

Antenna Hosting

Technical Overview

Confidential document



pinkmatter
ANTENNA HOSTING



Technical overview

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1. Introduction

We offer antenna hosting services in the southern hemisphere, 40 minutes drive from Johannesburg airport in South Africa. The site is ideally co-located at the *Pinkmatter* head office to ensure smart hands support.

We offer project management from the establishment of your site to operation. We will assist in obtaining regulatory licencing with forwarding and clearing logistics options on offer. Your antenna site will be built according to your specifications with power and high-speed internet access.

The location offers excellent horizon masks with moderate weather conditions, ideal for antenna hosting.



2. Location

The site is located on a farm on the outskirts of the city of Pretoria, South Africa. This quiet, low-density area ensures low RF interference and provides an excellent horizon mask.

Location

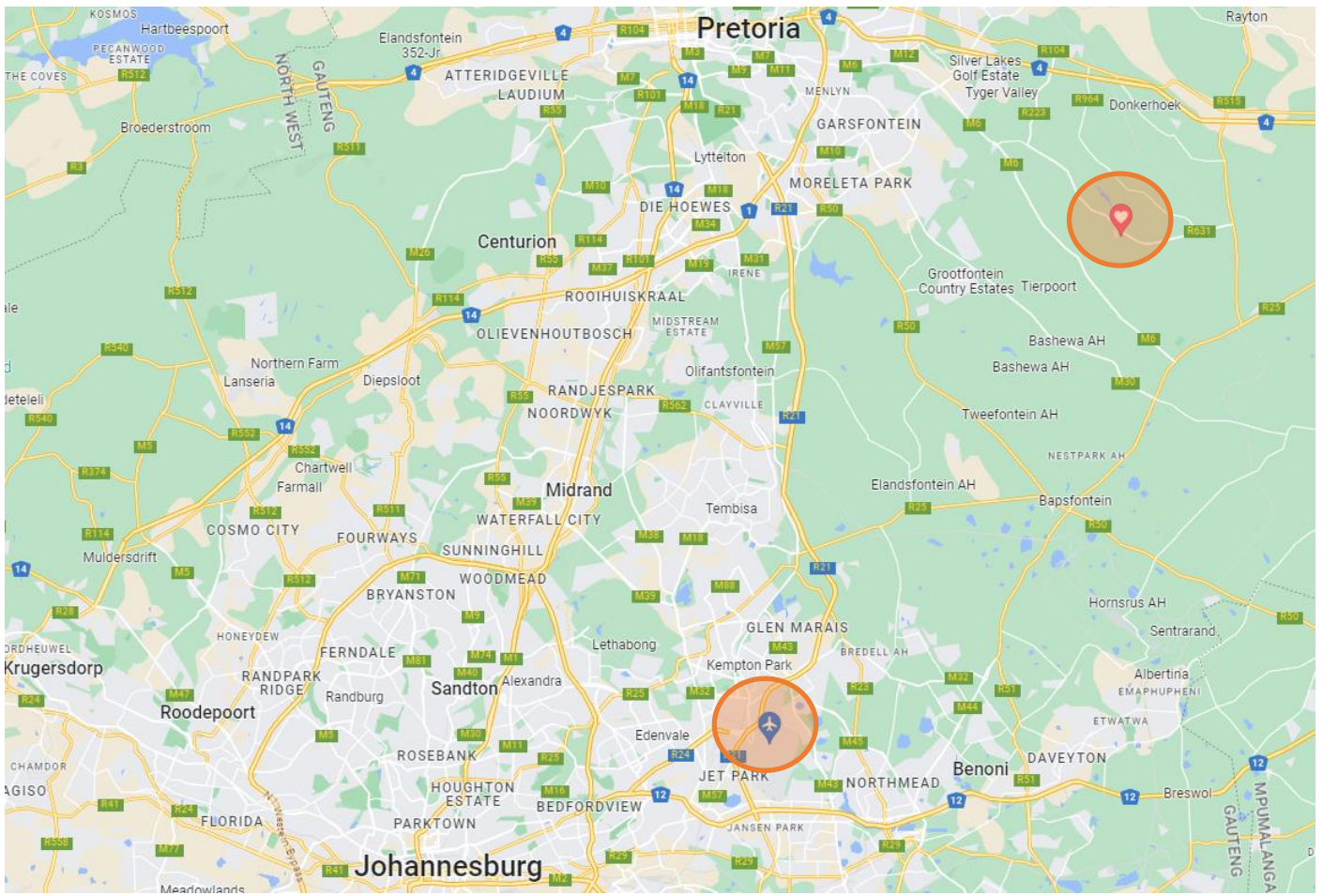
- Boschkop, Pretoria, South Africa
- (25°51'30"S, 28°27'10"E)
- Altitude: 1 350 m





Aerial view of the Pinkmatter hosting site with the office building in the centre of the picture.





