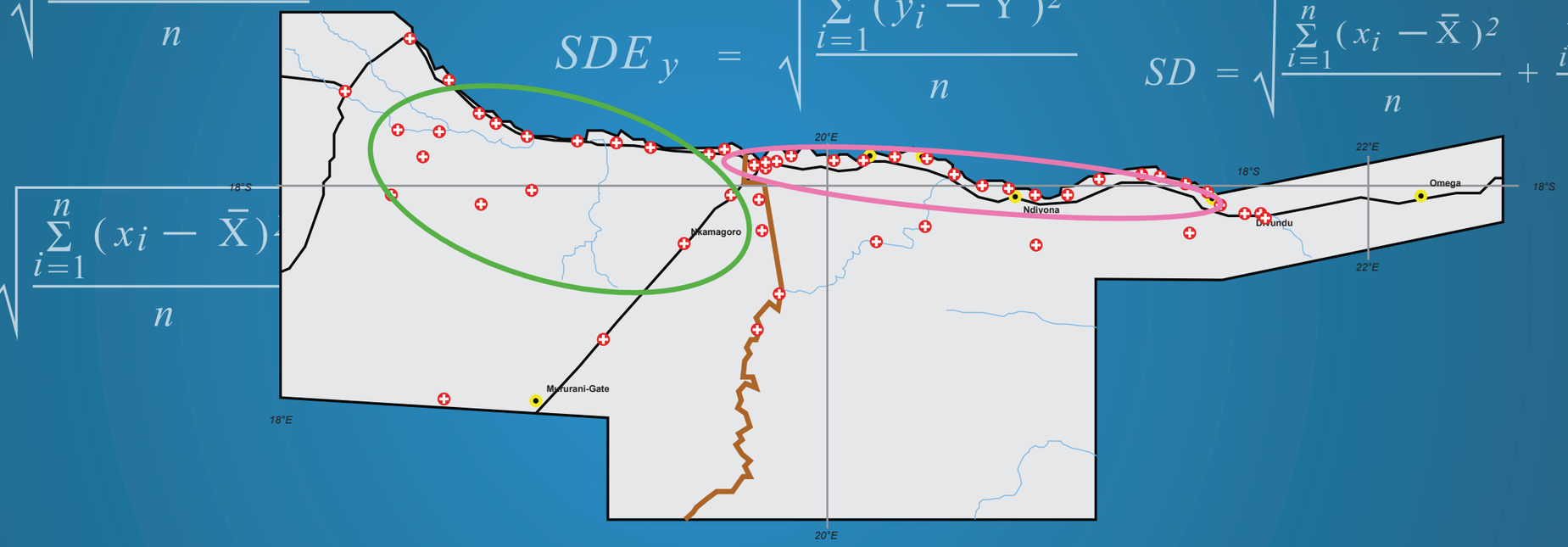
Pilot Basic Spatial Analysis Atlas

March 2016

$$SDE_x = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{X})^2}{n}}$$

$$SDE_y = \sqrt{\frac{\sum_{i=1}^{n}(y_i - \bar{Y})^2}{n}}$$

$$SD = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{X})^2}{n} + \frac{\sum_{i=1}^{n}(y_i - \bar{Y})^2}{n}}$$



$$Length = \sqrt{(X_2 - X_1)^2 + (Y_2 - Y_1)^2}$$

Namibia Statistics Agency, P. O. Box 2133, Windhoek, FGI House, Post Street Mall
Tel: +264 61 431 3200
Fax: +264 61 431 3253 | +264 61 431 3240
www.nsa.org.na

Namibia Statistics Agency

Pilot Basic Spatial Analysis Atlas 2016

Issued April 2016

MISSION STATEMENT

“In a coordinated manner produce and disseminate relevant, quality and timely statistics that are fit-for-purpose in accordance with international standards and best practice”

VISION

“Be a high performance institution in statistics delivery”

CORE VALUES

Performance
Integrity
Service focus
Transparency
Accuracy
Partnership

FOREWORD

An informed society is driven by evidence which can only be attained through quality information. Research in the early 90s indicated that nearly 80% of government projects are locational in nature. In other words government programmes happen somewhere, thus spatial data provides an easier mean for spatial planning. Spatial information assist us to take stock of our national development. Not only that, spatial data allows us to test spatial relationships and patterns thereby ensuring sound spatial planning and decision making at all levels of government.

This Atlas is the first pilot study at the Namibia Statistics Agency (NSA) which is aimed at revealing some spatial relationships existing between and among different mapped infrastructures. The Atlas uses very basic spatial analysis tools to calculate some basic spatial statistics that cannot be easily and accurately discerned from numerical statistics. Spatial statistics is a rapidly developing field involving the quantitative analysis of spatial data and the statistical modelling of spatial variability and uncertainty.

The NSA is currently developing capacity to be able to integrate statistics with spatial data not only as part of analysis but also to enhance communication to planners and decision makers. This is in line with government direction of promoting the integration of statistics with locational information in evidence based development planning. This work is also within the framework of the National Spatial Data Infrastructure (NSDI).

The Atlas attempts to use basic centrographic statistics or statistics relating to geographic distribution of features to:

- simply discern pattern and relationships between two or more mapped features;
- compare two sets of geographic features;
- map proximity to government facilities such as schools and health facilities;
- measure direction and orientation of mapped data such as schools in relation to locations of the population.

The aim is to showcase the value and benefits of spatial data and the development of a functional NSDI in the country. In this Atlas the main data layer used is the dwelling unit frame (DUF) which is envisaged to be the main contribution of the NSA to the National Spatial Data Infrastructure (NSDI) as it is widely used by most if not all government offices, ministries and agencies. The frame was first produced during the preparation of the 2011 national population and housing census of 2011. This frame shows the geographic locations of dwelling structures with each location given minimum descriptive information. For instance, a dwelling structure can be permanent, semi-permanent or temporary with basic household indicators recorded. Each dwelling is linked to an enumeration area for easier variable association and spatial analysis.

Since the dwelling units are structures where households live, the frame can be associated for spatial relationship to any social or economic structures such health facilities, schools or roads in a geographic analysis. The NSA used the regions which were fairly and accurately covered during the mapping exercise. It must be noted that Euclidean distances (straight line distances) are used as estimates when calculating proximity to government facilities or shortest distances.

Some basic highlights of the Atlas results are given below giving examples for the Kavango East Region:

- In 2007, there were 153 mapped schools consisting of 132 primary schools, 13 junior secondary schools and 8 senior secondary schools.
- Using the mapped schools of 2007, in 2011 only 2.3% of verified dwelling units in Kavango East Region were more than 5 kilometres from a primary school. This showed a 95% attainment of the education policy which requires a pupil not to walk more than 5 kilometres to primary schools.
- Ndiyona Combined School was the most central school in Kavango East Region.
- 80.1% of dwelling units were within 68.9 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 55.6% of schools were within 71.5 kilometre radius from the mean center (Ndiyona Combined School) in 2007. As expected, the result shows that schools are more dispersed than dwelling units.
- The dwellings around Epangero and Kangulungu are the furthest from the nearest school. These dwellings are located 47.5 kilometers from the nearest school which is Karukuvisa Junior Primary.
- In 2011, there were 30 clinics, 1 health center and 3 mapped hospitals in Kavango East Region.
- About 6.1% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 93.9% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 96.3˚ angle while the directional distribution of health facilities is at 94.3˚. This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Kavango East Region is highly distributed linearly along trunk, main and district roads. Statistics shows that only 4.0% of dwelling units existed more than 5 kilometers from an existing national road. Thus 96% are located within 5 kilometers of a national road.
- In terms of electrification, about 58.2% of the verified dwelling units were more than 500 meters from an electricity grip in 2010.

With the above example highlights, we must implore the important of having relevant, accurate and timely spatial data that is able to provide planners, policy and decision makers with information to solve current prevailing spatial problems. It is therefore important for data custodians to maintain their datasets. My hope is that through the national spatial data infrastructure which is being established and coordinated by the NSA on behalf of government, we will achieve maximum participation by those involved including the general public.

