

**BACKGROUND INFORMATION DOCUMENT (BID) FOR A SATELLITE STATION IN
OKAHANDJA AREA, OTJOZONDJUPA REGION.**

Concordia Space Science and Technology

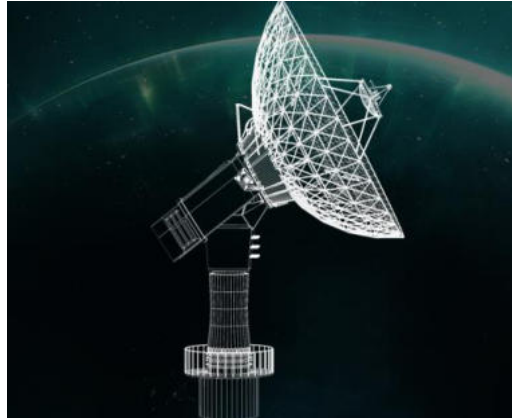


Figure 1: Photo for illustration purposes

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PROJECT DETAILS

TITLE	BACKGROUND INFORMATION DOCUMENT (BID) FOR A SATELLITE STATION IN OKAHANDJA AREA, OTJOZONDJUPA REGION.
REPORT STATUS	BACKGROUND INFORMATION DOCUMENT
CONSULTANTS	TAMIL ENVIRONMENTAL HEALTH AND SAFETY CONSULTANCY CC
ENVIRONMENTAL CONSULTANT NAME AND SIGNATURE	LINEEKELA HAIPINGE
DATE	15 DECEMBER 2025



Acknowledgement

Many thanks to all stakeholders, Interested and Affected Parties and key stakeholders for their corporation and contributions that will shape this environmental study.

ABBREVIATIONS

EIA: Environmental Impact Assessment

EMP: Environmental Management Plan

ESMP: Environmental Scoping & Management Plan

ECC: Environmental Clearance Certificate

ECO: Environmental Control Officer

EO: Environmental Officer

EMA: Environmental Management Act (No. 7 of 2007)

METF: Ministry of Environment, Tourism & Forestry

DEA: Directorate of Environmental Affairs

Purpose of this Document

A Background Information Document is one of the important products of an Environmental Assessment (EA) process that briefly describes the project, the environmental context of the project, the project overview and potential environmental impacts. It also describes the potential issues or concerns raised during the public consultation process. The project elements considered in this study comprise of the construction and operation of the satellite station, the decommissioning phase was not considered and should be dealt with on its own. This scoping report should be read together with the proposed Environmental Management Plan crafted to mitigate the proposed impacts identified in the scoping exercise. It is therefore the responsibility of MEFT and the proponent to ensure that the proposed activity as well as the EMP process conforms to the principles of the EMA and should ensure that any contractors appointed comply thereto EIA Consultants therefore, carried out the EMP process according to the EMA.

Executive Summary

The applicant, Concordia Space Science and Technology, is a wholly Namibian owned company and are planning to set up a satellite station in Okahandja area in Otjozondjupa Region. Construction of telecommunications related infrastructure is a listed activity in the Environmental Management Act of 2007 making it mandatory to conduct an Environmental Impact Assessment and apply for an Environmental Clearance Certificate before implementing the project. Tamil Environmental Health and Safety Consultancy CC an independent consulting company, will conduct the EIA process for the applicant. Comments received during the scoping exercise will be incorporated. The second phase will give rise to the draft environmental scoping and management plan which will be shared with stakeholders for their inputs. The proposed construction and operation of a satellite station can pose potential environmental damage in the form of aesthetic view and visual impacts. The predicted environmental impacts can be managed resulting in minimal or insignificant residual effects through the successful implementation of the proposed Environmental Management Plan. Specific instructions will have to be formulated as part of the EMP.