Google Maps

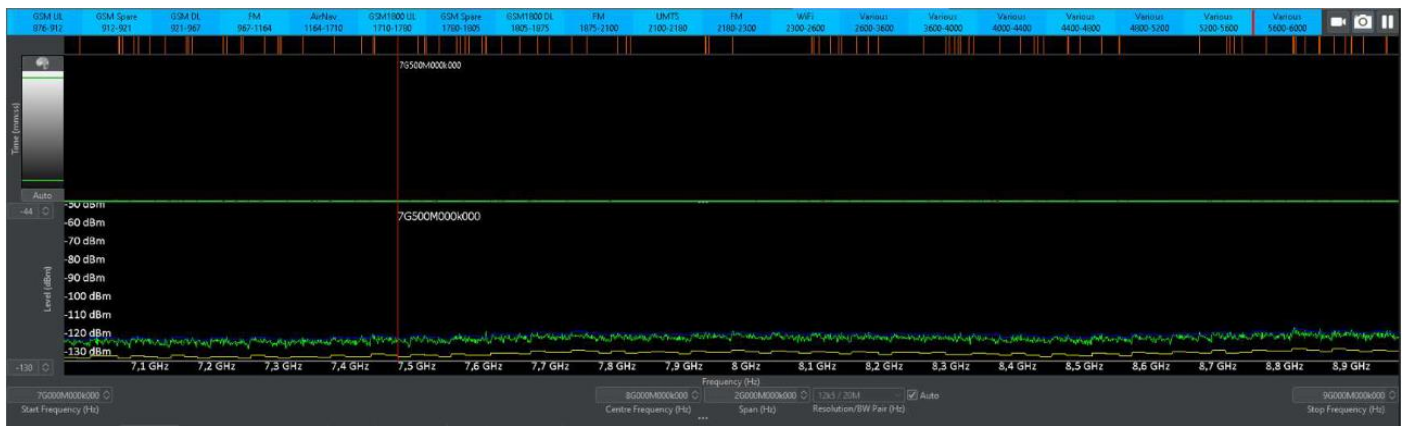
Location	<ul style="list-style-type: none"> • Boschkop, Pretoria, South Africa • (25°51'30"S, 28°27'10"E) • Altitude: 1 350m
Access	<ul style="list-style-type: none"> • OR Tambo International Airport (JNB) • 40 minutes drive by car
Horizon mask	<ul style="list-style-type: none"> • Above 5-degrees
Network connectivity	<ul style="list-style-type: none"> • High-speed internet
Staffing	<ul style="list-style-type: none"> • Staffed on business days • Remote support on all other days
Security	<ul style="list-style-type: none"> • Access control • Fenced • Security patrols • Security cameras at the antenna pad area
Power supply	<ul style="list-style-type: none"> • 50kVA 3-phase utility connection (230VAC per phase @50Hz) • Backup power
Server/equipment room	<ul style="list-style-type: none"> • Shared or dedicated
RF Interference	<ul style="list-style-type: none"> • Low RF interference • Site report available

RF Interference

The topography surrounding *Pinkmatter's* location ensures that the noise floor is low across typical satellite communication bands. RF interference surveys confirm that the sites experience low interference and noise.



The 2-3GHz S-band shows minor interference from a nearby cellular tower.

