Game Ranger & Tracker Training Specialists
Spatial Analyst Report for A.P.U operations.

MAVHURADONHA

WILDERNESS AREA

2025

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STRATEGIC HIGHLIGHTS

There has been an increase in trespassing reports in Mavhuradonha Wilderness Area, Guruve, and that is raising concerns with the landowners over the effectiveness of having an Anti-Poaching Unit deployed in the area. There was a resolution to set up a ranger base in the marginal peripheries of the area that is deemed under patrolled/uncovered.

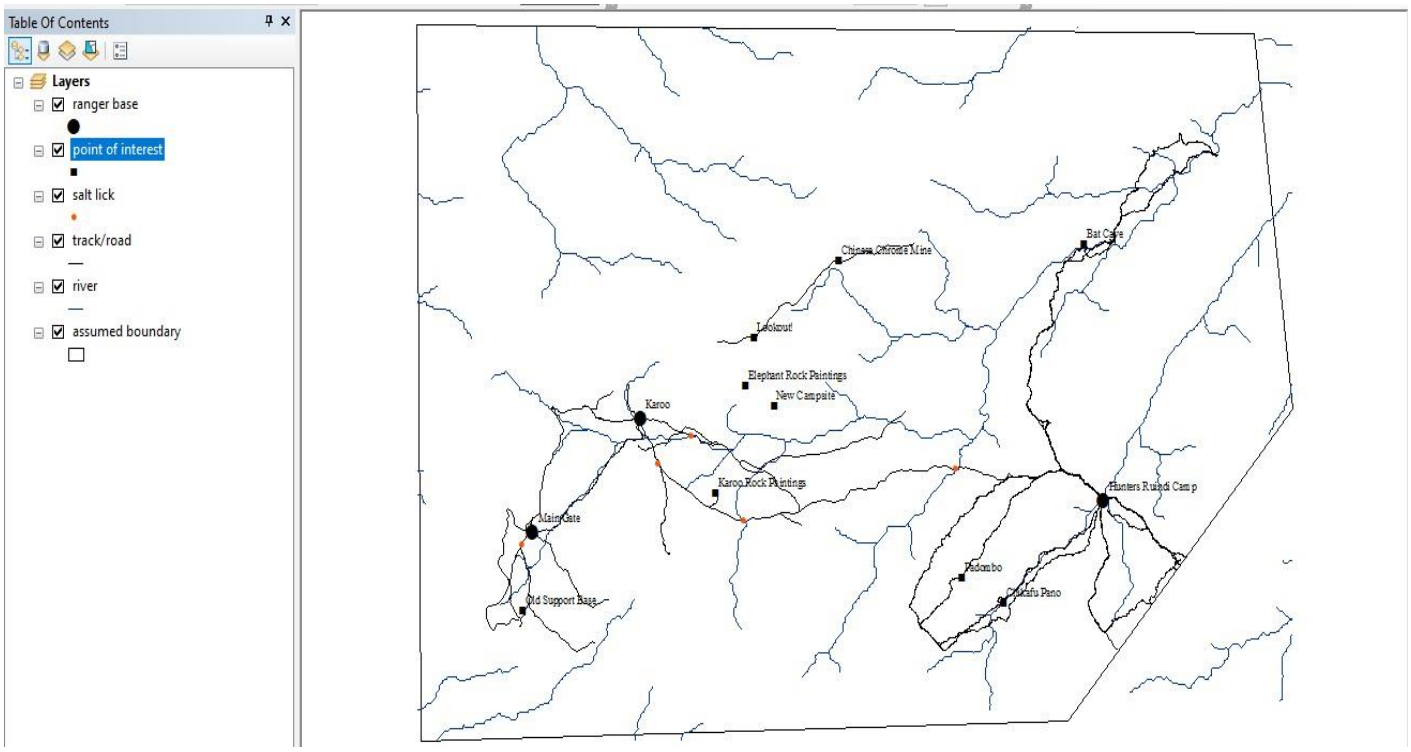
OPERATING HIGHLIGHTS

Originally, there were 3 (three) main operating camps, Main Gate Base, Karoo and Hunters Ruindi Camp. The operations were on a good scale with steady decline in the rate of poaching and trespassing incidents that were being reported, however, the area is proving to be too large for the current bases to ensure maximum coverage.

