gathered because of consultations with key stakeholders during focus group meetings. The potential impacts of the activities associated with the Oshivela Pilot Project could therefore be assessed.

[2] With reference to Section 1, the EIA for the proposed Shiyela Project included mining of the iron ore deposit, which is not relevant to the proposed Pilot Project on Portion 4 of Farm Bloemhof 109 and the related assessments.

The EIA process and corresponding activities include the following:

- Project initiation and screening phase (September – October 2023):
    - Project initiation meetings and site visits with the HyIron team to discuss the proposed Pilot Project and EIA / ECC Application process.
    - Early identification of environmental aspects and potential impacts associated with the proposed project and determine legal requirements.
    - Decision on EIA process to be followed and specialists to be used in the process.
    - Identify key stakeholders and compose Interested and / or Affected Parties (I&AP) database.
- Scoping (including assessment) phase (October 2023 – February 2024):
    - Notify authorities and I&APs of the proposed EIA process (distribute background information document (BID), e-mails, telephone calls, newspaper advertisements and site notice).
    - I&AP registration and initial comments.
    - Key stakeholder (focus group) meetings and include I&AP issues and concerns in the studies and assessments.
    - Conduct specialist studies, including field work.
    - Compilation of EIA Scoping (including Impact Assessment) Report and EMP.
    - Distribute EIA Report and EMP to relevant authorities and I&APs for review.
    - Update and finalise EIA Report with EMP, considering comments received.
    - Online submission of the final report onto the MEFTs portal.
    - Submit Application and finalised EIA Scoping Report with EMP and I&APs comments to MME and MEFT for decision-making.

2.1 EIA Team

Namisun is an independent environmental consultancy firm appointed by HyIron to undertake the EIA process. Werner Petrick, the EIA project manager, has more than twenty-four years of relevant experience in conducting / managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems (EMSs). Werner has a B. Eng (Civil) degree and a master's degree in environmental management and is certified as lead environmental assessment practitioner (EAP) and reviewer under the Environmental Assessment Professionals Association of Namibia (EAPAN). Dr Pierré Smit, the EIA project assistant, holds a PhD in Landscape Ecology and has more than twenty-eight years of experience in environmental management, managing environmental assessment, the implementation of EMPs and EMSs in Namibia.

The environmental project team and proponent details for the EIA process relating to the Oshivela Pilot Project is outlined in Table 1.

TABLE 1: EIA TEAM AND PROPONENT DETAILS

Team	Name	Designation	Tasks and roles	Company
Project proponent	Johannes Michels	Managing Director	Technical input Implementation of the EMP	Hylron
EIA Project Management Team	Werner Petrick	Lead EIA Practitioner	Management of the EIA process and reporting	Namisun
	Pierré Smit	EIA Project Assistant Ecology input		
Avifauna	Ann and Mike Scott	Avifauna specialists	Specialist input incorporated into this report: Avifauna study and assessment General biodiversity input	African Conservation Services cc
Groundwater and surface water	Sandra Müller	Hydrogeological Specialist	Specialist input incorporated into this report: Hydrogeological and hydrological study and assessment	S Muller Hydrogeological consultant
Archaeology	John Kinahan	Archaeological specialist	Specialist input incorporated into this report: Archaeological study (Phase 1)	J. Kinahan, Archaeologist
Air Quality and Noise	Nicolette von Reiche	Noise and Air Quality specialist	Specialist input incorporated into this report: Air Quality and noise	Soundscape Consulting (Pty) Ltd

2.2 Steps in the public participation process

All comments, questions and issues that have been raised throughout the process by authorities and I&APs are provided in Appendix C of the EIA Scoping (including Impact Assessment) Report. A summary Issues and Response Report (I&RR) is also attached in Appendix C. Various I&APs provided positive comments relating to the proposed project.

The steps that were followed as part of the consultation process are summarised below:

- Notification - regulatory authorities and I&APs:
    - The stakeholder database was developed. This database is updated as and when required.
    - Compile a Background Information Document (BID). Copies of the BID were distributed via email to relevant authorities and I&APs on the stakeholder database and copies were made available on request. The purpose of the BID was to inform I&APs and authorities about the proposed activities, the assessment process being followed, possible environmental impacts and ways in which I&APs could provide input / comments to Namisun.

- A Site Notice was placed at the access to the Project Site (i.e. access gate to Portion 4 of Farm Bloemhof 109) to notify I&APs of the proposed project, and the EIA process being following.
- Block advertisements were placed in the Market Watch (on 23 October and 30 October 2023) as part of the following newspapers:
  - The Namibian Sun; Die Republikein; and Allgemeine Zeitung.

- Key stakeholder and focus group meetings:
  - The above-mentioned notifications and adverts stated the following: "Focus Group meetings are planned within the comments and registration period. Should you like to be invited to one of the Focus Group meetings, please contact Namisun".
  - EIA Focus group meetings were held as follows:
    - Neighbour (Farm Bloemhof (Remainder)): Mr and Mrs De Man on 30 October 2023
    - Neighbour (Farm Nelsville, Vlakteplaas Portion 1): Mr S Kleeman on 30 October 2023.
    - Forsys Metals Corporation (Forsys) (Mr Oliver Krappmann) on 31 October 2023.
    - Neighbour (Farm Valencia): Mr Horn on 7 November 2023.
    - Dr Detlof Von Oertzen on 10 November 2023.
- Various emails were sent and telephone discussions conducted with numerous I&APs to share further information, the BID and to offer Focus Group meetings. These I&APs included, amongst others, other nearby farm owners.
- Review of EIA Scoping (including Impact Assessment) Report by I&APs and authorities and submission of Application to MME and MEFT.

2.3 Opportunity to Comment

The EIA Scoping (including Impact Assessment) Report was distributed for public / authority review. I&APs are invited to comment on these documents, which are available for a review and comment period from **8 January 2024 to 2 February 2024**. Comments should be sent to Namisun at the telephone number, or e-mail address shown below by no later than **2 February 2024**.

Namisun

Attention: Werner Petrick

E-mail address: wpetrick@namisun.com

Cell number: +264 (0)81 739 4591

3. PROJECT DESCRIPTION

As stated in Section 1, HyIron plans to develop the world's first industrial production of iron at zero emissions, i.e. using hydrogen for the production process and therefore no greenhouse gasses emitted, planned to be implemented in the framework of their Oshivela Pilot Project on Portion 4 of Farm Bloemhof 109.

In the conventional processes of iron processing, carbon from largely coking coals, but also other sources like natural gas, is burnt at very high temperatures so that the carbon is oxidizing to become carbon monoxide. The carbon monoxide, again at high temperatures and in absence of other oxygen, draws the oxygen from the iron ore (Fe_2O_3 or Fe_3O_4). After this reaction (i.e. the reduction of iron oxide) the elemental iron (Fe) is obtained and as a waste product, vast amounts of carbon dioxide (CO_2) released. It is estimated that this reduction process is responsible for ~ 9% of global CO_2 emissions and approximately 1,8 Tons of CO_2 per ton of iron.

To the contrary, HyIron therefore intends to produce iron without any CO_2 emissions, by using renewable energy only and applying its proprietary technology. In an airtight rotary kiln, hydrogen reacts with the oxygen contained in iron ore to produce DRI. Here again elemental Iron (Fe) is the product while the only "waste product" (i.e. "by-product") is water (H_2O). "Green hydrogen" is used for this process, meaning that the hydrogen is fully generated from renewable sources, i.e. solar. The proposed Oshivela Pilot Project is planned in the north-western Section of Portion 4 of Farm Bloemhof 109 (see Figure 1 and Figure 2) and includes the following key activities:

- Production of 5 tons direct reduced iron per hour (~ 3 000 hours per year), using hydrogen as a reduction agent during the product beneficiation, in a specialised industrial (airtight) furnace.
- Hydrogen will be produced by means of electrolysis (i.e. breaking down water molecules (H2O) into oxygen (O2) and hydrogen (H2)).
- Renewable energy supply (i.e. 25 MWp) in the form of Photovoltaic (PV) power to supply energy for the above-mentioned electrolysis process. The PV power plant will cover an area of ~ 30 hectares (ha).

During the Pilot phase of the Oshivela Project, 5 tons of direct reduced iron will be produced per hour. At an average of nine hours sunshine per day, production time is estimated at approximately 3,000 hours per year and at an estimated production of 5 tons per hour, a total of 15,000 tons of direct reduced iron (i.e. Sponge Iron) can be produced per year.