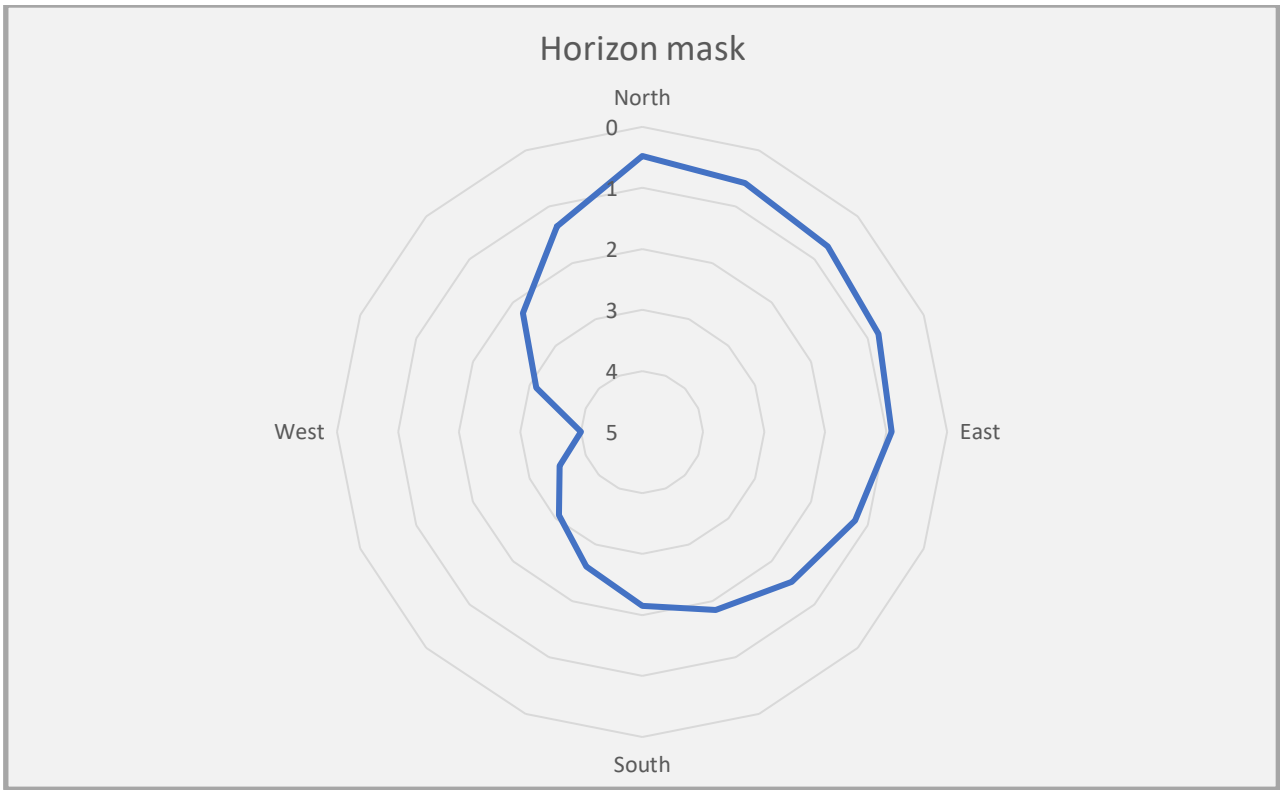


The 7-8GHz X-band shows no interference.

Horizon mask

Pinkmatter owns a large area of land, allowing you to choose the optimum site that meets your antenna's requirements. The photo below is one example of the horizon mask available at our location. We consider all your requirements when suggesting the right site for your antenna.