LOOKING AHEAD

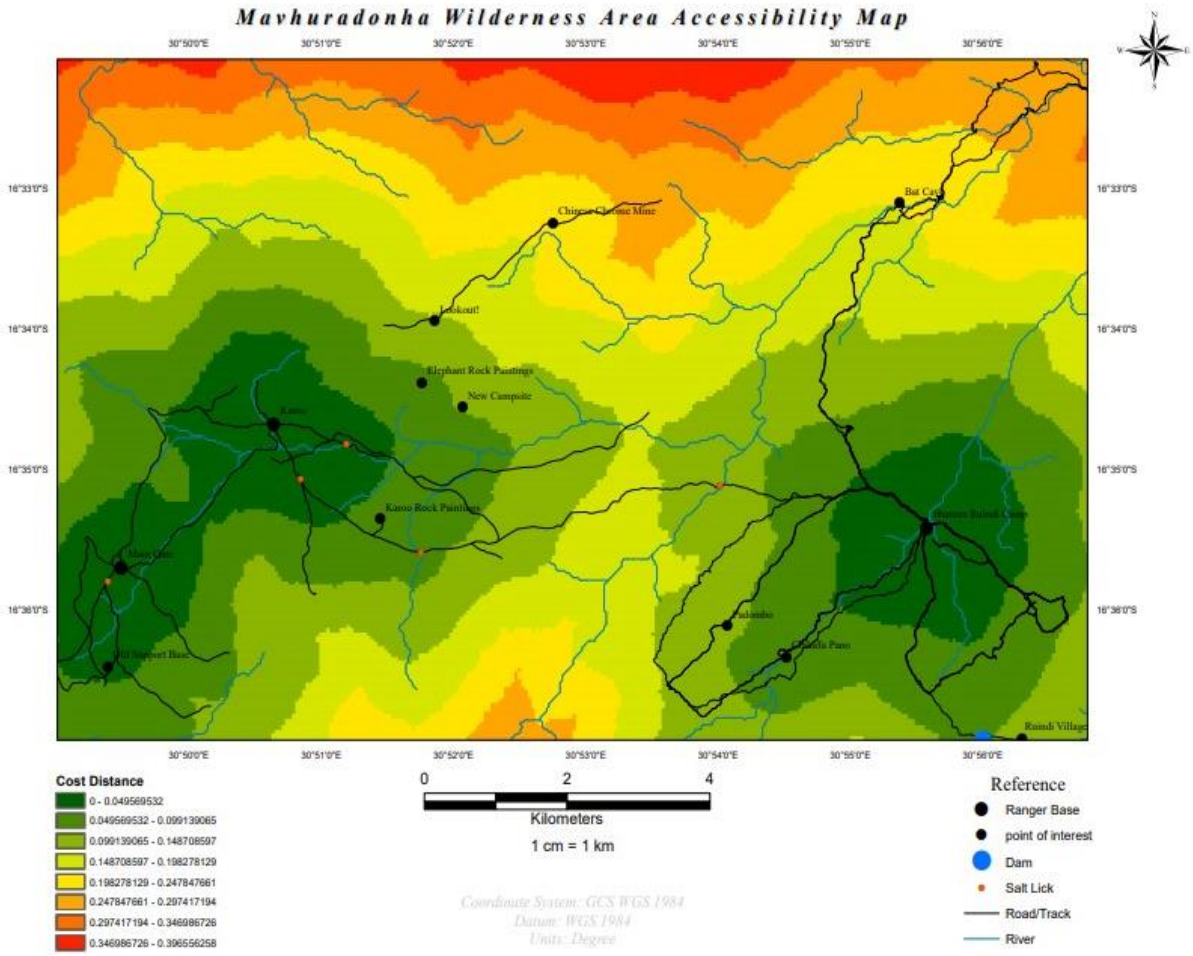
The base (Bat Cave Base) is a measure to curb the resurgence of illegal activities that are reportedly taking place in the area for instance poaching of wildlife within areas of close proximity to salt licks, illegal gold panning along Bure river and Tingwa river and illegal logging of firewood. This piece will include spatial analysis of the current ranger patrols including coverage and patrol density and ultimately produce a habitat suitability map showing the ideal areas to set up a ranger base with hopes of alleviating the damage being caused.

Operational Map



The *trial* map shows the location of the current A.P.U bases and the major points of interest within the area.

Patrol Coverage/Accessibility Map



The operations map shows the effort required by the rangers to ensure effective coverage for the area, take for instance the color grades as stress exerted to a person's body during operation.