x

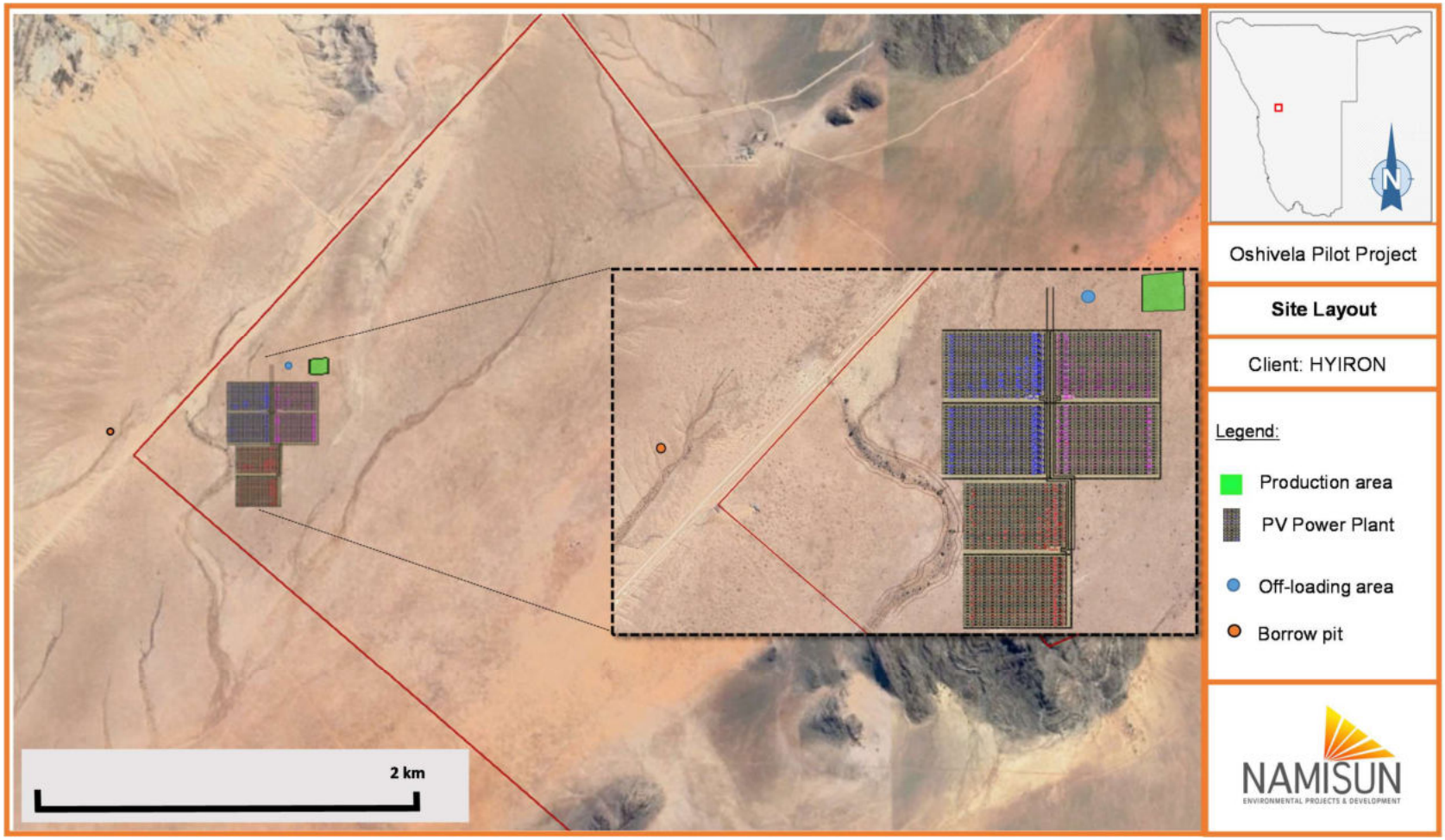

FIGURE 2: PROPOSED LAYOUT OF THE OSHIVELA PILOT PROJECT (REF: GOOGLE EARTH)

3.1 Sources of Iron ore concentrate and transportation of the Iron ore concentrate to site

During the pilot phase, 27 000 tons of iron ore concentrate will be required per annum. HyIron plans to obtain iron ore concentrate from various sources / suppliers, both locally (i.e. from within Namibian borders) and internationally for processing at their pilot plant. HyIron has received a lot of international attention with a number of countries already expressing keen interest to test their iron ores at the Oshivela plant to assess their potentials for the industrial transition towards zero emission productions. Some of these countries include Brazil, Urugay, Canada, Australia and South Africa (amongst others). While it is part of HyIron´s objectives to scale the technology worldwide and proof the potential of different countries at the Oshivela Pilot Project in Namibia, it is the medium- and long- term objective to use the majority of local (i.e. Namibian) iron ores.

HyIron estimates that ~ 2.5 truck trips (on average) will be required daily to transport the iron ore concentrate to the Project Site. The trucks will follow an existing access road (i.e. the Norasa Uranium Project private access road) from the B2 Road. Other options for access to the Project Site are also being considered by HyIron, depending on the supplier. The options include the following:

Iron ore concentrate that will be sourced from international suppliers will likely be brought in by shipping vessels through the port of Walvis Bay. From Walvis Bay trucks will transport the iron ore concentrate via the existing road network along the D1984 (i.e. road behind the dunes (i.e. east of the dunes) and the B2. Another option for the transport of the ore to site is following a route along the C28 road turning north onto the 'Welwitschia Drive' and then the D1914. This route cuts through the NNNP in a north-easterly direction.

Iron ore sourced from within Namibia (i.e. Khomas Region or possible Erongo, Otjozondjupa or Kunene Region) would either be transported by rail[3] to Arandis from where it will be loaded onto trucks for transporting to site; or trucks following the existing road network, including the B2.

HyIron is also investigating the possibility to use tractors for the hauling of the ore along the Norasa Uranium Project access road. The ore would then be transferred from the truck to a tractor with a wagon in a dedicated area next to the access road.

A maximum of ~ 3 000 m^3 ore concentrate will be stockpiled near the furnace (Refer to Figure 2). The ore concentrate delivered to site will be dry, fine grained (< 2mm) iron ore.

[3] Details regarding the rail transport option(s) still need to be further developed by HyIron, in consultation with relevant stakeholders.

3.2 *Processing / Beneficiation*

Depending on the purity of the ore, HyIron might need to mill the ore, either after or before the reduction process. Milling of the ore would entail the breaking and milling into finer grain sizes with the objective to further separate 'waste material' from the Fe. Due to the changed physical attributes of the "sponge iron", comparably little pressure would be required, therefore, only small scaled machinery would be necessary - should this process step be necessary. This would be done inside the warehouse. The ore will be further concentrated by means of a gravity and magnetic separation process.

The potential 'waste material' (i.e. the 'non-iron bearing material') would consist almost exclusively of silica (i.e. sand). Depending on the input quality of the iron ore, a maximum volume of 1,000 to 2,000 tons of this silica material will be produced per year.

The (milled) iron ore concentrate will be transported, using a front-end loader, to a specialised industrial furnace, where hydrogen produced on-site (see below) is also introduced. In this airtight furnace, the Hydrogen reacts with the Oxygen contained in the Iron Oxide (Iron ore concentrate as Fe_2O_4 or Fe_3O_4). The following reaction is taking place:

$$3H_2 + Fe_2O_3 = 2Fe + 3H_2O$$

As a result, an Iron product (i.e. "sponge iron") of between 90 and 99 % purity is produced. No chemicals are required in the process.

This sponge-iron is produced in the furnace, generating net zero CO_2 emissions and has 30% less weight than iron ore. A by-product from the furnace would be water, which would be recycled for hydrogen production. The rotary kiln for Iron reduction and the hydrogen processing as well as the briquetting will be covered in a steel structure with shade netting.

The entire processing facility will cover an area of maximum 10,000 m^2. The maximum height of the facilities will be ~ 15 m.

Figure 3 illustrates the processing of sponge iron envisaged by HyIron.

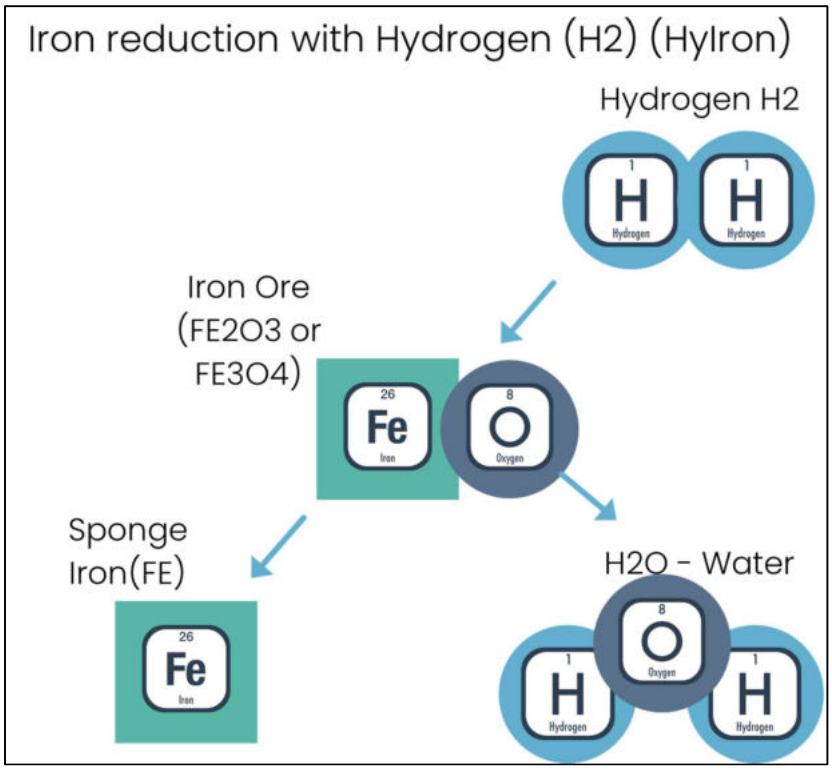

FIGURE 3: PROCESSING SPONGE IRON

A by-product from the furnace would be water (H_2O), which would be recycled for hydrogen production. The process plant for the pilot phase includes the following key infrastructure:

- Steel structure with shade netting for the shaft furnace for Iron reduction and the hydrogen processing as well as the briquetting.
- Water Electrolysis building, which will cover an area of ~ 1 000 m^2.
- Another warehouse (i.e. ~ 500 m^2 area) will be constructed adjacent to the process plant, which will include ablutions, offices, staff kitchen and a meeting room.

The final product – Sponge Iron – will be transported to Walvis Bay for export. Approximately 2 truck trips would be required from site to Walvis Bay daily for the transportation of the ~ 15 000 tons Sponge Iron per annum, following a similar route for the transport of the Iron ore concentrate.

3.3 Hydrogen Production and Water Cycle

Renewable energy will be produced onsite. This energy will also be used to split water into hydrogen and oxygen by means of electrolysis (see Figure 4). During electrolysis water molecules (H_2O) are broken down into oxygen (O_2) and hydrogen (H_2) and in the reaction of the hydrogen

with the oxygen of the iron ore concentrate (which could be Fe_2O_3 or Fe_3O_4), water is again produced.