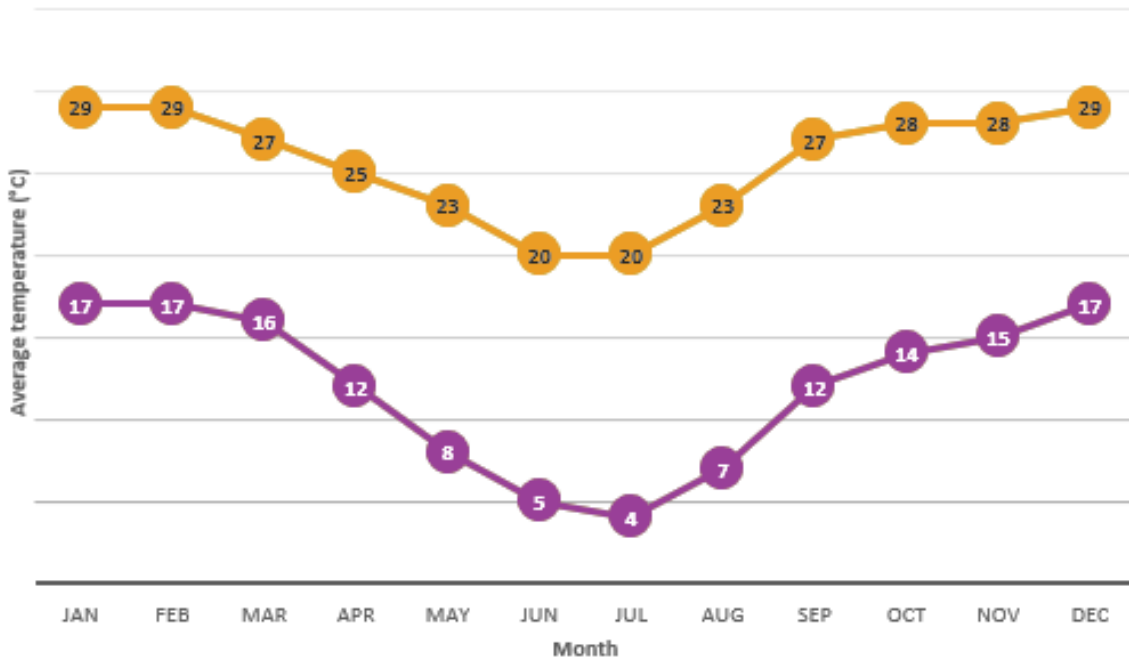




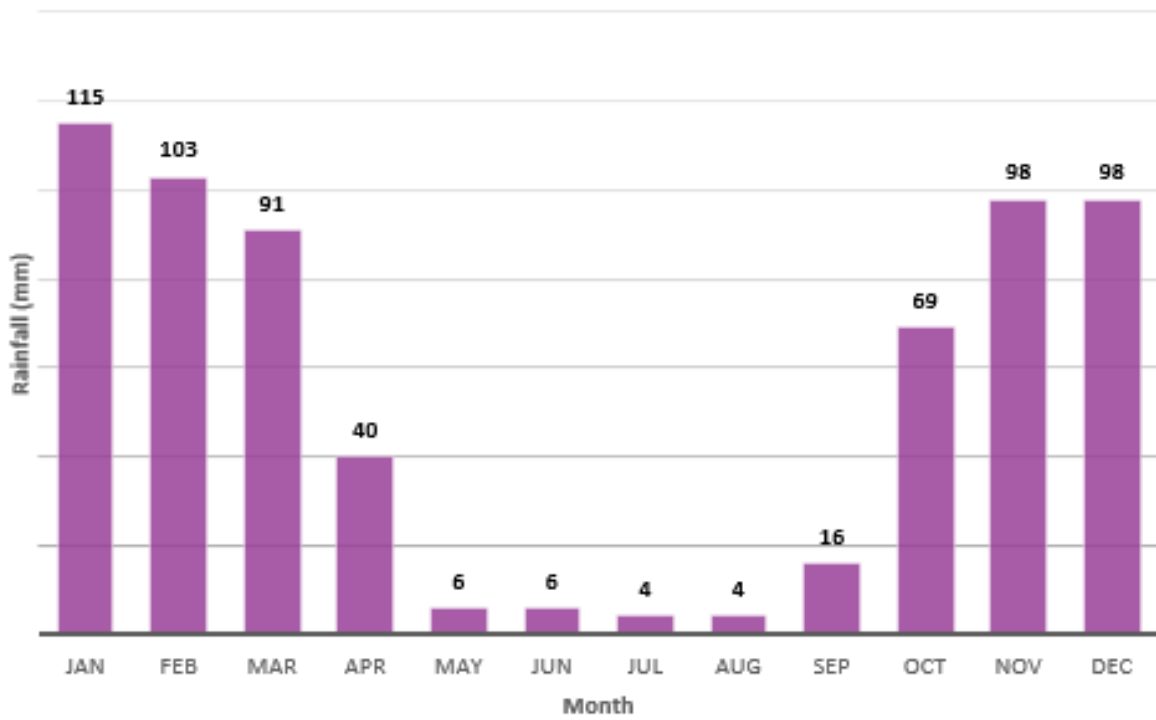
Weather and climate

Pretoria’s weather conditions are ideal, with moderate temperatures, low winds, and zero snowfall. Located in a summer rainfall area, rain is uncommon in winter. During the rainy season, we experience some late afternoon short-lived thunderstorms.