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1. Introduction

The applicant, Concordia Space Science and Technology, hired Tamil Environmental Health and Safety Consultancy CC, a local company to conduct an EIA for the establishment and operation of ground satellite station. The applicant has strategically partnered with China Jiangsu International Ltd a service provider in for commercial aerospace measurement, operation and control network. And plans to deploy measurement, operation and control equipment in all continents around the globe including Namibia to provide global users with measurement, operation and control services. The plan is to deploy a monitoring and receiver station using the current mainstream civil and commercial satellite application frequency bands, and servicing global customers, providing fast, reliable and safe satellite data transmission, reception and services for the applicant. Concordia Space Science and Technology core services will be centred on:

- Measurement and control services,
- Satellite applications,
- Telecommunication

This document has been drafted according to the Namibian Environmental Management Act (No. 7 of 2007) and its Regulations of (2012) whereby various aspects of the intended development were considered under the listed activities with potential impacts on the environment. Therefore, this development requires authorization and an Environmental Clearance Certificate (ECC) from the Environmental Commissioner (Ministry of Environment, Tourism and Forestry). Applicant appointed Tamil Environmental Health and Safety Consultancy CC, an independent Environmental Assessment Practitioner to the project in fulfilment of the Environmental Management Act 2012. The commitments described here form part of the Environmental Clearance Certificate (ECC) between the applicant and the state, as represented by the Ministry of Environment, Tourism & Forestry (METF). Non-compliance is considered illegal and may have legal consequences. The amendment, transfer or renewal of the ECC should be communicated to the Environmental Commissioner as stipulated in the Environmental Management Act (EMA) of 2007 and its EIA Regulations 2012. Any changes to this EMP will require an amendment to the ECC for these developments.

2. Project Concept and Overview

2.1. What is a Satellite Station?

A telecommunication satellite station, also known as a **satellite ground station**, earth station, or teleport, is a land-based complex of equipment (like antennas and processors) that links satellite networks to terrestrial networks, sending signals up to satellites (uplink) and receiving signals down (downlink) for global communication services like TV, internet, phone, and data.

Key Functions:

- **Data Relay:** Transmits and receives signals to/from satellites, acting as a crucial bridge.
- **Network Hub:** Connects satellite systems with terrestrial networks (fiber, internet).
- **Signal Processing:** Handles data from satellites, providing services like broadcasting, command issuing, and program uploading.

Components & Characteristics:

- **Sophisticated Antennas:** Large dishes designed to send and receive vast amounts of data.
- **Terrestrial Interconnection:** Operates in conjunction with land-based systems (like the internet).
- **Location:** Situated on Earth's surface, often in areas with clear sky views.

How it Works:

1. **Uplink:** Sends signals to a satellite in orbit.
2. **Satellite Relay:** The satellite amplifies and redirects the signal.
3. **Downlink:** The ground station receives the signal from the satellite.
4. **Distribution:** The signal is then routed through terrestrial networks to end-users.

Types of Stations:

- **Fixed Stations:** For geostationary satellites, dishes can be permanently aimed.

3. The Environmental Impact of Satellite Communications

The study takes as a starting point that information and communication technology (ICT) contributes about 2 percent of global carbon emissions. This ICT contribution is predicted to grow to approximately 2.8 percent of global emissions by 2020. The impact from consumer and related peripherals is considered to be about the same.

These consumer devices have a substantial overall impact due to the large volumes of units involved and the shorter product life compared to infrastructure systems. It is that comparison that leads to the assessment that a shift to satellite systems compared to terrestrial would not have much impact on the overall carbon contribution. The dominant impact of Digital Terrain Technology (DTT), according to Researchers, arises from the energy consumption during the operating or use phase. DTT infrastructure has a long service life, which means there is a modest annual contribution to carbon emissions from manufacturing and installation of the infrastructure equipment (transmission equipment, antennas and the like) over the expected life of the system. The satellite sector makes the good point that it uses much less electricity for broadcast transmissions.