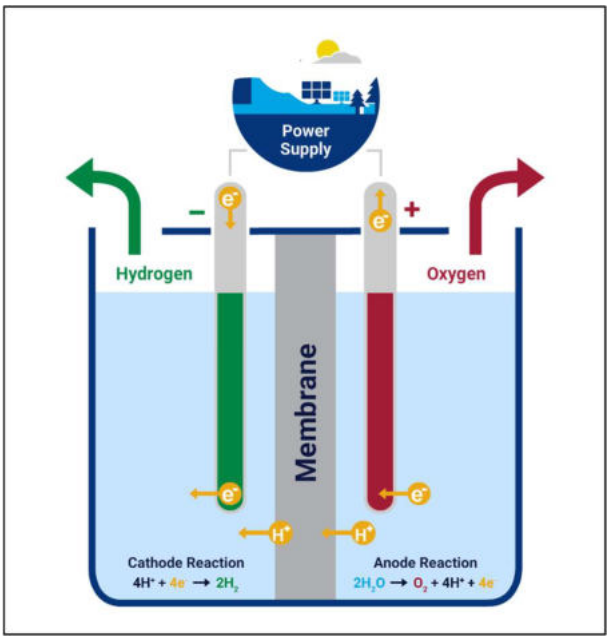

FIGURE 4: ELECTROLYSIS PROCESSING TO PRODUCE HYDROGEN

Therefore, even though water is split into hydrogen and oxygen in the electrolysis process, there is limited water use in the overall process because water will be recycled. Figure 5 illustrates the water cycle proposed by Hylron. In addition to the water formed during reduction, only small volumes of water (less than ~ 15 m^3 / week) will be required to make up process losses.

In addition, some low-quality water will be required for dust suppression on the roads around the plant, which could either be untreated borehole water or brine from the reverse osmosis (RO) plant, or a mix of these two sources.

A maximum of ~40 m^3 water would be required on average per week (i.e. ~ 2,000 m^3 / annum) during the pilot phase, which includes potable water use. The water will be supplied by abstracting from an existing borehole(s) (i.e. groundwater) on site that will either be conveyed through a pipeline between the borehole(s) and the site or transported with a water bowser. A water storage tank with a size of 40 m^3 would be required on site.

A small reverse osmosis (RO) desalination plant will be set up to produce pure demineralised water for hydrogen production and for mixing with untreated water to produce less mineralised drinking water.

3.4 *Power Supply*

The proposed project will receive its power exclusively from renewable energy sources, i.e. PV power onsite. No grid power will be required onsite and therefore no transmission lines will be installed. All cabling will be underground or on the ground, and electric installations will be bundled in the main process area. PV power is generated by converting solar radiation into direct current electricity. This is done by using semiconductors that exhibit the photovoltaic effect. The photovoltaic effect is the generation of voltage and electric current in a material upon exposure to light. Photovoltaic power generation uses solar panels composed of several solar cells connected in series containing a photovoltaic material (see Figure 5).

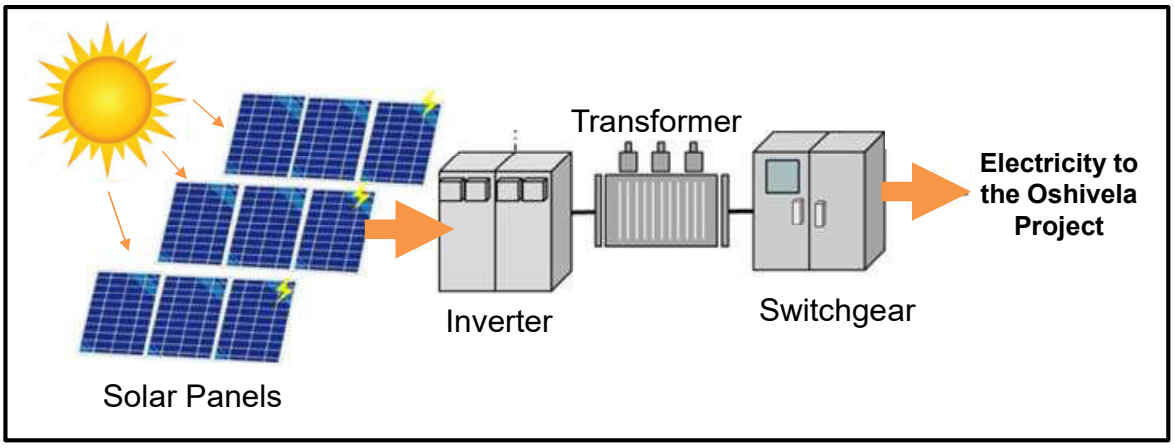

FIGURE 5: DIAGRAMMATIC ILLUSTRATION OF A TYPICAL PV POWER PLANT

Hylron proposes to use monocrystalline bi-facial technology for their PV Power Plant. Hylron proposes to install 25 MWp of Solar power. The PV panels are planned to be built in a north-facing alignment at a tilt of 25° and will need a maximum of 30 Ha of space (see Figure 2). The panels will each be ~ 2.3 m high and 1 m wide. A total of 44,000 panels / modulus will be installed. There will be Battery Storage on site to compensate for fluctuations from the PV Power plant, storing comparably small amounts of energy.

3.5 *Associated Support Structures / infrastructure and services*

Within the proposed Project area internal roads, internal power lines, pumps, pipes, water storage, sewage treatment system (septic tank) and other associated infrastructure and services, process and non-process plant buildings, product handling and loading areas, fuel storage facilities, general waste handling and storage facilities, etc. would need to be constructed.

The fuel storage facilities will entail a 10,000 litre above ground tank with the required bunding.

3.6 *Employment and accommodation*

The required staff during operations will be at a maximum ~ 20 people at a time. Up to 50 people will be employed as there will be at least two to three shifts. The staff will be accommodated on the farm(s) belonging to the Hylron group. Accommodation will be provided in already existing fully furnished flats and in newly build flats. On and off times will be organised in blocks to allow family visits and time for entertainment. Some staff might choose accommodation in Arandis or Swakopmund to travel to site for the shifts.

3.7 *Waste Management during operations*

a) Sanitation

Onsite biotreatment plants will be installed on site which will process sewage waste from operations ablutions. Treatment plants will be installed during early stages of the project. The septic tanks will be emptied on a regular basis and the effluent disposed in the plant site treatment plants. Treated effluent water from the treatment plants may be reused onsite for plant road dust suppression.

b) Other waste (hazardous and non-hazardous)

The types of waste that could be generated during operations include hazardous industrial waste, general industrial waste, medical waste from the staff medical station, and domestic waste. Waste will be sorted at source, stored in a manner that there can be no discharge of contamination to the environment and recycled or reused where possible. The remainder will be transported off site to appropriate recycling or disposal facilities (Swakopmund or Walvis Bay for general waste and Walvis Bay for hazardous waste).

c) Mineralised waste

A maximum volume of 1,000 to 2,000 tons of silica material (i.e. waste sand) will be produced per year, which would either be used for road maintenance (i.e. access road) or backfilling of borrow pits (where Forsys potentially use material for the access road maintenance). Any remaining silica material could ultimately be trucked back to the mine (i.e. local supplier of the iron ore concentrate) or used to backfill / rehabilitate the proposed new borrow pit (see below).

3.8 *Construction phase activities and infrastructure*

Construction activities will be undertaken for the process plant, which will be inside a steel structure with shade netting; the adjacent warehouse as well as the associated support structures

/ infrastructure. The following (key) activities are expected to take place during the construction of the above-mentioned facilities:

- Appoint contractors, labours, etc.
- Limited earth moving activities to create flat surfaces.
- Foundation excavations.
- Setting up contractors' laydown areas.
- Maintaining the Norasa Uranium Project access road as and when require – in liaison with Forsys.
- Digging of foundations and trenches.
- Delivery of materials – storage and handling of material such as sand, rock, cement, etc.
- General building / construction activities including, amongst others: mixing of concrete; operation of construction vehicles and machinery; refuelling of machinery; civil, mechanical and electrical works; painting; grinding; welding; etc.
- Handling and storage of hazardous material, including lubricants, paints, gas (welding), cement, chemical additives for cement, diesel and petrol.
- Handling, storage and disposal of hazardous waste, including empty paint containers, cements bags, chemical additives (for cement) containers, contaminated PPE and other (with oil, etc.).
- Handling, storage and disposal of non-hazardous waste, including steel off-cuts, domestic waste, wood off-cuts, grinding wheels, other construction waste, redundant concrete packaging, e.g. plastic wrapping, styrofoam.

Based on the geotechnical investigations carried out on the site, the uprights for the PV panels can be installed following the methodology described below:

- 'Hammer' holes with a modified excavator / jack hammer for each of the upright structures.
- Auger holes in some parts of the project area for the upright structures.
- Drill holes in some parts of the project area for the upright structures.

Hylron plans to create a relatively small borrow pit on the north-western side of the Norasa Uranium Project Private access road, which is on Portion 4 of Farm Bloemhof 109. The borrow pit will have the following (maximum) dimensions:

- Area: ~2,500 m^2.
- Depth: ~2 m.

The borrow material will be used for road maintenance / construction (i.e. onsite access road).

During construction there will be up to maximum ~ 80 people on site at a time. The core team of the construction workers will be accommodated on the farm(s) belonging to HyIron and neighbouring (guest-) farms. For some of the workers, HyIron will build fixed housing with own kitchens, bathrooms etc. on their farm(s). Day labourers will also be brought in from Arandis and Swakopmund.