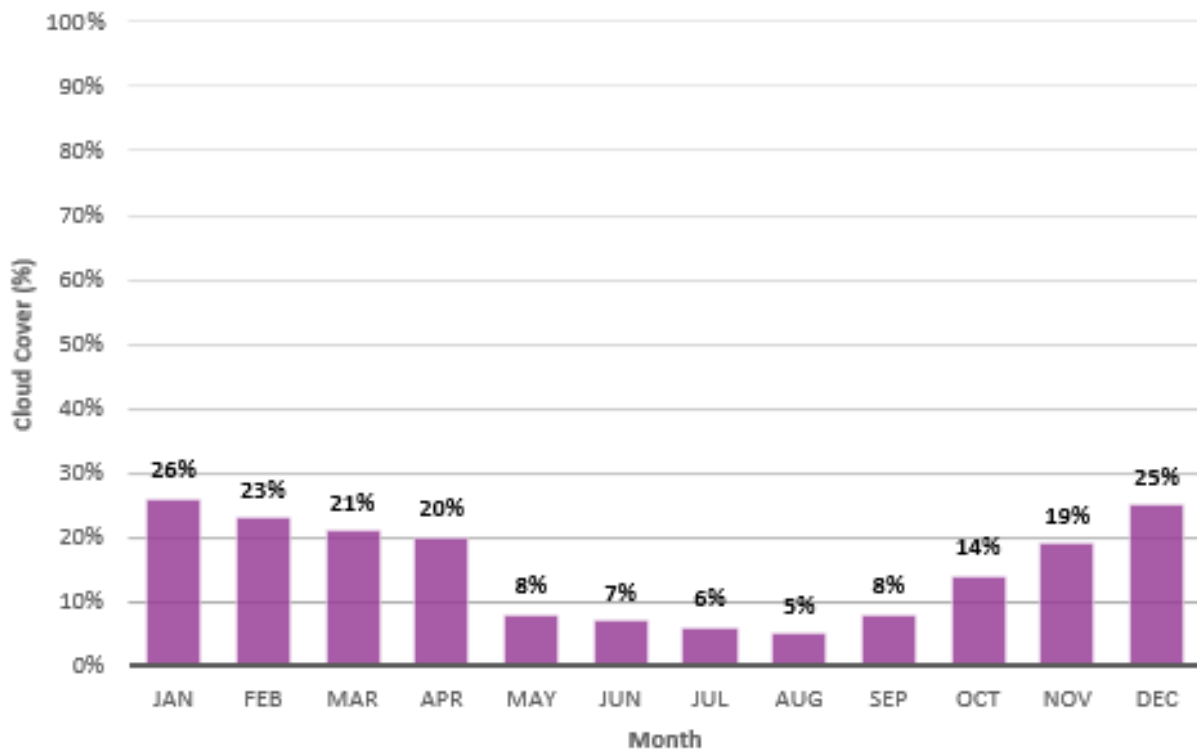
Average monthly minimum and maximum temperatures



Average monthly rainfall



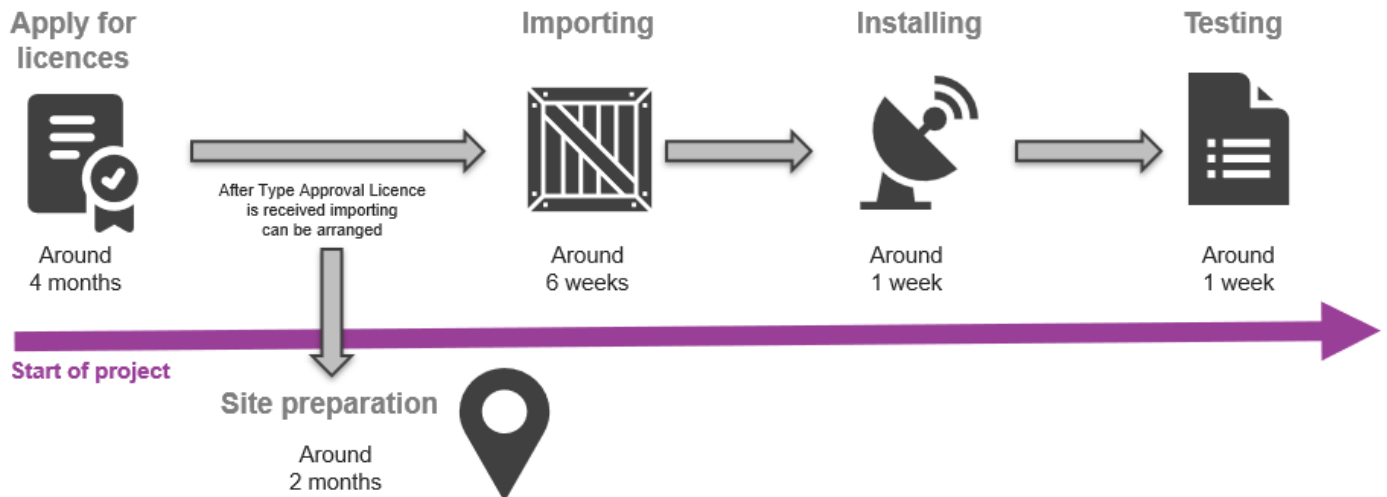
Average cloud cover (%)



3. Project phases

Experienced project managers and engineering teams are available on-site to assist at every project phase, from managing contractors to assembling antennas and connecting demodulators.