ALEX SHIMUAFENI
STATISTICIAN-GENERAL

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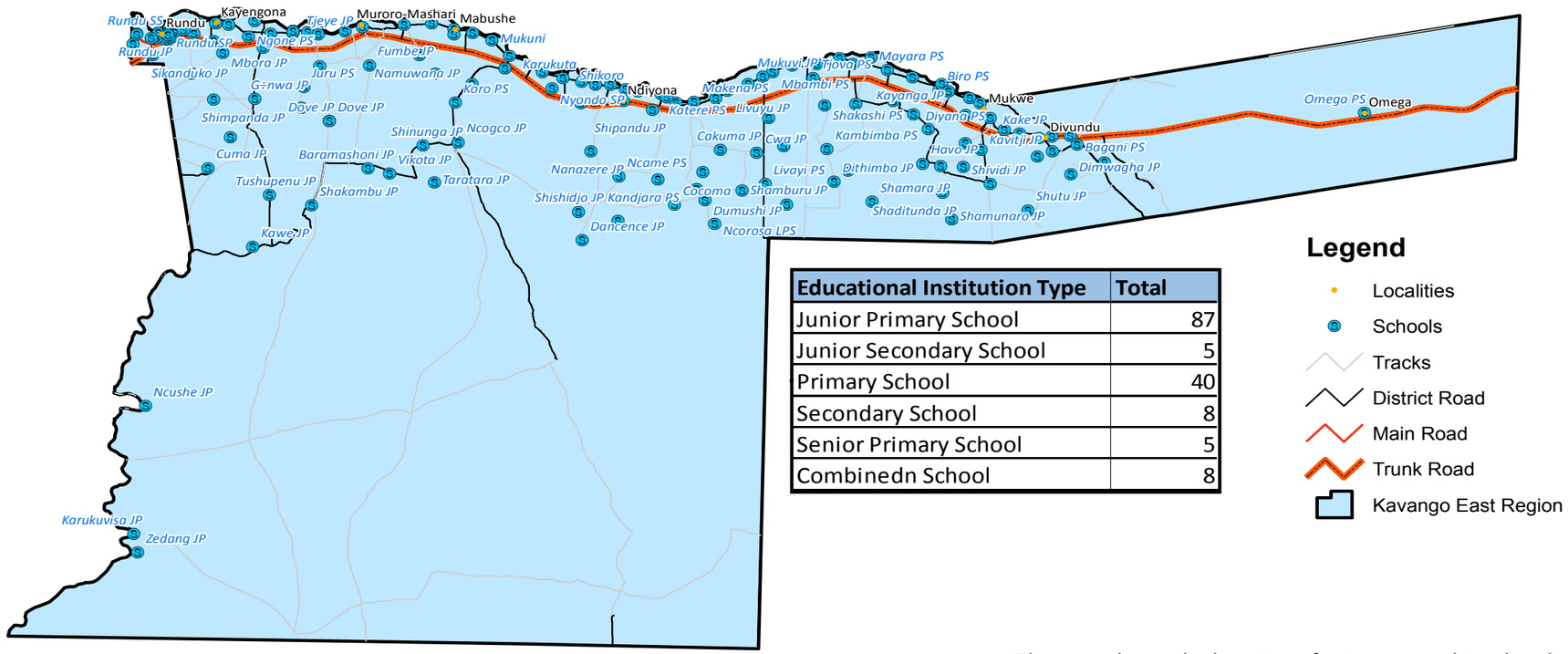
CHAPTER 1

EDUCATION

EDUCATION

- KAVANGO EAST

Figure 1.1.1 KAVANGO EAST REGION – SCHOOLS IN 2007



Educational Institution Type	Total
Junior Primary School	87
Junior Secondary School	5
Primary School	40
Secondary School	8
Senior Primary School	5
Combinedn School	8

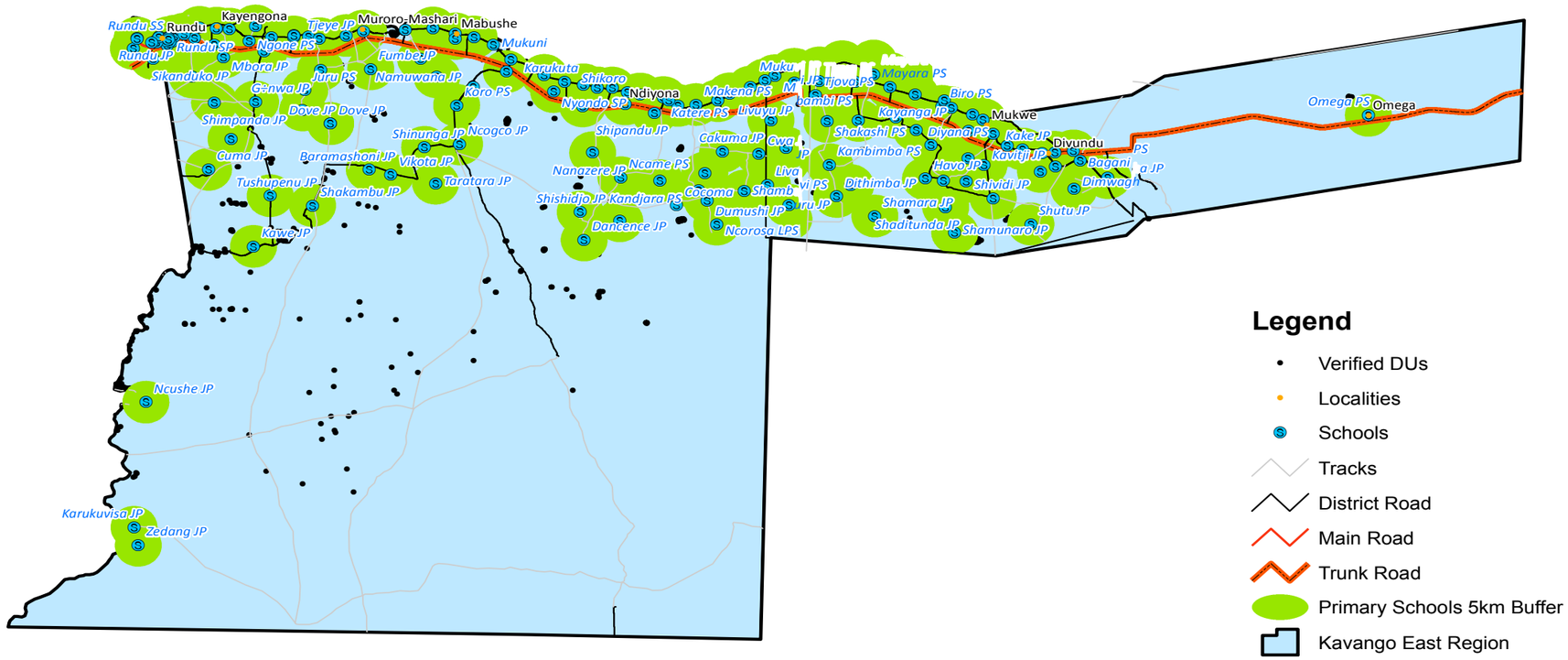
Legend

- Localities
- Schools
- Tracks
- District Road
- Main Road
- Trunk Road
- Kavango East Region

The map shows the location of primary, combined and secondary schools in the Kavango East Region in 2007.

Source: Schools, Ministry of Education 2007.