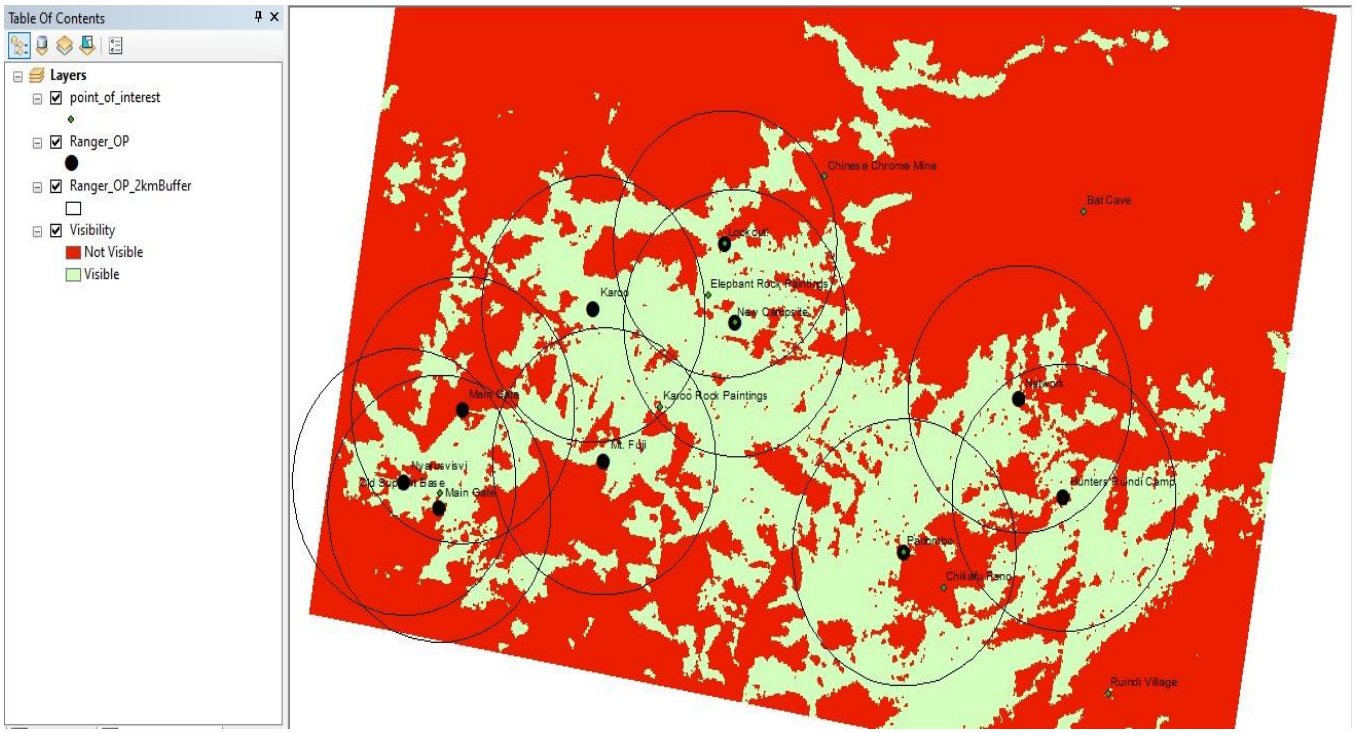
The aim of this analysis is to model travel effort and identify areas with low accessibility to ranger posts, a key spatial decision tool. Factors weighted were terrain *(40%)* accessibility to road channels *(30%)* and proximity to bases *(30%)*.

The **darker green** shades shows the average to minimal effort needed by the rangers to cover the designated areas, these areas are typically close to bases (buffer 6-7 km radius). These areas are characterized with effective patrol coverage.

The **bright yellow to red** zones signifies a rather higher effort required to ensure effective coverage. These areas are most likely to be under patrolled due to the difficulty in accessibility such as bat cave and areas beyond Chinese chrome mine (cabins). These areas are characterized by steep escarpments, no defined road or track and are further away from the existing bases