4. IDENTIFICATION AND DESCRIPTION OF POTENTIAL ENVIRONMENTAL IMPACTS AND ASSESSMENT FINDINGS

The environmental aspects and potential impacts associated with the development and implementation of the proposed Oshivela Pilot Project were identified during the scoping process, in consultation with I&APs and the project team.

An understanding of the environment and the sensitivity of the site and surroundings is important to ensure the potential impacts of the proposed Pilot Project activities and infrastructure can be identified and then assessed. A general overview of the current baseline conditions associated with the proposed Pilot Project were therefore first established. The following baseline conditions were therefore described in section 6 of the EIA Scoping (including Impact Assessment) Report: Climate; geology; topography and soils; biodiversity; surface water and groundwater; visual / sense of place, land use, surrounding build environment and sensitive receptors; noise; air quality; archaeology; and socio-economic aspects.

A summary of the activities associated with the proposed Oshivela Pilot Project and the associated key environmental aspects and potential impacts that were identified as part of the EIA process are summarised in Table 2 below. The relevance of the potential impacts ("screening") is also presented in Table 2 to determine which aspects / potential impacts needed to be assessed in further detail.

TABLE 2: KEY ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS ASSOCIATED WITH THE PROPOSED OSHIVELA PILOT PROJECT

ACTIVITY / FACILITY	ASPECT	POTENTIAL IMPACT AND RELEVANCE (SCREENING) OF POTENTIAL IMPACT
Construction phase: • Clearing, site preparation, use of earthmoving equipment and machinery. • Establishing of working areas and laydown areas, waste handling facilities and construction staff amenities. • Materials delivery and laydown / storage. • Drilling, excavation. • Establish new infrastructure / facilities, including: Processing plant, access tracks, offices, PV plant, and related infrastructure. *Operations phase*: • Processing. • Operating of solar fields.	Activities disturbing/ destroying **biodiversity** and habitats	In the broadest sense, biodiversity provides value for ecosystem functionality, aesthetic, spiritual, cultural, and recreational reasons. The development of the process plant and associated activities and infrastructure (including the proposed PV power plant) could cumulatively cause a loss of natural vegetation and could lead to habitat fragmentation and degradation. Various important species and sensitive habitats have been identified. Furthermore, the habitats of animal life and ecosystems may be impacted in a negative manner as a result of construction and operational activities. The natural movement of animals in the Project area and beyond, taking the movement of animals in the wider landscape into consideration, can be disturbed as a result of the processing facilities as well as the PV panels. Due to the overall project layout, specifically because of the proposed PV power plant the potential impacts on biodiversity have been assessed as part of this EIA process. The potential impacts on biodiversity (physical impacts and general disturbance), therefore include: • Loss of vegetation and associated biota due to construction activities. • Impact on animal movement. • Change of habitat. • Spread of alien invasive plants (operational phase). Potential impacts relating to Biodiversity were therefore assessed as part of this EIA process.
	Activities and infrastructure disturbing / killing **Avifauna**	Due to the overall project layout and activities / infrastructure, specifically as a result of the proposed PV power plant the potential impacts on avifauna had to be assessed as part of this EIA process. Potential impacts on avifauna include: • Disturbance of birds during (resulting in avoidance / displacement / barrier effects); this could include road mortalities and/or poaching during construction. • Direct and indirect modification / loss / destruction of bird habitat (resulting in voidance / displacement / barrier effects).

ACTIVITY / FACILITY	ASPECT	POTENTIAL IMPACT AND RELEVANCE (SCREENING) OF POTENTIAL IMPACT
		• Attraction of birds to novel (artificial) habitats and resources; this impact could lead to negative impacts on infrastructure, caused by bird nesting, perching and other activities • Bird collisions with infrastructure such as solar panel arrays and other associated infrastructure.
	Clearing of **topsoil** and spillages that pollute soil	Potential impacts on soil include: • Pollution because of leakages and spills. • Loss of soil due to disturbance and erosion. Topsoil (and subsoil) will be disturbed during the construction phase when the footprint areas for surface infrastructure will be stripped (i.e. processing facilities). Topsoil could further be impacted through accidental spills of hydrocarbon, paint, etc., movement of vehicles and machinery which could result in a loss of topsoil through contamination, erosion and compaction. Potential impacts on soil are cumulative considered as part of the surface water and groundwater and biodiversity assessments. Measures relating to topsoil management are included in the EMP (Appendix G).
	Infrastructure contributing to the overall **visual** impacts	Negative visual (and sense of place) impacts are expected because of the visual intrusion by the proposed infrastructure. Visual impacts on this receiving environment may be caused by activities and infrastructure during both construction and operational phases. Potential visual impacts therefore include: • General visual impacts and sense of place. The potential visual (and sense of place) impacts were therefore assessed as part of this EIA process.
	PV Power Plant infrastructure causing **glint and glare**	Glint and Glare – Arandis Aerodrome There is a general concern for the potential of PV glare in aerodrome environments. Part 139.01.13 of the Namibia Civil Aviation Regulations (NAMCARs) of 2001, as amended in 2018, and the Namibia Civil Aviation Technical Standards – Aerodromes and Heliports (NAMCATS -AH), stipulates the requirements for lights that may endanger the safety of aircraft. Therefore, a glint and glare assessment are required prior to the construction of a Solar PV Plant, where relevant.

ACTIVITY / FACILITY	ASPECT	POTENTIAL IMPACT AND RELEVANCE (SCREENING) OF POTENTIAL IMPACT
		Although, the NCAA has not yet domesticated the technical guidance material for glint and glare assessments, industry best practice is to be adhered to. In this regard, the South African Civil Aviation Authority (SACAA) obstacle notice 3/2020[4] Additional Requirements for Solar Project Applications states that a Glint and Glare Assessment would not be required if the solar PV facility is not within a 3 km radius of the aerodrome (Part 139.01.30 (3). Using the SACAA guideline and the NCAA note suggesting 'industry best practice is to be adhered to', and because the solar PV facility of the proposed Oshivela Pilot Project is ~25 km to the arrays, a glint and glare analysis is not required. It is therefore assumed that the potential for glint and glare caused by the Pilot Project would not influence the operation of the Arandis Aerodrome and no further assessment is required.
	Various spillages that could pollute **groundwater and surface water**.	As a result of the proposed project activities and infrastructure, the potential impacts on groundwater and surface water in the surrounding need to be assessed. The potential impacts that were identified, requiring assessment, based on the proposed overall project activities and infrastructure include the following: • Abstraction of groundwater for the project could deplete the limited stored resources. Neighbouring farmers may think that pumping will lower the regional water table and affect the yield of their boreholes. • Project infrastructure impacting surface water flow / drainage. • Spills from the RO plant and disposal of brine mixed with water treatment chemicals could affect soil and water quality. • Disposal of untreated sewage causes soil and water pollution. • Soil, surface and groundwater pollution from domestic sewage effluent, hydrocarbon spills or improperly managed waste negatively affects the soil, groundwater and surface water quality and could reduce the availability of water resources. The above-mentioned groundwater and surface water impacts were therefore assessed as part of this EIA process.
	Abstraction of groundwater.	
	The infrastructure area (including the process plant and PV panels with all associated infrastructure etc.) causing reduced **storm water flow**.	

[4] **Obstacle Notice 3/2020 (Replacement for 17/11/2017): Additional Requirements for Solar Project Applications**
Kindly note that with immediate effect, A Glint & Glare Assessment will be required as soon as the proposed site is located on the extended runway centreline within the ICAO Annex 14 Approach Surface, Take-Off Climb Surface & Departure Surface, and within 3km radius around an Aerodrome/helistop as per Part 139.01.30 (3).

ACTIVITY / FACILITY	ASPECT	POTENTIAL IMPACT AND RELEVANCE (SCREENING) OF POTENTIAL IMPACT
	Noise and air emissions from various construction activities, vehicles, processing and associated activities	There are a range of construction and operational activities relating to the proposed Oshivela Pilot Project that will generate noise, which could potentially be heard from surrounding areas. The increase in ambient noise levels could cause disturbance or nuisance impacts to sensitive receptors (third parties) or animals. There are also various activities or sources relating to the proposed Project that can pollute the air and cause resultant potential impacts (i.e. nuisance impacts and / or health) on third parties. Pollution sources relating to dust generation include: Land clearing activities, materials handling and stockpiling, wind erosion of stockpiles, disturbed areas and vehicle movement (i.e. transport) along unpaved roads. Sources of gaseous emissions will mainly be from the vehicles. “Sponge-iron” of between 90% and 99% purity is produced with net zero carbon dioxide (CO_2) emissions. In the construction and decommissioning phases these activities are temporary in nature while the operational phase will present more long-term activities. There are a number of farms with homesteads in the area, the closest to the Pilot Project facilities being two houses on Farm Valencia. As a result of the proposed project activities and its location, the potential noise disturbance to third parties and air pollution, dust nuisance and increased risk of health impact to third parties (i.e. closest receptors) need to be assessed. The potential noise and air quality impacts were therefore assessed as part of this EIA process.
	Construction, land clearing; use of machinery, vehicles, equipment, etc. that could damage **archaeological** / heritage sites	The construction activities and movement of vehicles associated with the Oshivela Pilot Project have the potential to encroach upon, disturb, damage or destroy archaeological remains protected under the National Heritage Act (27 of 2004). The proposed Pilot Project Site lies in a part of the Namib Desert which has revealed several important archaeological sites which have provided new insights into the archaeology of the desert. Due to the proposed activities and the overall project layout the potential archaeological impacts were assessed as part of this EIA process. Note: This report presents a Phase 1 assessment of the proposed Oshivela Pilot Project based on previous work in the same area and a site visit to the surrounding area by Dr Kinahan in October 2023. A Phase 2 field survey and assessment is scheduled for January 2024. The results of the Phase 2 field survey will be used to further augment the Final EIA Scoping (including Impact Assessment) Report to be submitted to the relevant Ministries for their review and decision-making of the ECC Application.