Satellites in space use solar energy, while DTT transmission towers rely on terrestrially generated energy to transmit to consumers. Nevertheless, that energy consumption and related carbon emission is only a small part of the picture. By far the main energy consumption connected with the broadcasting sector comes from consumer equipment. Study estimates show that for developed countries such as the U.K. CO₂ emissions from the DTT transmission network represent about 0.01 percent of total U.K. emissions, compared to about 3.54 percent of emissions coming from domestic equipment. Looking at the energy consumption of satellite versus terrestrial equipment does not produce a favorable comparison for the satellite sector. The study maintains that satellite set-top boxes (STBs) and other consumer equipment use substantially more energy than DTT equipment does. Both for operating power consumption and standby power use, satellite STBs compared poorly to DTT equivalents.

The overall conclusion was that the operating power for a terrestrial transmitter network should not be the primary target for energy efficiency because it is so small an element compared to consumer equipment. The power consumption for DTT infrastructure is only about 2 percent of domestic equipment consumption. Moreover, the impact of satellite installation does the satellite sector no favors either, because satellite antenna installation would normally be a more energy intensive matter than self-installation of DTT equipment. The bottom line is that consumer equipment power consumption is the main energy and carbon impact for broadcasting — other life cycle impacts are much less important and satellite broadcasting does not come off so good in the comparison. The conclusion is that there probably is "not an overwhelming environmental advantage of one technology over the other."

4. Project Overview and Planned Activities

Concordia Space Science and Technology, intend to construct and operate a ground satellite station within the Okahandja Area, in Otjozondjupa Region, Namibia. The infrastructure and structures for the proposed project includes but is not limited to inter alia: The project includes the following components:

- Ground station infrastructure: This mainly comprises of a telecommunications antenna for transmitting and receiving radio waves;
- Buildings: operation and maintenance building to house equipment for data processing, a guard cabin for security;
- Electricity lines to tap power from the national grid;
- Water supply lines from the existing facilities to supply domestic water;
- A connection pipe to existing infrastructure for the collection of sewer water from the toilets.

4.1. A detailed overview of construction sequence includes;

Construction of antenna base tower with an equipment room to house air conditioners, wiring cabinets, equipment racks, servers, desktop computers, network devices, UPS systems, batteries, power distribution cabinets, and other related equipment. The equipment room serves as a critical support facility for the backend processing equipment and provides the foundational infrastructure for the system.

China Jiangsu International Namibia Ltd, has a 315KVA converter installed on site, so no additional upgrades or changes required, however we will apply for a dedicated line Installation of the 12-meter antenna on top of the base tower. Installation of high-speed fiber internet connection, a dedicated line to ensure safe and fast data transmission. Basically, this station is designed for monitoring, control and tracking of satellites to ensure their smooth operation, like what Garmin does for fleet control. The ground station antennas are directional antennas, are completely different from the antennas of mobile phone base stations, the later ones are omni antenna. The ground station antennas' working elevation angle is greater than 5 degrees, meaning the antenna beams are always sending to upper atmosphere. The antenna's serving targets are satellites, the orbit height are more than 500 km base station antenna's targets are to cover ground surface, the antenna always pointing to upwards and base station antenna always pointing downwards, since the antennas radio is like a searchlight, we can concentrate energy in a narrow beam, the HPA is no more than 100W, base station antenna's HPA usually much bigger than our HPA.

4.2. Additional Photogenic illustration (Antenna Radio/Search light):



5. Phases of the Project

The process which was followed in compiling this report is in compliance with the Environmental Management Act of (2007) and Environmental Impact Assessment Regulations 2012, and applies the principles of sustainable development. The purpose of is to predict potential impacts and formulate mitigation measures that are made binding on all contractors during the construction phase as well as during the operational phase. The point of departure from the formulation of the EMP is to take a proactive route by addressing potential problems before they occur. This should limit corrective measures needed during the construction and operational phases of the development. Additional mitigation will be included throughout the project's various phases, as required and if necessary. This assessment deals with the following phases as detailed below:

5.1. Planning and Design Phase

This stage offers an ideal opportunity to incorporate proactive environmental management measures with the goal of attaining sustainable development. While there is still the chance of accidental impacts taking place; however, through the incorporation of contingency plans (e.g. as will be proposed in the EMP) during the planning phase, the necessary corrective action can be taken to further limit potential impacts.