Each antenna and client's specifications are different. A typical project to establish your site and the expected time associated with each step are shown below.



Once the quotation is approved, your project will start, and our project manager will be introduced to your team.

Your specific project plan will be supplied by our project manager. All project stakeholders will regularly be updated on the status and progress of the project. Meetings can be scheduled as required by parties throughout the duration of the project.

Pinkmatter will apply for all relevant licencing on your behalf. We will start with site preparations while awaiting the licences. When the Type Approval Licence is received, importing can start. We can assist with import logistics and administrative support.

We will prepare your antenna pad and ensure all infrastructure is connected to your site. Once the antenna arrives, installation can commence. We arrange equipment hire for the rigging of heavy equipment for installation. We facilitate and help test all the installed equipment.

4. Hosting

Antenna pad

We build your antenna pad on your chosen location according to your specifications. We offer project management from the establishment of your site to full operation.

Pinkmatter manages trenching, building of your telco room, and related civil works for your antenna pad. This will take approximately 6 to 8 weeks.

Infrastructure

Pinkmatter provides the following infrastructure for your antenna pad.



Power supply

Pinkmatter is not dependant on the national grid and can operate independently. Our site is equipped with several power sources:

- 50kVA 3-phase utility connection (230VAC per phase @50Hz)
- Scalable solar backup power
- 50kVA 3-phase diesel generator



Internet connectivity

Dedicated internet connectivity can be provided. Expansion of network capacity and redundancy is in progress.

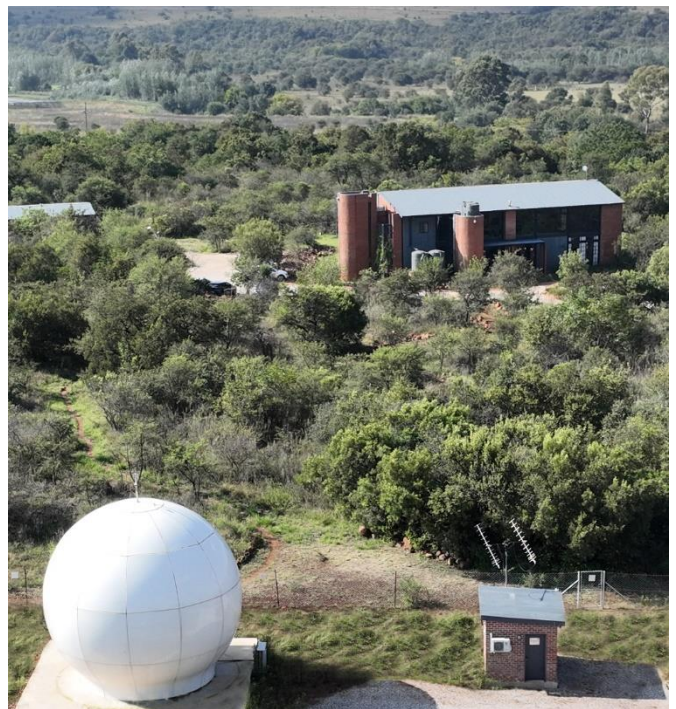
Equipment rooms

Equipment can be hosted in the central server room within *Pinkmatter's* own infrastructure. Alternatively, a Telco equipment room near the antenna pad to host your equipment can be established according to your specifications.

Security

Antennae and outdoor equipment rooms are protected by:

- Fencing - Each antenna site is individually fenced (optional extra)
- Security cameras – IP-enabled camera streams are routed to the *Pinkmatter* office, the armed response control centre, and security footage are available to you (optional extra)
- Armed response – 24-hour day armed response with regular patrols around the antennae sites



Example of outdoor equipment room established at the Pinkmatter site.