ACTIVITY / FACILITY	ASPECT	POTENTIAL IMPACT AND RELEVANCE (SCREENING) OF POTENTIAL IMPACT
		In addition, a standard chance find procedure will be developed for the managing of discoveries made in the course of civil works on the Project Site.
Construction phase: • Transport of equipment, building supplies, etc. during construction. • Transport of workers to site during construction. *Operations phase:* • Transport of iron ore concentrate to site and final product to the port of Walvis Bay for shipment to the end client.	Increased **traffic impacts** and impacts on the **road condition**.	Various access routes to the Oshivela site (and other transport options), for the transport of the iron ore concentrate (to site) and the final product (to the Walvis Bay Port) are being considered. Both road and rail[5] options are considered by Hylron. The road option 1, following the B2 and the Norasa Uranium Project Private access road is preferred over road option 2, through the NNNP. This route option requires further agreements between Hylron and the DWNP before this could be considered and the current commitments in the EMP (see Appendix G) might need further actions, depending on conditions set by DWNP. Construction related traffic will follow the B2 and the Norasa Uranium Project Private access road to site. The construction phase is for a limited period of time. The key potential traffic-related impacts are associated with the following: • Road capacity issues. • Road maintenance issue (i.e. road condition), relating to the Norasa Uranium Project Private access road. • Third party (i.e. public) road safety. These traffic-related impacts were qualitatively assessed as part of this EIA process.
General activities, offices and buildings, ablution facilities, domestic waste generation, maintenance activities: • Waste handling, management, recycling and disposal.	**Emissions** to land, impact on **biodiversity**, environmental **degradation**, **visual** and **nuisance** impacts	Waste management practices will be implemented by Hylron. Hylron will further develop waste management procedures. Waste will be separated at source and stored in a manner that there can be no discharge of contamination to the environment. Some waste types will be recycled or reused where possible. Where recycling/re-using is not possible, non-hazardous, non-recyclable waste will be disposed of offsite at the nearest licenced landfill site. Hazardous waste that is non-recyclable will be transported off site to an appropriate disposal facility. The related management and mitigation measures are stipulated in the EMP (refer to Appendix G). No further assessment is required.
Construction activities and general operations:	Employment of people, onsite	A maximum of ~ 80 will be required over the ~ 7 - 8 months construction period and 20 people at a time (i.e. up to 50 employees working on shifts) for the operational phase of the project.

[5] Details regarding the rail transport option(s) still need to be further developed by Hylron, in consultation with relevant stakeholders.

ACTIVITY / FACILITY	ASPECT	POTENTIAL IMPACT AND RELEVANCE (SCREENING) OF POTENTIAL IMPACT
• Employment of people. • Construction workers. • Staff accommodation on site.	accommodation and related **socio-economic** impacts: • Impacts to local, regional and national economy. • Jobs creation and skills development. • In-migration • Impacts to community (i.e. surrounding farmers) health, safety and security.	The proposed Oshivela Pilot Project will therefore bring economic benefits, jobs and new skills to Namibia. With the high unemployment numbers in the region (and country) this will be a positive impact. Operating with a relatively small workforce, it is unlikely to induce negative social impacts such as in-migration and significant additional pressures on government's services such as education and health. The potential positive impacts that were identified, requiring assessment include the following: • Economic impacts during construction and operations. • Job creation and skills development during construction and operations. However, various potential negative social impacts could be associated with the construction workers, permanent employees and the accommodation on Hylron's Farm(s) in the area, as was raised during the public participation process by I&APs. The potential socio-economic impacts were therefore assessed as part of this EIA process.

The issues that were identified as requiring further assessment; and the assessment findings are summarised in Table 3. Some of the issues (based on the assessment findings and issues raised by I&APs) are further described in the sections below.

Management and mitigation measures and monitoring requirements are presented in the EMP.

TABLE 3: SUMMARY OF POTENTIAL IMPACTS ASSOCIATED WITH THE PROPOSED PROJECT (L = LOW; M = MODERATE; H = HIGH)

Potential Impact	Significance	
	Before mitigation	After mitigation
Biodiversity (fauna and flora):		
Loss of vegetation and associated biota due to construction activities	**M**	**L-M**
Disturbance of large mammal movements	**L-M**	**L**
Change of habitat due to the construction and operation of the process plant, solar plant modules and associated infrastructure	**M**	**L-M**
Spread of alien invasive plants (operational phase)	**M**	**L**
Avifauna:		
Physical/human disturbance of birds	**M-H**	**M**
Direct and indirect modification / loss / destruction of bird habitat	**M**	**L-M**
Attraction of birds to novel (artificial) habitats and resources; this impact could also lead to negative impacts on infrastructure, caused by bird perching, nesting and other activities	**L**	**L**
Bird collisions with infrastructure such as solar panel arrays, fencing and other associated structures	**L**	**L**
Visual:		
General visual impacts and sense of place	**L-M**	**L-M**
Groundwater and Surface Water:		
Biophysical and Social Aspects of Groundwater Abstraction	**L**	**L**
Infrastructure impacting surface water flow / drainage	**L**	**L**
Desalination Plant Operation and Brine Discharge	**L**	**L**
Sewage Disposal	**L**	**L**
Water and Soil Pollution	**M**	**L**
Air Quality:		
Air pollution, dust nuisance and increased risk of health impact to third parties (closest receptors)	**L-M**	**L**
Noise:		
Noise disturbance to third parties (closest sensitive noise receptors)	**L**	**L**

Potential Impact	Significance	
	Before mitigation	After mitigation
Archaeology:		
Damage or destruction of archaeological sites	**L**	**L**
Socio-economic:		
Economic impacts – construction and operational phases	**H+**	**H+**
Job Creation And Skills Development	**H+**	**H+**
Potential negative social impacts associated with the construction workers, permanent employees and the accommodation on Hylron's Farm(s) in the area	**H**	**L**
Traffic related impacts	**H**	**L-M**

4.1 Biodiversity (fauna and flora)

a) Issue: Loss of vegetation and associated biota due to construction activities

The Oshivela Pilot Project will be constructed in mostly undisturbed area on the north-western Section of Portion 4 of Farm Bloemhof 109. The following needs to be taken into consideration in the assessment of potential impacts:

- The process plant with supplementary infrastructure will be constructed with an overall footprint of ~10,000 m^2. Minor change to natural habitats are expected, but no densely vegetated areas on any rocky outcrops / hills or in the drainage lines or other environmentally sensitive areas are affected. With reference to Figure 6, the process plant and associated infrastructure is located to the west of the marble outcrop, on the gravel plains with limited vegetation. Similarity, the proposed borrow pit will be located on the gravel plains, outside the more distinct drainage line (i.e. shallow wash) with small tributaries that drains southwest towards the Khan River.
- The PV power plant (i.e. solar panels and associated infrastructure) will eventually require a relatively large area, but the solar modules do not entirely sterilise the ground. Vegetation and associated fauna can thrive in between the structures. Some vegetation would need to be cleared, some natural area will be affected and natural processes therefore altered. The PV power plant will largely be constructed on the gravel plains, except for a small section of the panels overlapping the marble outcrop extension (with very vegetating) (see Figure 6).

- Construction workers inadvertently disturb vegetation and sensitive habitats. Without controls, people will not avoid sensitive areas and more vegetation may be cleared than necessary.
- There is an existing access track to the site, within the farm boundaries, however, this track will require upgrading. The traffic volumes are expected to be low and no conventional haul road is necessary. Without controls people will not avoid all sensitive areas.
- Artificial lighting attracts night-active animals and may result in their death by collision with vehicles or lighting fixtures. However, the Pilot phase of the Oshivela Project, will be operational solely in daytime. A few lights will however be installed for security purposes and for unscheduled services on the machines, which would be comparable to lights of existing households in the area.
- Noise may drive animals away thus changing their behaviour and possibly keeping them away from established den, roosting and nesting sites, this will affect all animals inhabiting the area and may lead to animals avoiding the Project area, or a reduction in population numbers where avoidance is not possible.

Taking all of the above into consideration, the cumulative impact intensity is rated as moderate in the unmitigated scenario. With mitigation, the intensity is rated as low to moderate as natural processes remain altered in some areas.