Figure 1.1.2 KAVANGO EAST REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



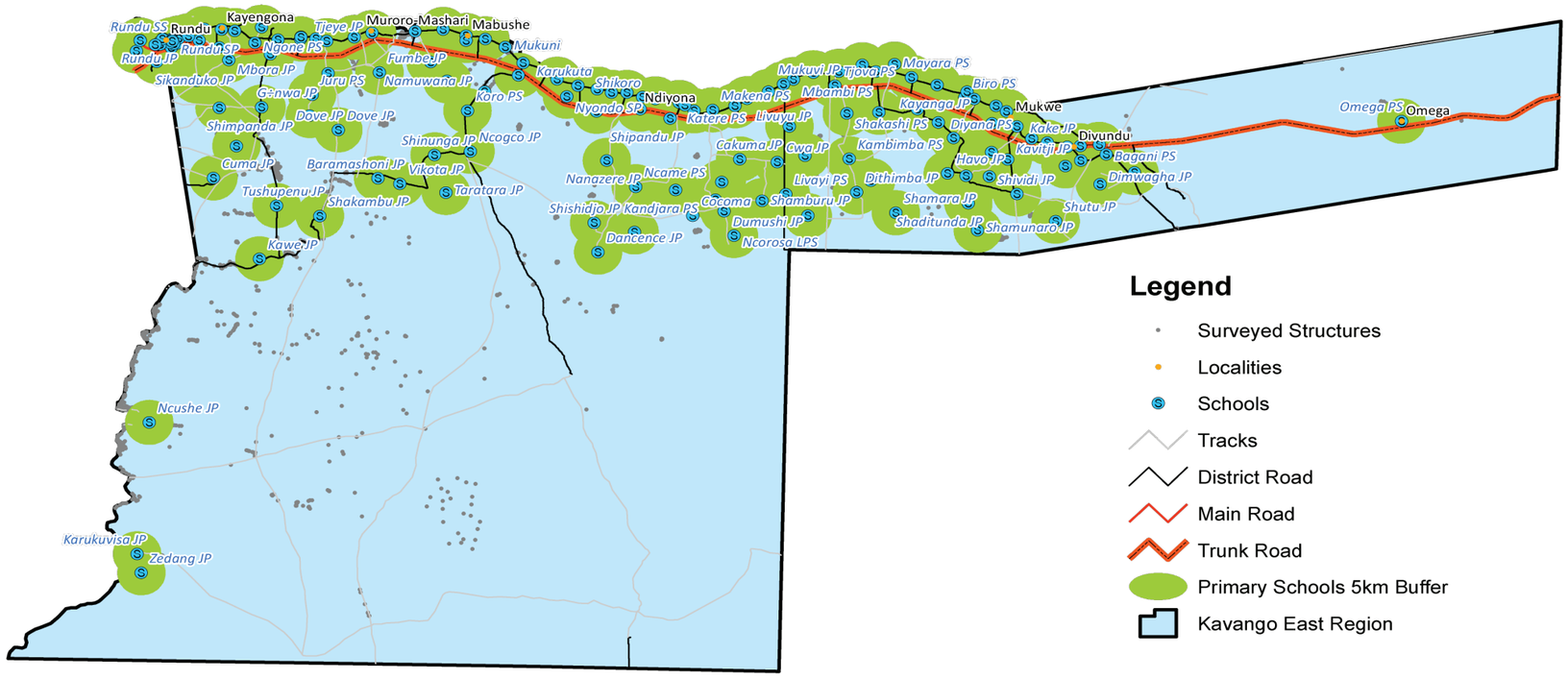
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Kavango East Region.

In 2007, 2.3% of all Verified Dwelling Units in the Kavango East Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.1.3 KAVANGO EAST REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



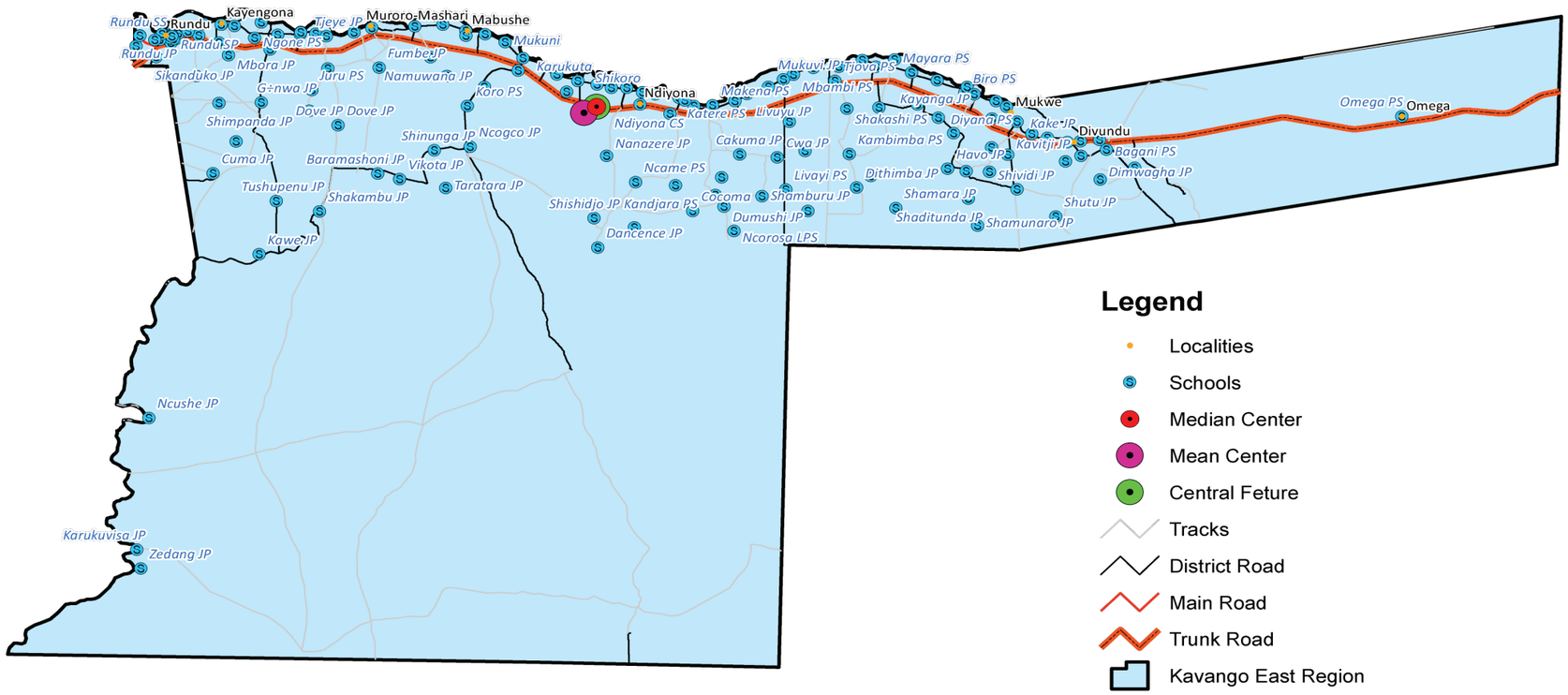
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Kavango East Region.

In 2007, 5.1% of all Surveyed Structures in the Kavango East Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.1.4 KAVANGO EAST REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