5.2. The Construction Phase

The bulk of the impacts during this phase will have immediate effects (e.g. noise, dust and water pollution). If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur. These impacts can then be mitigated through the contingency plans identified in the planning phase, together with a commitment to sound environmental management.

5.3. Operation and Maintenance

By taking proactive measures during the planning and construction phases of the ground satellite station, potential environmental impacts emanating during the operational phase will be minimized. This, in turn, will minimize the risk and reduce the monitoring effort, but it does not make monitoring obsolete. It is therefore a goal of this report to reduce the impact on the immediate and surrounding environment by minimizing environmental harm and preventing environmental incidents:

- Systematically manage environmental risk
- Where practicable eliminate environmental risk, or if not practicable adequately control via application of a hierarchy of risk control measures.
- To comply with requirements of the contract specifications o Legislation prescribed by the relevant Regulatory Authorities (MEFT) and of Namibia Information Communication Technology Policy the need for the Project Modern day decision making requires access and speed processing of data into information for decision making and management across the diverse sectors of the economy. This enhances knowledge & skills transfer as well as employment creation as we try to position ourselves in the regional and world markets. The proposed development will facilitate or enable access to data and / or information for:
 - Environment,
 - Climate change,
 - Urban Planning and Development,
 - Disaster Risk Reduction and Management,

The proposed project is expected to enhance Namibia's development goals in accordance with Vision 2030 (GRN, 2004), NDP5 (GRN, 2017) and Harambee Prosperity Plan (GRN, 2016).

6. Practitioners' Details

1.5.1. Details of Environmental Assessment Practitioner

Concordia Space Science and Technology, appointed Tamil Environmental Health and Safety Consultancy CC, to conduct the EIA for the application of the ECC for the construction ground satellite station in Okahandja area. Tamil Environmental health and Safety Consultancy CC, is a privately owned consultancy company doing various projects in Southern Africa Development Community (SADC) countries. Our core services are:

- Environmental Impact Assessment
- Strategic Environmental Assessment
- Environmental Investigations
- Research and Training
- Feasibility Studies
- Agronomy
- Monitoring and Evaluation
- SHEW services

Tamil Environmental Health and Safety Consultancy CC, draws its experts from regional and international universities and declares that we have no interests in this project and are independent and will act as such during the EIA process as required by the EIA regulations.

The team members who participated in the EIA are presented in Table 1 below.

Table 1: Outrun Team of Experts and their responsibilities in this study.

ORGANIZATION	AREA OF RESPONSIBILITIES/AREA OF EXPERTISE	TEAM MEMBER(S)
Tamil Environmental Health and Safety Consultancy CC	Project management EIA Coordination	Lineekela Haipinge 0858183192
Tamil Environmental Health and Safety Consultancy CC	EIA Process	Lineekela Haipinge 0858183192
Tamil Environmental Health and Safety Consultancy CC	Literature Review and Desk Study	Oskar Angula 0817671370
Tamil Environmental Health and Safety Consultancy CC	Legislation and Policy Review	Lineekela Haipinge 0858183192
Tamil Environmental Health and Safety Consultancy CC	Development of Environmental Management Plan (EMP)	Lineekela Haipinge 0858183192

Tamil Environmental Health and Safety Consultancy CC	Public Consultation, Relation, Marketing and Facilitation	Oskar Angula 0817671370
Concordia Space Science and Technology	Development of the concept and Project design	Rui Gong 0811279916

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