Viewshed Analysis

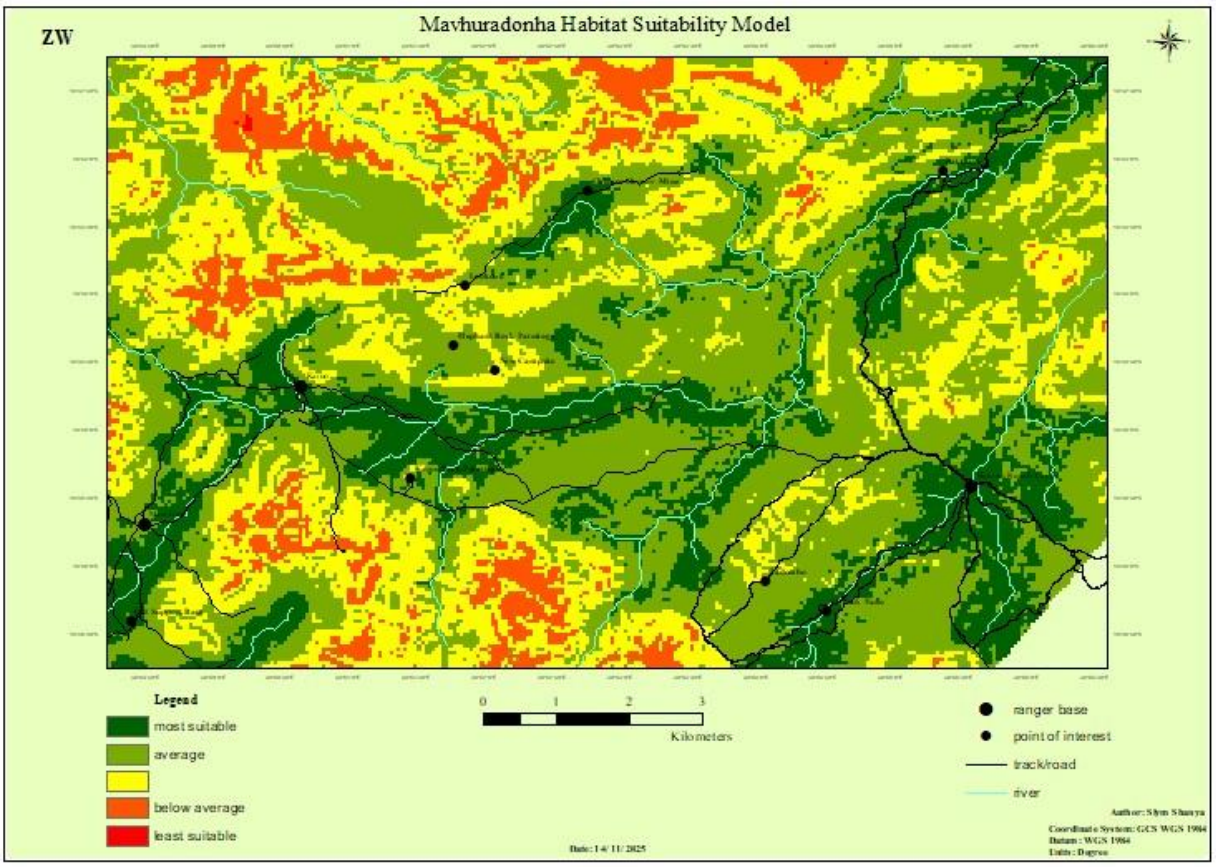
The purpose of this model is to determine visible areas from observation points. Factors used in the training were altitude (height) of the observer and elevation of the OP/LP.



The viewshed/visibility map has ranges from **visible (light blue) to not visible (red)** that models the anticipated effectiveness of OPs. The 2 km radius buffer predicts the range in which any anomaly (dog barks or gunshots) can be heard from a selected site. It critically shows the gap within the bat cave area where it is neither visible from sited OPs nor is the sound from that area heard.

Base/Habitat Suitability Model

The objective of this model is to identify optimal sites for new ranger stations.



The model was trained on 4 factors, slope/terrain *(40% importance)*, landuse (woodland/grassland) *(10%)*, road accessibility *(20%)*, and access to water sources (in this case rivers) *(30%).*

The **darker green** shades shows areas that are suitable for siting a ranger outpost. For bat cave base, the suitable sites will be the areas north east of bat cave towards the confluence of Bure and Tingwa rivers. The access to road channels is however compromised as there is no defined road/track to the site.

The **bright yellow to red** zones are areas that are not suitable for a ranger outpost based on other factors such as steep terrain, further away from the road channels, no water sources and also minimizing duplicate patrols as the areas are covered by other outposts i.e. cabins and maware areas.

Siting the base around bat cave area will be beneficial statistically as the coverage is enhanced and also patrol effort is spread across a relatively smaller area. However there are other factors to consider such as accessibility to reliable and clean sources of water, accessibility to mobile network coverage and radio network to enhance communication and other unforeseen threats and socio-economic factors.