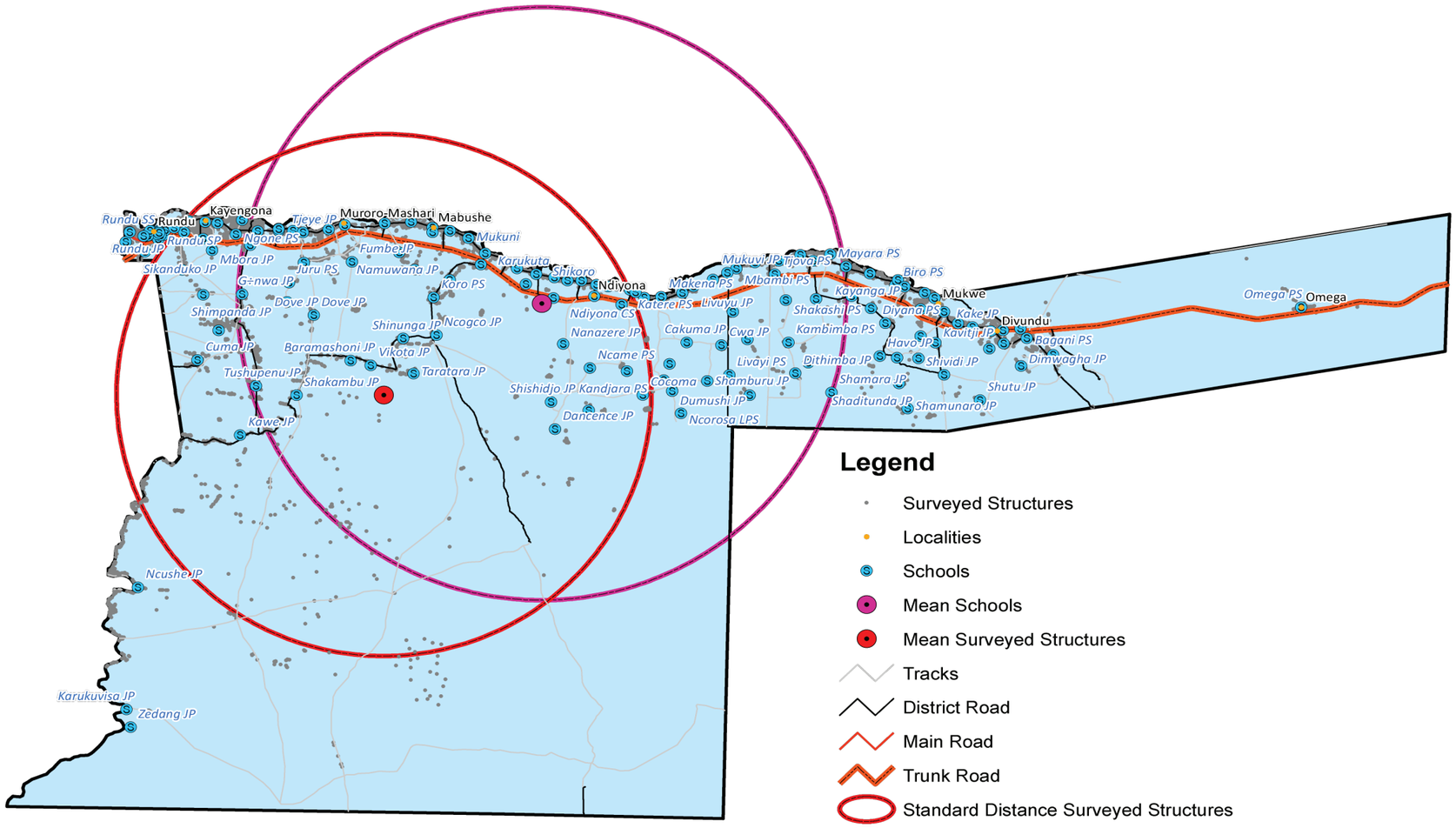
The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Kavango East Region.

Furthermore it shows the median center, which is the location having the shortest distance to all schools in relation to their distribution.

Source: Schools, Ministry of Education 2007.

Figure 1.1.5 KAVANGO EAST REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007



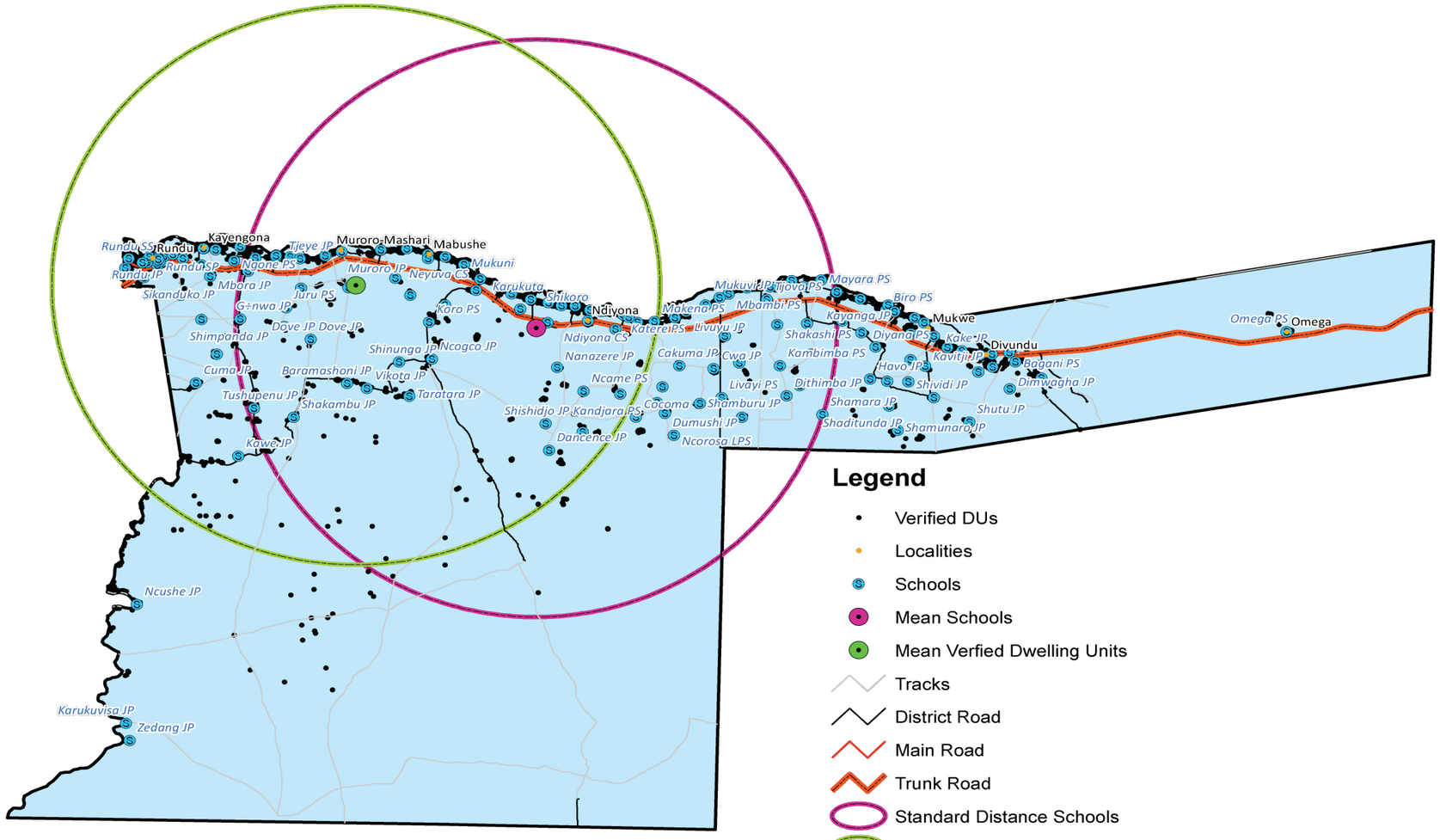
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 31.2% were within 62.9 km from the mean center.
Schools: 55.6% were within 71.5 km from the mean center

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.1.6 KAVANGO EAST REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



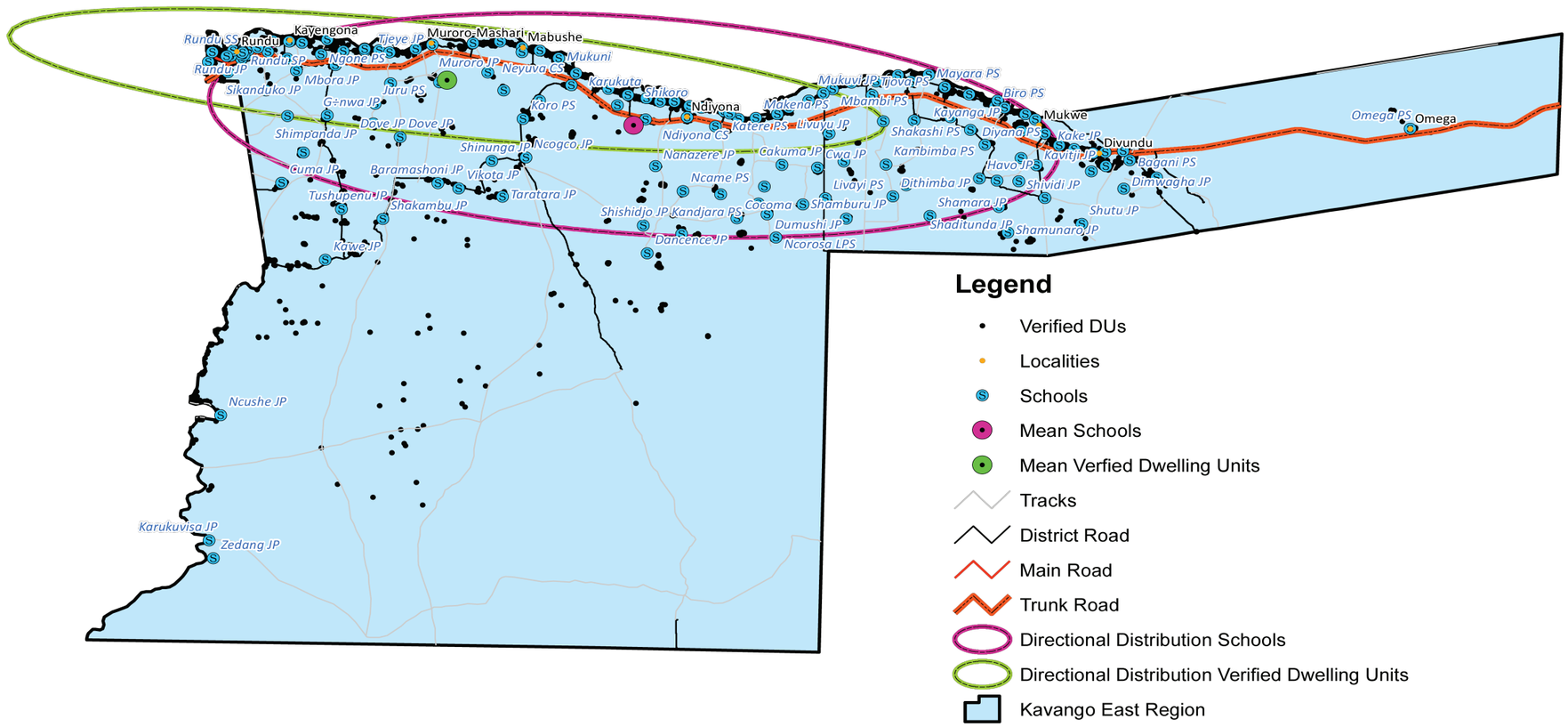
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 80.1 % were within 68.9 km from the mean center.
Schools: 55.6% were within 71.5 km from the mean center.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.1.7 KAVANGO EAST REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