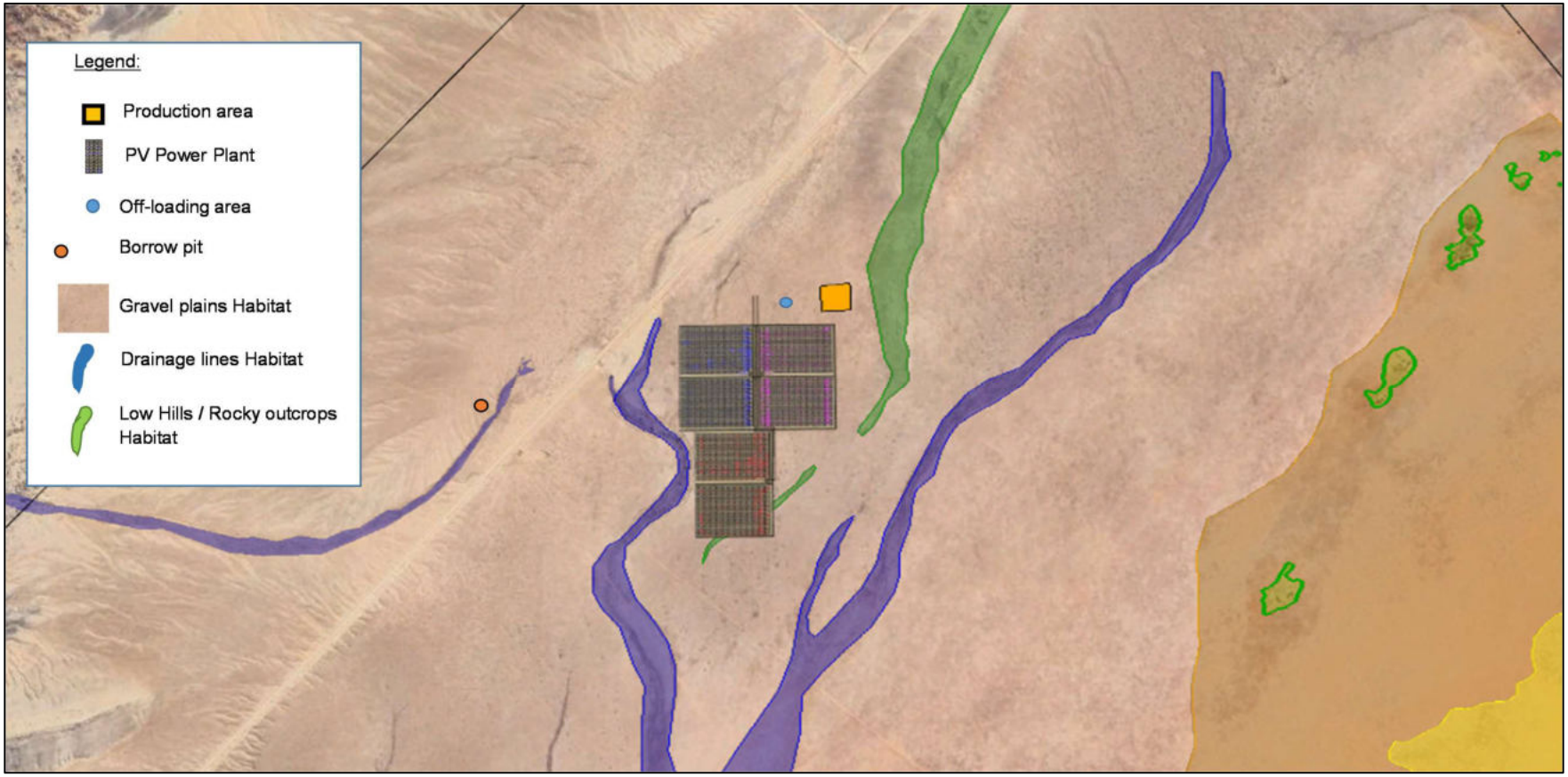

FIGURE 6: OSHIVELA PILOT PROJECT LAYOUT IN RELATION TO NATURAL HABITATS

b) Issue: Disturbance of large mammal movements

The proposed Pilot Project area is located within a fenced farm from which big mammals are largely absents due to the persistent drought of the last years. However, large mammals periodically frequent the area and more animals could be attracted after rains. They could be disturbed along their customary routes by traffic on the access roads, the construction activities, and maintenance inspections of the solar panels as well as the activities near the operational area of the process plant. Regular animal movements are, however, currently limited and only expected during exceptional vegetation seasons. Also, large animals would still be able to move freely around the proposed infrastructure.

c) Issue: Change of habitat due to the construction and operation of the process plant, solar plant modules and associated infrastructure

The process plant with supplementary infrastructure will be constructed on the least sensitive habitat, i.e. gravel plains and will have a relatively small footprint compared to remaining similar habitat in the region. The solar modules are above-ground and will thus not sterilise the soil. However shading by the panels will alter the natural habitat. The effects on biodiversity are unknown at present and could be negative (e.g. less light for photosynthesis) as well as positive (e.g. run-off from panels, shaded habitat). If the main drainage lines are avoided for the position of infrastructure, no major alteration of water flow is expected. With reference to Figure 6, the more distinct drainage line (i.e. shallow wash) with small tributaries that drains southwest towards the Khan River is well outside the PV Project area. The proposed borrow pit will also be outside of the wash on the western side of the access road. The two more distinct drainage lines on the site where the Process plant and PV power plant are planned will be kept open. Also, the outcrops and hills habitats are largely avoided. Only a small section of the panels will overlap the marble outcrop extension (see Figure 6). The impact intensity is rated as moderate in the unmitigated scenario as some natural areas would be affected and natural processes altered, but whether positive or negative with regards the habitat affected by the installation if the solar modules cannot be determined presently.

d) Issue: Spread of alien invasive plants (operational phase)

Invasive alien plants can establish near artificial water sources such as the desalination plant, water tanks and sewage plant. The most likely candidates in this area are Mexican poppy *Argemone mexicana*, thorn apple *Datura* species, mesquite *Prosopis* species, wild tobacco *Nicotiana glauca* and castor oil *Ricinus communis*. The intensity of impacts is rated high in the unmitigated scenario as Natural processes could be altered, because indigenous vegetation is

suppressed or replaced, for example Prosopis species use more water than indigenous trees and thus deprive vegetation nearby of water. With mitigation the intensity is low.

4.2 Avifauna

a) Issue: Physical/human disturbance of birds (resulting in avoidance/displacement/barrier effects); this could include road mortalities and/or poaching during construction

Physical / human disturbance from solar developments can potentially impact on birds during both the construction and operational phases, thereby affecting the presence or foraging and/or breeding success of key species. During the construction phase, vehicle and human activity on the site is at a peak, with high levels of disturbance. Further forms of disturbance include road mortality and poaching of birds (and of eggs). Once operational, the amount of disturbance should decrease to some extent (although not cease). The results of disturbance may be indirect or direct. The proposed development area is relatively undisturbed, except for some geotechnical investigatory work undertaken by Hylron and their technical Team. The intensity of potential impacts is rated as moderate as disturbance may cause displacement and barrier effects; birds may leave the study site and surrounding areas, either temporarily or permanently; in some cases disturbance may result in decreased breeding success; individuals affected but not populations.

b) Issue: Direct and indirect modification / loss / destruction of bird habitat (resulting in avoidance/displacement/barrier effects)

Solar developments can potentially affect birds by destroying or degrading large areas of habitat, thereby displacing sensitive species. In many cases, PV facilities have involved the complete removal of vegetation from the inclusive footprint of the installed plant. It is this tendency to destroy, degrade, fragment or otherwise displace birds from large areas of natural habitat that has stimulated most concern to date about the implications for avifauna of large-scale solar PV development, particularly in relation to species with restricted ranges and very specific habitat requirements. Habitat loss may also occur through off-road driving (e.g. in sensitive wash areas or the rocky outcrop / hills) during construction. Such habitat loss is usually permanent. Indirect habitat loss (and consequent displacement) may also occur, because the habitat used by birds is exploited or changed in a way that makes it less attractive to them, or (due to barrier effects) the birds avoid the area near the development, resulting in lower densities locally. A large concentration of solar plant developments may also lead to increased levels of fragmentation and barrier effects to terrestrial species, particularly if the sites are fenced. This would apply to species such as Common Ostrich, and possibly Rüppell's Korhaan, in the present study.

It must however be noted that there is already an existing farm boundary fence and it is unlikely that other fences are planned around the PV power plant. Also HyIron will not completely clear the area underneath the panels. Hill/outcrop habitats in the area are sensitive for several priority bird species, including Ludwig's Bustard (for roosting and display areas) and Rüppell's Korhaan; and for Stark's Lark. These habitats are limited in the study area, and birds displaced by such habitat loss would not be accommodated easily in the existing, remaining outcrop habitats, especially where territorialism is involved. Any removal or disturbance of natural vegetation will result in a change to the habitat available to the birds in the area, potentially impacting on their ability to breed, forage and roost in the vicinity. The sparsely vegetated drainage lines in the study area are limited, and particularly vulnerable to habitat destruction.

4.3 Visual impacts

a) Issue: General visual impacts and sense of place

The nature and intensity of visual impacts is determined by assessing the change to the visual landscape as a result of the proposed new Pilot Project with its related infrastructure and activities. The (existing) visual landscape is determined by considering: landscape character, sense of place, aesthetic value, sensitivity of the visual resource and sensitive views. The landscape is rated as sensitive to change in general and when viewed from the perspective of a land owner or their guests / visitors, the natural landscape is associated with a serene and tranquil sense of place. The area in which the proposed Pilot Project is situated is therefore considered to have a significant visual landscape. When considering the potential change to the visual landscape the key issues are: visual exposure, visual intrusion, and sensitivity of receptors. Each of these issues is discussed below. The main visual receptors and sensitive viewers of the Project would be:

- Two residential homesteads on the Farm Valencia. The one house is located ~ 2.6 km north-east of the Pilot Project site and the second house is located ~ 6 km north-east of the site, along the edge of the sand dune. It must however be noted that this homestead is on the north-eastern side of an outcrop (hill) and the site will not be visible from this house.
- The house on the Farm Namibplaas west located ~ 9.5 km north-east of the Pilot Project site. It must however be noted that this homestead is on the north-eastern side of an outcrop (hill) and the site will not be visible from this house.

- Surrounding Farm owners and their guests using the Norasa Uranium Project Access Road. It must however be noted that the Project site would only be visible for a relatively short distance from this road.
- People working at the Norasa Uranium Project or at the farms, travelling along local roads whose attention may be focused on their work or activity and who therefore may be potentially less susceptible to changes in the view.

The other farms' houses are too far away and therefore fall outside the zone of potential influence, also taking the topography of the study area into account.

Visual exposure is the extent to which Project infrastructure and activities will appear in the various views. It follows that the closer the infrastructure and activities, the greater the visual exposure. The study area (i.e. the proposed Oshivela Pilot Project site and surroundings) is characterised by sandy gravel plains that are flat to undulating, occasionally interspersed with isolated ridges, hills (inselbergs) and mountains. Transitions between landforms are often abrupt. Each of the sensitive viewer locations, taking their respective exposure into consideration, are described in more detail below:

- House on the Farm Valencia is located ~ 2.6 km north-east of the Pilot Project site:

  The Pilot Project infrastructure would largely be hidden behind the Marble outcrop. The highest infrastructure at the process plant would be ~15 m, meaning that a small part of the infrastructure would possible be visible above the outcrop area. However at a distance of ~ 2.6 km it would not be clear.