5. Services

Admin and project support

We offer project management services for the project as well as administrative and technical support services as you need it. We will assist you with the import logistics to get your equipment to our site in South Africa.

We will assist with the licencing requirements for radio frequency (RF) equipment. *Pinkmatter* will submit your Type Approval (TA) and Spectrum Licence on your behalf.

Licencing

Pinkmatter has an ECS Licence, which permits equipment hosting on our site. As the holder of the ECS Licence, we will submit Type Approval and Spectrum Licence applications on your behalf.

You will need the following licences to operate RF equipment in South Africa:

1. Electronic Communication Services (ECS) Licence – *Pinkmatter* holds such a licence
2. Type Approval (TA) – *Pinkmatter* will submit application on your behalf
3. Spectrum Licence – *Pinkmatter* will submit application on your behalf

ECS

Our Class ECS Licence permits us to host your equipment on our site. This licence allows us to provide commercial electronic communications services within a specific geographical area. *Pinkmatter*, as the holder of the ECS Licence, is required to submit your Type Approval and Spectrum Licence applications on your behalf.

Type Approval (TA)

Type Approval by ICASA is compulsory to import or use RF equipment, devices, or systems in South Africa. It involves verification of the equipment's compliance with the applicable standards and regulatory requirements.

Only South African registered companies can apply for Type Approval. *Pinkmatter* will apply for approval on your behalf. Type Approval is required for all equipment that emits energy at RF frequencies in South Africa.

Spectrum Licence

A Spectrum Licence allows the holder to use part of the available radio frequency spectrum from a fixed point. A Spectrum Licence will remain valid for 12 months from April to March and is thereafter renewable by payment of the prescribed annual licence fee.

6. Pinkmatter – history and experience

Pinkmatter is a leading Earth observation software company established in 2002. We serve the global market with customers on 5 continents. We have offices located in South Africa, Canada, and Germany.

Pinkmatter's offerings consist of:

- *Pinkmatter Antenna Hosting* – a world-class hosting site near Pretoria, South Africa, co-located with our head office
- *FarEarth* – it offers ground segment and image processing software for smallsats and Earth observation satellite missions
- *ChangeMonitor for Mines* - a specialised service for monitoring ground displacement, tailings, pond, and ESG, using optical and radar satellite imagery

Expertise

Pinkmatter has years of experience in managing customers' ground receiving stations. *Pinkmatter's* team of engineers, software developers, and remote sensing experts have extensive experience developing satellite image ground segment systems, image processing software, and geospatial products. Cutting-edge algorithms, innovative software architecture, and intuitive, easy-to-use interfaces set us apart in the NewSpace industry. *Pinkmatter* was part of the first privately funded South African smallsat, launched in April 2017 – nSight1.

Customers

Pinkmatter's customers range from government agencies to privately owned start-ups.

Customers that we can list include:

- European Space Agency (ESA)
- United States Geological Survey (USGS)
- Indonesian Space Agency (LAPAN)
- German Aerospace Agency (DLR)
- Canadian Centre for Mapping and Earth Observation (CCMEO)
- SANSA – South African National Space Agency
- *Pinkmatter* is currently in contract with various smallsat integrators using our FarEarth for SmallSats product

Earth observation antenna hosting

Pinkmatter provided Type Approval and Spectrum Licencing services for our client hosting a 6 m Earth observation antenna, housed in a 6.8 m radome, for low-orbiting LEO satellites, at our premises. Site preparation included the establishment of a dedicated telco room.

Whip antenna hosting

The installation of whip antenna's at the *Pinkmatter* site was completed by our own engineers after the site was prepared according to operational requirements. *Pinkmatter* assisted the client in forwarding and clearing activities.

Satellite and Weather Information for Disaster Resilience in Africa (SAWIDRA)

A key element of this project is acquiring, processing, and redistributing real-time polar-orbiting satellite data via a network of reception stations to ACMAD.

ISIS Space, Netherlands

Pinkmatter deployed *FarEarth for SmallSats* processing system for a 6U newly engineered satellite.

Digital Earth Australia platform

Pinkmatter provided tools that enabled Geoscience Australia to harmonise and assemble its Landsat data into the Australian Geoscience Data Cube (AGDC).

National Disaster Management Institute (NDMI), South Korea

NDMI receives various free missions as well as Landsat data for monitoring and prevention of all forms of disasters. At NDMI, *Pinkmatter's FarEarth for SmallSats* software handles scheduling, data acquisition, real-time processing and production of high-level products.