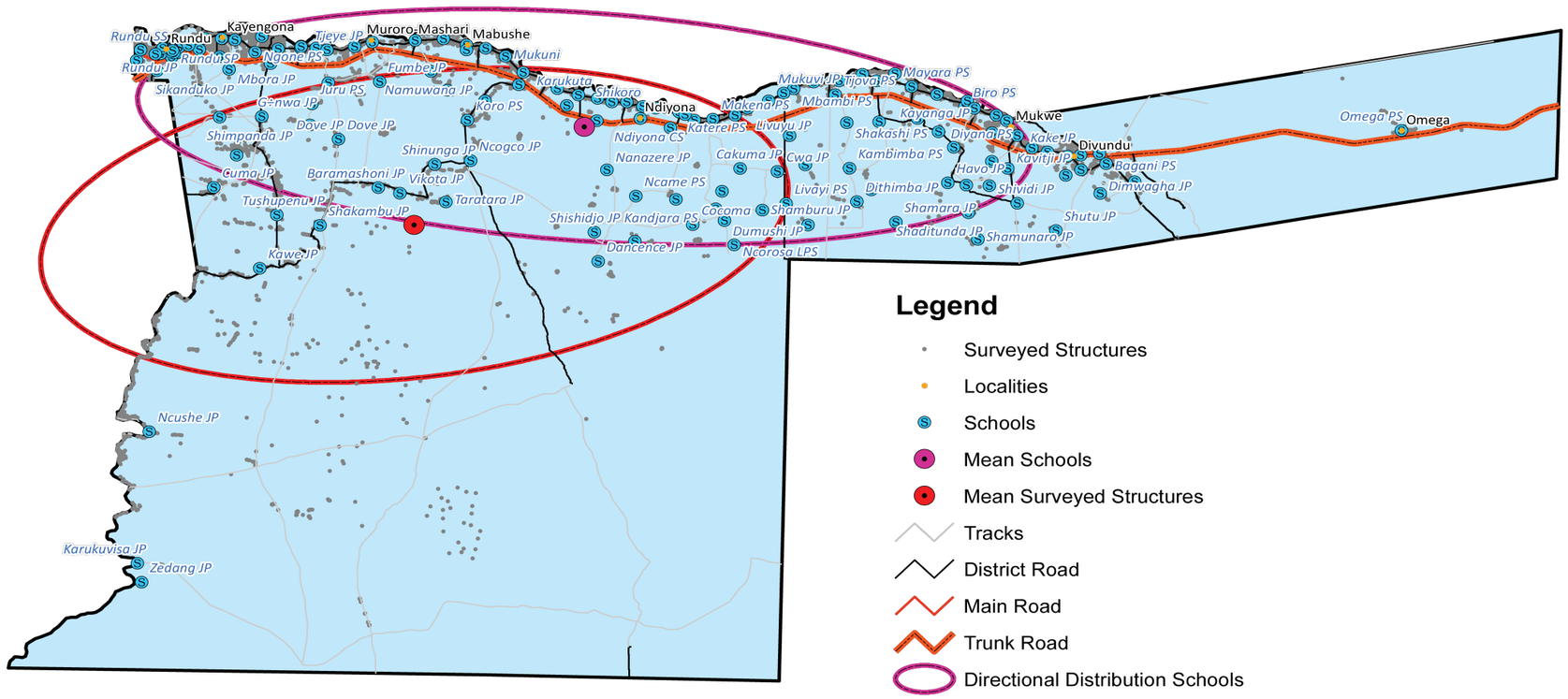
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 96.2° (degrees), West-East
Schools: 93.0° (degrees), West-East

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.1.8 KAVANGO EAST REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



A surveyed structure refer to all man made features on the earth's surface that the NSA had visited and captured a location point. these include dwelling units, shops, schools, health facilities, dams, monuments etc.

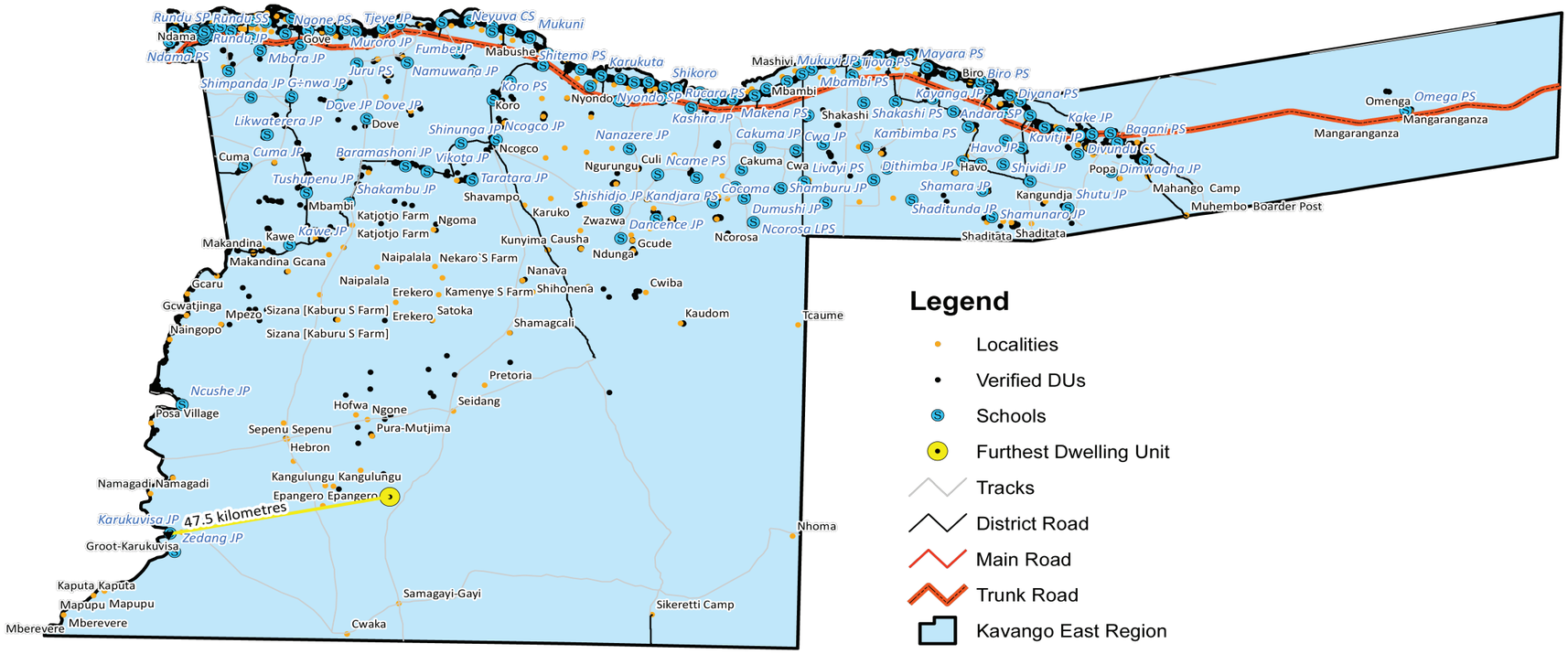
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of surveyed structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 82.1° (degrees), North East- South West
Schools: 93.0° (degrees), East-West

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.1.9 KAVANGO EAST REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest school in Kavango East Region in 2007.