- House on the Farm Valencia located ~ 6 km north-east of the site:

  The Pilot Project infrastructure would completely be hidden behind the hill with red sand dune adjacent (west) to the house. Furthermore, with the house being ~ 6 km from the Project development area, and the topographical features in-between, the visual exposure is relatively small.

- The house on the Farm Namibplaas west located ~ 9.5 km north-east of the Pilot Project site:

  The Pilot Project infrastructure would completely be hidden behind the hills. Furthermore, with the house being ~ 9.5 km from the Project development area, the visual exposure is insignificant.

- Third parties using the Norasa Uranium Project Access Road:

The Pilot Project infrastructure would be visible from the road (as it will be very close to the road). However, the project infrastructure would be visible for only a ~ 2.5 km Section when traveling along the access road (i.e. a very small percentage of the full length of the road from the B2). Also, only a few sensitive viewer receptors (i.e. farm owners and their guests) make use of this access road, as other access roads to the surrounding farms exist.

Visual intrusion is the extent to which the infrastructure and activities will contrast with the visual landscape and can/cannot be absorbed by the landscape. The visual intrusion of the proposed Project is considered to be low to moderate as infrastructure would be absorbed in the landscape at some distance and very few sensitive viewer locations will be affected.

Taken together, the unmitigated cumulative intensity of visual and landscape disturbance is low to moderate, specifically taking the Norasa Uranium Project Access Road, used by some of the surrounding farm owners and their guests into consideration.

4.4 Groundwater and Surface Water

a) Issue: Biophysical and Social Aspects of Groundwater Abstraction

The availability of groundwater is limited by the dry climate, especially the fact that groundwater recharge only takes place in years with exceptionally good rainfall that occur at random intervals, though local sources often refer to an average of every ten years. Individual boreholes may yield considerable volumes of water but the aquifer size is usually limited and the stored reserves could soon be depleted through continuous pumping. The proposed Pilot Project will use the existing borehole (no. 61617) on Farm Bloemhof that lies on the banks of a major drainage line and is recharged through infiltration of rainwater and runoff into the alluvium. As the borehole was in continuous use for farming at the time of the EIA data gathering, it was not possible to conduct a short pump test to assess the borehole yield and water level drawdown, as well as the aquifer size and the extent of the cone of depression.

The available data indicate general groundwater flow directions from north-east to south-west, which means that the neighbouring farms are upstream of this borehole and will not be affected by water abstraction for the project. One sometimes hears the opinion that the cone of depression around a borehole will draw in water from upstream at a higher rate than the normal flow. This only applies in case of a single aquifer, while the boreholes around Bloemhof are situated on widely spaced discrete fractured rock aquifers. Also, contrary to another common misperception, these water sources are topped up by recharge from rainfall and runoff, not by groundwater

flowing in from upstream. Information on the aquifer parameters is not essential because the Pilot Project will use very little water (less than the consumption for sheep farming) .Though the water analyses that were provided showed the quality to be unsuitable for human consumption the previous farm owners reported no health effects 'if one is used to it'. To supply drinking water to the employees at the plant, the borehole water should be mixed with desalinated water so that it meets the Namibian Group B water quality standard as a minimum.

A potential negative impact on the groundwater resources at Bloemhof can be expected but it is very unlikely that it will spread beyond the borders of the farm and affect other users. The physical intensity of the impact will be low, even if the water table is drawn down, because once the previous sheep farming has ended, there are few other uses for the water on the farm and hardly any negative effects on the biophysical environment, e. g. trees drawing water from the aquifer. The naturally brackish water does not have any economic value apart from the potential utilisation in project operations. Effects of pumping on the local groundwater on the farm may arise within a short time and persist in the medium- to long-term as groundwater recharge is a highly localized and rare event. Neighbours and other stakeholders may however perceive water as a sensitive issue and ask the company to demonstrate the low impact beyond doubt during the EIA process through monitoring.

b) Issue: Water and Soil Pollution

Pollution due to careless waste management and hydrocarbon spills is one of the main environmental risks experienced at all industrial sites. It requires continuous management and awareness training. Hydrocarbons will be present in vehicles (diesel, oil) and a fuel storage tank.

Waste types at the Pilot Project may include domestic waste, general and hazardous industrial waste and medical waste from the first aid station. Waste will be sorted and transported off site to appropriate recycling or landfill facilities (Swakopmund for general waste and Walvis Bay for hazardous waste). Prior to removal, it will be stored on site in suitable containers to prevent littering and contamination of the environment.

The impact intensity is expected to be moderate in the worst case because hydrocarbon spills can easily pollute surface water and soil and even seep down to the water table, though this is unlikely under the local circumstances. The risk of hydrocarbon spills will be present for the duration of the project, but potential spills will only affect a very small area.

4.5 Air Quality

a) Issue: Air pollution, dust nuisance and increased risk of health impact to third parties (closest receptors)

During the operational phase, sources of air pollution are likely to include:

- Vehicle entrained dust from unpaved roads because of trucks transporting materials to, from, and on-site including iron ore concentrate, waste (silica), and sponge iron.
- Windblown dust from the iron ore concentrate stockpile.
- Dust from on-site handling and transfer of materials to various processing and beneficiation steps and unloading/loading of trucks, including.
- Exhaust emissions from haul trucks, and mobile diesel equipment such as front-end loaders. Exhaust emissions from trucks and mobile equipment will include e.g. nitrogen oxides (NOx), fine PM, sulphur dioxide (SO_2), unburned hydrocarbons, carbon monoxide (CO), carbon dioxide (CO_2), and volatile organic compounds (VOC).

The milling and separation of concentrate and briquetting (if applicable) are generally high moisture processes with little to no fugitive dust emissions expected. Emissions from the PV plant will be mostly limited to the construction phase.

Fugitive dust emissions, or particulate matter (PM), comprise a mixture of organic and inorganic substances, ranging in size and shape and can be divided into coarse and fine particulate matter. Total Suspended Particulates (TSP) represents the coarse fraction greater than 10 µm, with particulate matter with an aerodynamic diameter of less than 10 µm (PM_{10}) and particulate matter with an aerodynamic diameter of less than 2.5 µm ($PM_{2.5}$) falling into the finer inhalable fraction. TSP is associated with dust fallout (nuisance dust) whereas exposure to PM_{10} and $PM_{2.5}$ are a health concern. The project's technology, activities, and scale of operations are such that, while it will contribute to the atmospheric load of particulate matter and gases in the area during the operational phase, its impact is anticipated to be localized and within acceptable air quality standards off-site and at sensitive receptors. This is contingent upon the effective management of dust from especially unpaved haul routes and other fugitive emission sources.

4.6 Noise

a) Issue: Noise disturbance to third parties (closest sensitive noise receptors)

Noise levels as a result of sources associated with operational phase of the Shiyela Project were conservatively estimated by assuming simple hemispherical propagation (i.e. source close to

ground level). Applying these noise sources to the Oshivela Pilot Project make it even more conservative, due to a smaller scale Project and less activities planned (for Oshivela).

The calculation does not account for atmospheric noise attenuation, meteorological, ground absorption and other mitigating effects. Expected (worst case) noise levels as a function of distance from specific operational activities are presented in Figure 7. During the operational phase, noise emitted will reduce to levels comparable to those found in rural areas within 1 km from the source during the day. Night time levels were not taken into consideration, due to the fact that the Pilot Phase activities will only be conducted during the day. The IFC noise level guidelines of 55 dBA and 45 dBA will be met within 400 m from the source.

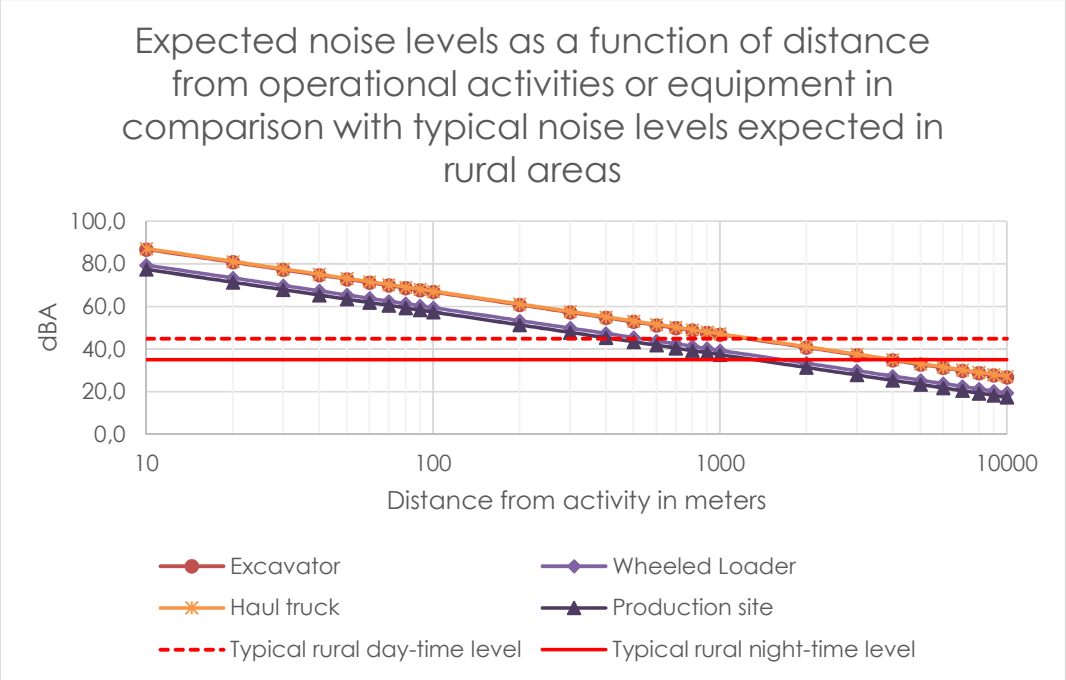

FIGURE 7: EXPECTED NOISE LEVELS AS A FUNCTION OF DISTANCE FROM OPERATIONAL AREAS OR EQUIPMENT IN COMPARISON WITH TYPICAL NOISE LEVELS EXPECTED IN RURAL AREAS

The noise impact of operational phase activities is presented in Figure 8. Reference is made to the 3 dBA increase guideline by the IFC for human receptors. On average operational phase activities and equipment will result an increase of 3 dBA over residual noise levels up to 850 m from the source during the day. Night time values are also reflected in the figure below, however, the Pilot Phase activities will only be conducted during the day.

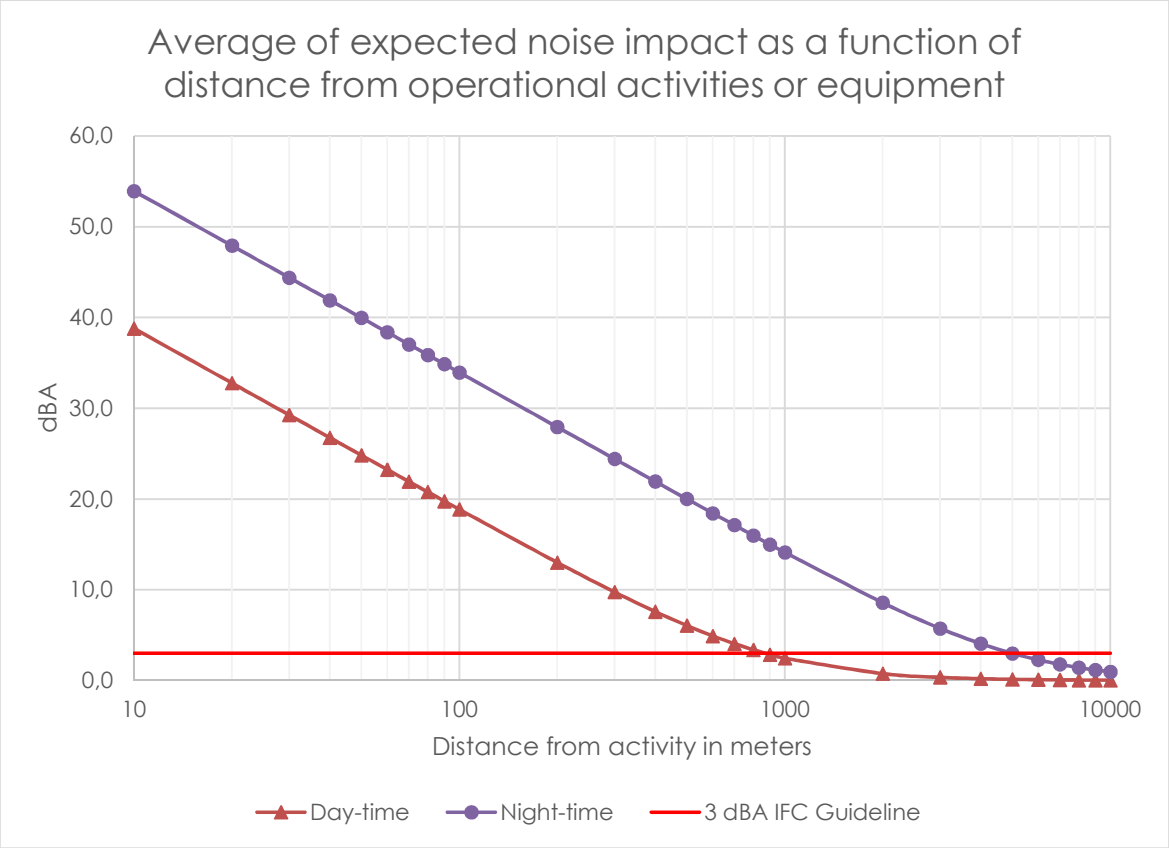

FIGURE 8: AVERAGE OF EXPECTED NOISE IMPACT AS A FUNCTION OF DISTANCE FROM OPERATIONAL ACTIVITIES OR EQUIPMENT

Taking all of the above into consideration, as well as the fact that the Pilot Project will be developed to the west and south-west of a marble outcrop, which will form a natural screen (i.e. noise barrier) between the Project activities and the closest noise sensitive receptor, the impact intensity for the operations phase is rated as low.

4.7 Socio-economic impacts

a) Issue: Economic impacts; Job Creation and Skills Development

Given the scale of the capital investment, the operating costs, and assuming an acceptable private rate of return, it can be crudely calculated that the positive financial net present value of the project is significant. Direct economic benefits will include the sale of sponge iron, the wages and salaries of the ~ 80 construction workers and up to ~ 50 persons employed during operations, the taxes paid, and profits earned. Indirect economic benefits are derived from the goods and services used to construct and operate project's components. Further induced economic benefits will result from the spending power of the construction and operations workforce, especially when

wages are used to buy Namibian goods and services. Government will gain revenue from royalties, corporate taxes, from the employees, and from those up and down the supply chain who will pay personal income tax and Value Added Tax (VAT) on goods and services they purchase. To conclude, the project will generate new and positive contributions to national income and employment during construction and operations, and these positive impacts are rated high in terms of intensity.

The proposed Shiyela Iron Project will create about 80 medium term construction jobs and up to 50 permanent jobs. It will also build skills in maintaining renewable energy power plants and for metal workers and machine operators. The positive nature and intensity is high.

b) Issue: Potential negative social impacts associated with the construction workers, permanent employees and the accommodation on HyIron's Farm(s) in the area

Community health, safety and security are issues of concern with the neighbouring community (i.e. surrounding farms) due to the workers at the proposed Pilot Project, as well as the staff that will be accommodated on the farm(s) belonging to HyIron, likely near the proposed project site. The presence of the Pilot Project, with associated construction workers and employees (during operations) could lead to an increase in crime such as theft, poaching, prostitution and rape, drug dealing and HIV among farmworkers. These issues were also raised as concerns by the neighbouring farmers. The higher risk stems from an increase in strangers coming into the area, who are off duty for 15 hours/day/night and their friends/relatives wanting to visit them.

The Oshivela Pilot Project is, a relatively small scale operation with relatively small numbers of people (both construction and operation). The Project Site is far away from any town / village and not easily accessible, i.e. a permanently locked gate is installed on the Norasa Uranium Project private access road from the B2 Road (south of the Kahn River) and access from other directions are though various farms mostly with locked gates. Therefore, on the inward migration would likely not occur. Taking all the above mentioned into consideration, the intensity is therefore high in the unmitigated scenario but can be reduced to low with the implementation of proper management measures.

c) Issue: Traffic related impacts

Impacts because of traffic could occur during the construction and operational phases when Project-related trucks, busses and private vehicles make use of the private and public transport network in and adjacent to the Pilot Project site. The key potential traffic-related impacts are associated with road capacity and third party (i.e. public) road safety. Another associated issue

relates to the road maintenance issue (i.e. road condition) of to the Norasa Uranium Project Private access road. The proposed increase in traffic from the Oshivela Pilot Project has the potential to add to the above mentioned issues and lead to additional road accidents. The Pilot Project's contribution to the overall increase in traffic numbers and associated road capacity issues (i.e. cumulative) is however small compared the existing traffic on the B2, specifically during the operations phase. The C28 road is not frequently used by tourists and locals and the D1984, which was recently upgraded to a double lane road with various significant bridges, etc. means that the increase in road traffic (i.e. Pilot Project's contribution) should not significantly affect the capacity of these roads.

The additional Project traffic making use of the Norasa Uranium Project Private access road will likely deteriorate the road condition, which could cause safety impacts to third parties using this road. Trucks making using of the route through the NNNP will drive (amongst others along the Welwitschia drive) which will have negative impacts on tourists driving along this route, for the scenic experience of the park. The Project related traffic could also cause the additional risk of animal killings in the park.

Taking the above mentioned into consideration, in the unmitigated scenario, the potential for injury and death to road users and impacts relating to the route through the NNNP, give this a high intensity. With mitigation, the potential accident rate associated with the Project development and impacts on tourists should be reduced, and therefore the intensity reduces to moderate.

5. WAY FORWARD

The way forward is as follows:

- Distribute the EIA Scoping (including Impact Assessment) Report and a summary thereof for review by I&APs and authorities.
- Receive comments from I&APs and authorities by (latest) 2 February 2024.
- Consider all comments received, update reports (where relevant) and submit the final report to the MME and MEFT.
- MME and MEFT review the documentation and provide record of decision.

6. ENVIRONMENTAL IMPACT STATEMENT AND CONCLUSIONS

It is Namisun's opinion that the environmental aspects and potential impacts relating to the proposed Oshivela Pilot Project activities and the associated facilities have been successfully identified.

The results of this impact assessment present the potential for negative environmental impacts and positive socio-economic benefits that can all be mitigated to acceptable levels, by implementing the EMP.

Furthermore, Namibia should gain international praise for introducing a novel process of producing iron which does not emit carbon dioxide, and which will contribute to reducing the negative socio-economic impacts of climate change.

Taking the above-mentioned into consideration, Namisun believes that all environmental aspects and potential impacts associated with the proposed Oshivela Pilot Project were identified, described and appropriately assessed.

It is recommended that, if MEFT provides a positive decision on the application for the proposed Pilot Project, they should include a condition to the clearance that HyIron must implement all commitments in the EMP.