People in and around Epangero and Kangugngu travelled the furthest distance of approximately 47.5 km to the nearest school in Kavango East Region in 2007.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

EDUCATION

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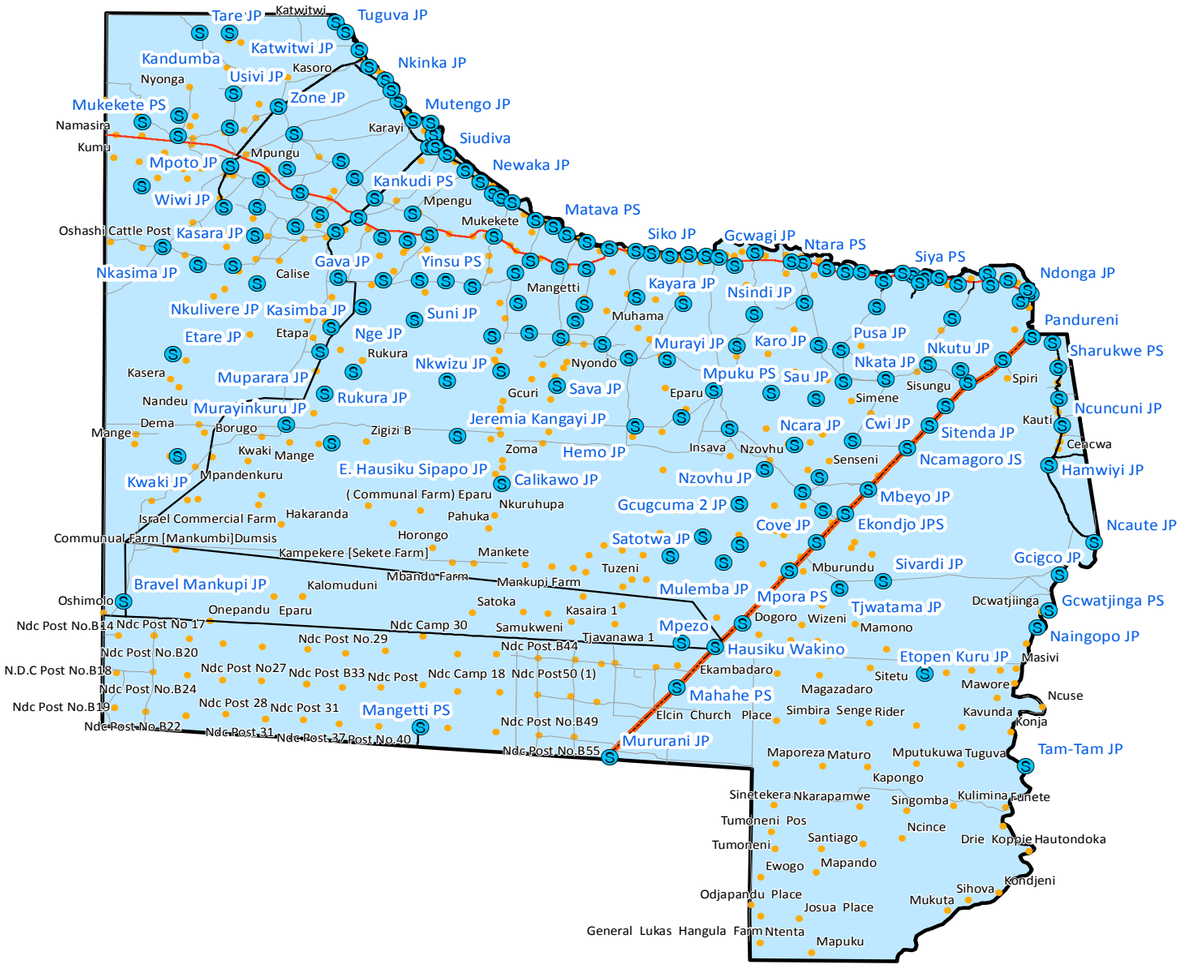
KAVANGO WEST

Figure 1.2.1 KAVANGO WEST REGION – SCHOOLS IN 2007



Legend

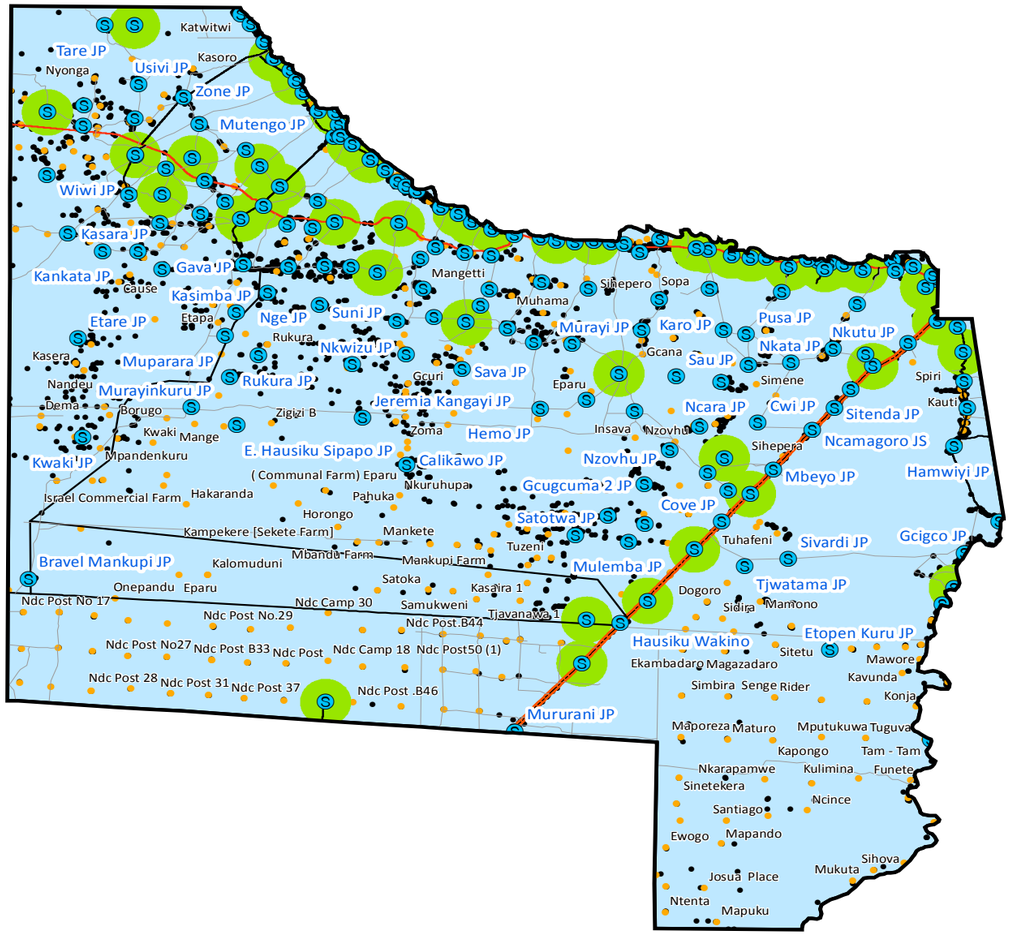
- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kavango West Region

School Type	Total
Junior Primary School	127
Junior Secondary School	6
Primary School	38
Senior Primary School	2
Secondary School	3
Combined School	3

The map shows the location of primary, combined and secondary schools in the Kavango West Region in 2007.

Source: Schools, Ministry of Education 2007.

Figure 1.2.2 - REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



Legend

- Verified Dwelling Units
- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Primary Schools 5Km Buffer
- Kavango West Region

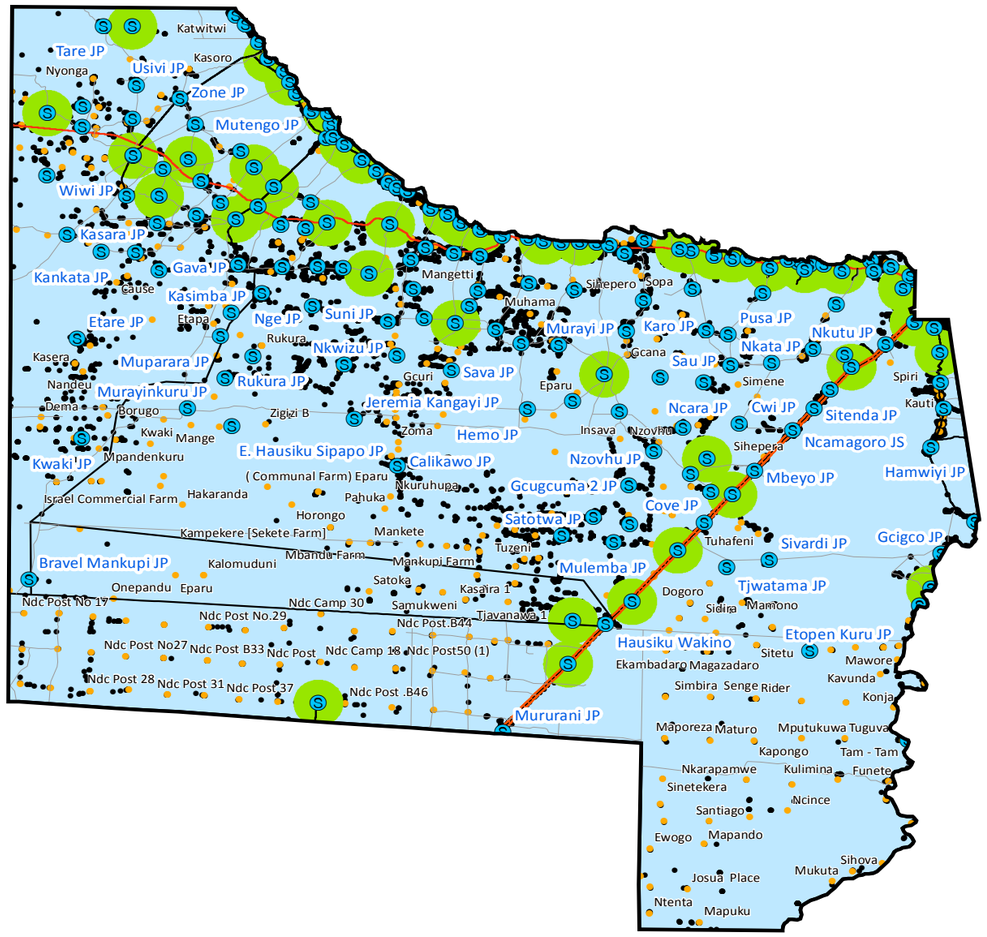
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Kavango West Region.

In 2007, 45.5% of all Verified Dwelling Units in the Kavango West Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.2.3 KAVANGO WEST REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



Legend

- Surveyed Structures
- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Primary Schools 5Km Buffer
- Kavango West Region

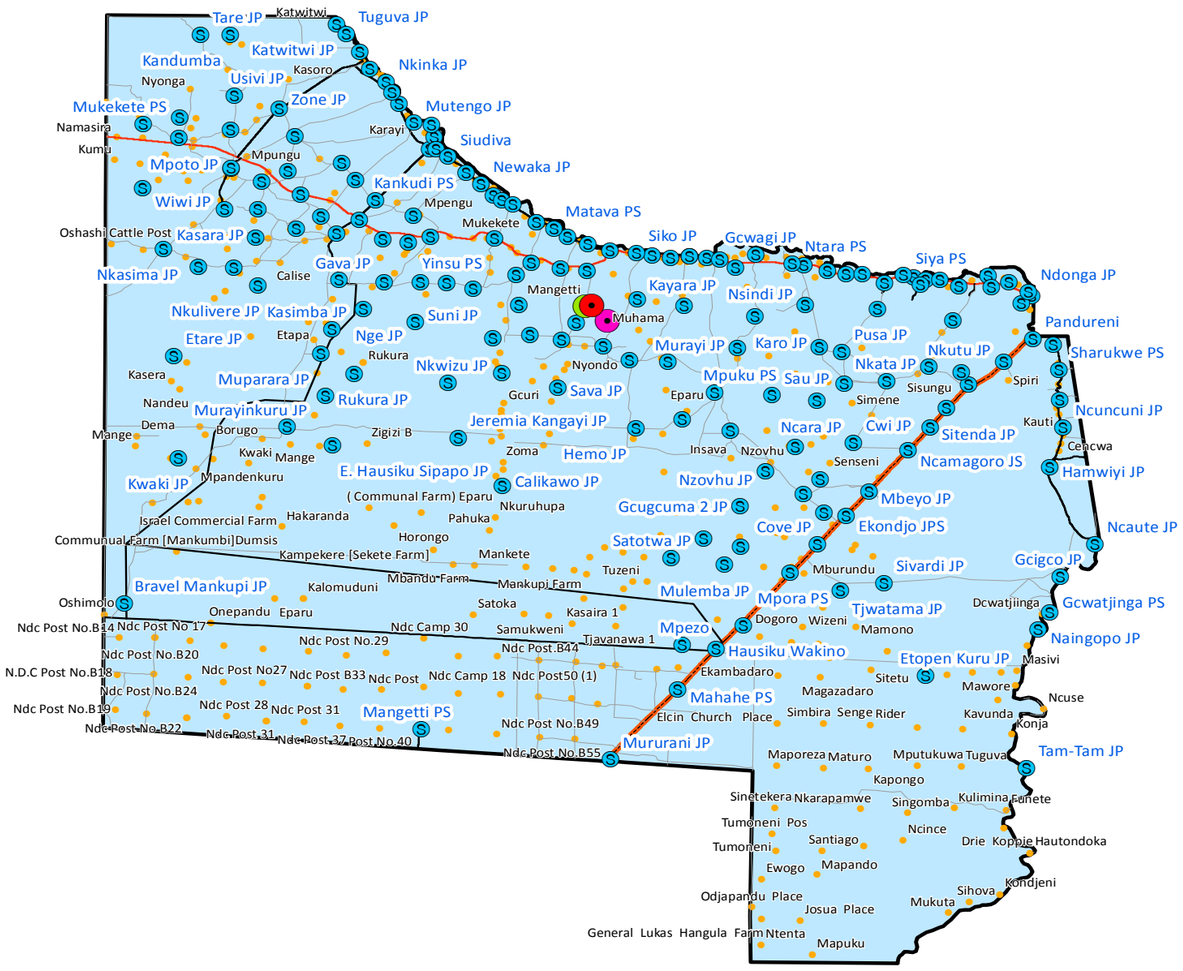
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Kavango West Region.

In 2007, 53.0% of all Surveyed Structures in the Kavango West Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.2.4 KAVANGO WEST REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



Source: Schools, Ministry of Education 2007.

Legend

- Localities
- Schools
- Median Center
- Mean Center
- Central Feature
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kavango West Region

The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Kavango West Region.

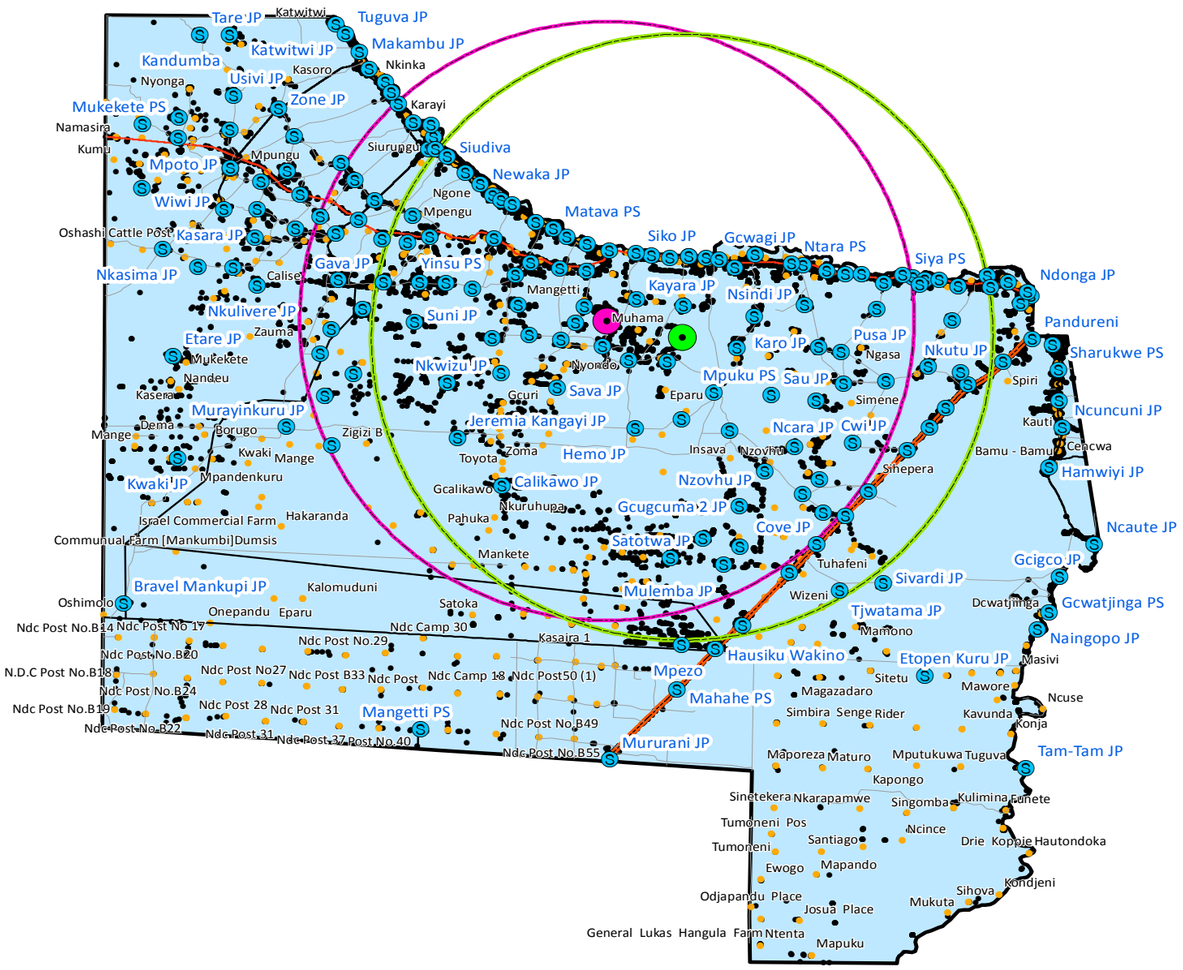
Furthermore it shows the median center, which is the location having the shortest distance to all schools in relation to their distribution.

Case Study: Mean Center Analysis

The mean center is the average geographic location of all the features in the study area. In this case it is the average geographic location of all the schools in Kavango West Region. It's useful for tracking changes in the distribution of features over a certain period of time. E.g. one can use mean center to see how the distribution of schools in the region has changed over the years.

It is also used for comparing the distributions of different types of features. E.g. distribution of schools and population in the given area. Having the mean center of the population and the mean center of the schools in the area enables planners to compare the distance between the two points and determine whether the schools have been planned accordingly and distributed fairly.

Figure 1.2.5 KAVANGO WEST REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007



Legend

- Surveyed Structures
- Localities
- Schools
- Mean Surveyed Structures
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Surveyed Structures
- Standard Distance Schools
- Kavango West Region

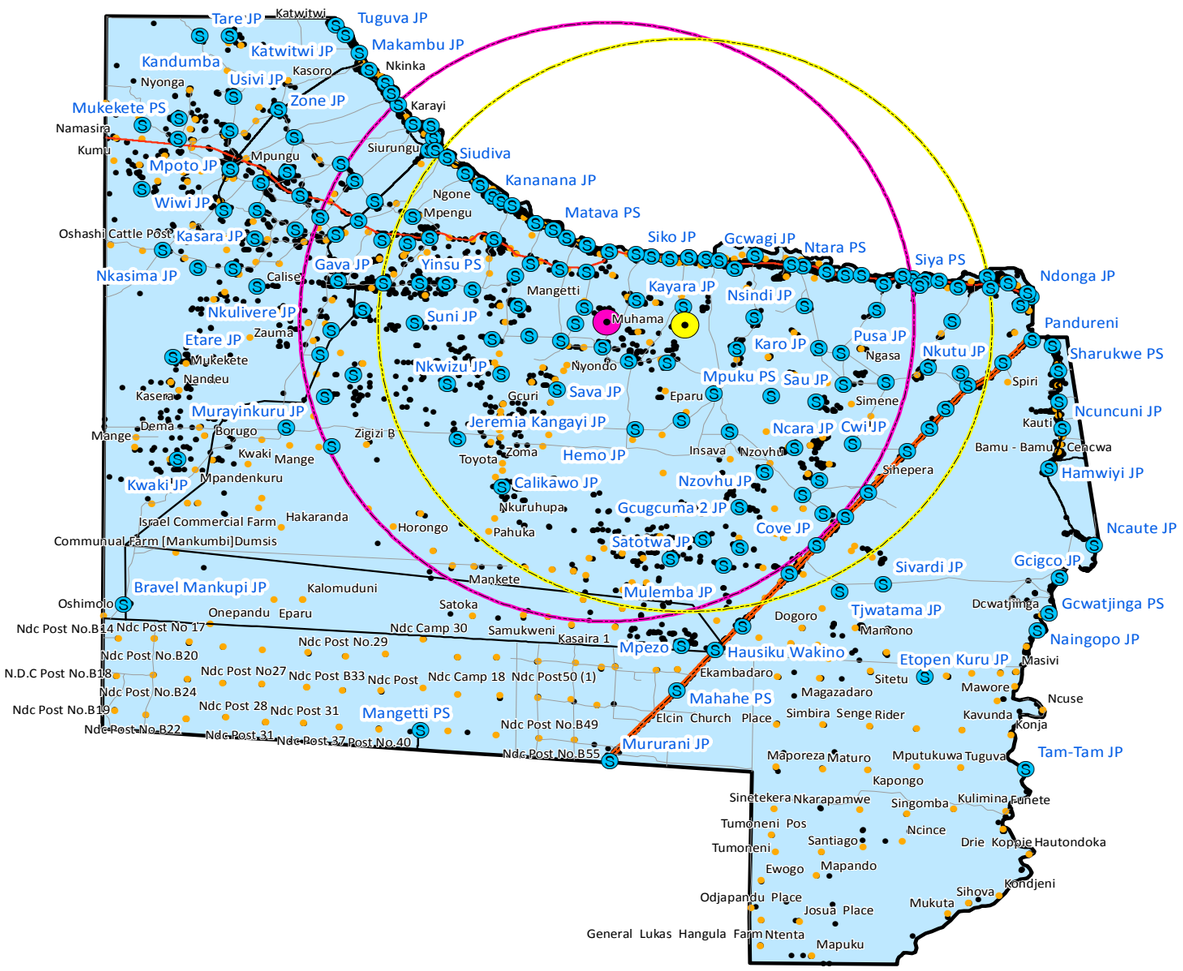
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 59.7% were within 63.7 km from the mean center.
Schools: 56.9% were within 62.9 km from the mean center.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.2.6 KAVANGO WEST REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



Legend

- Verified Dwelling Units
- Localities
- Schools
- Mean Verified Dwelling Units
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Verified Dwelling Units
- Standard Distance Schools
- Kavango West Region

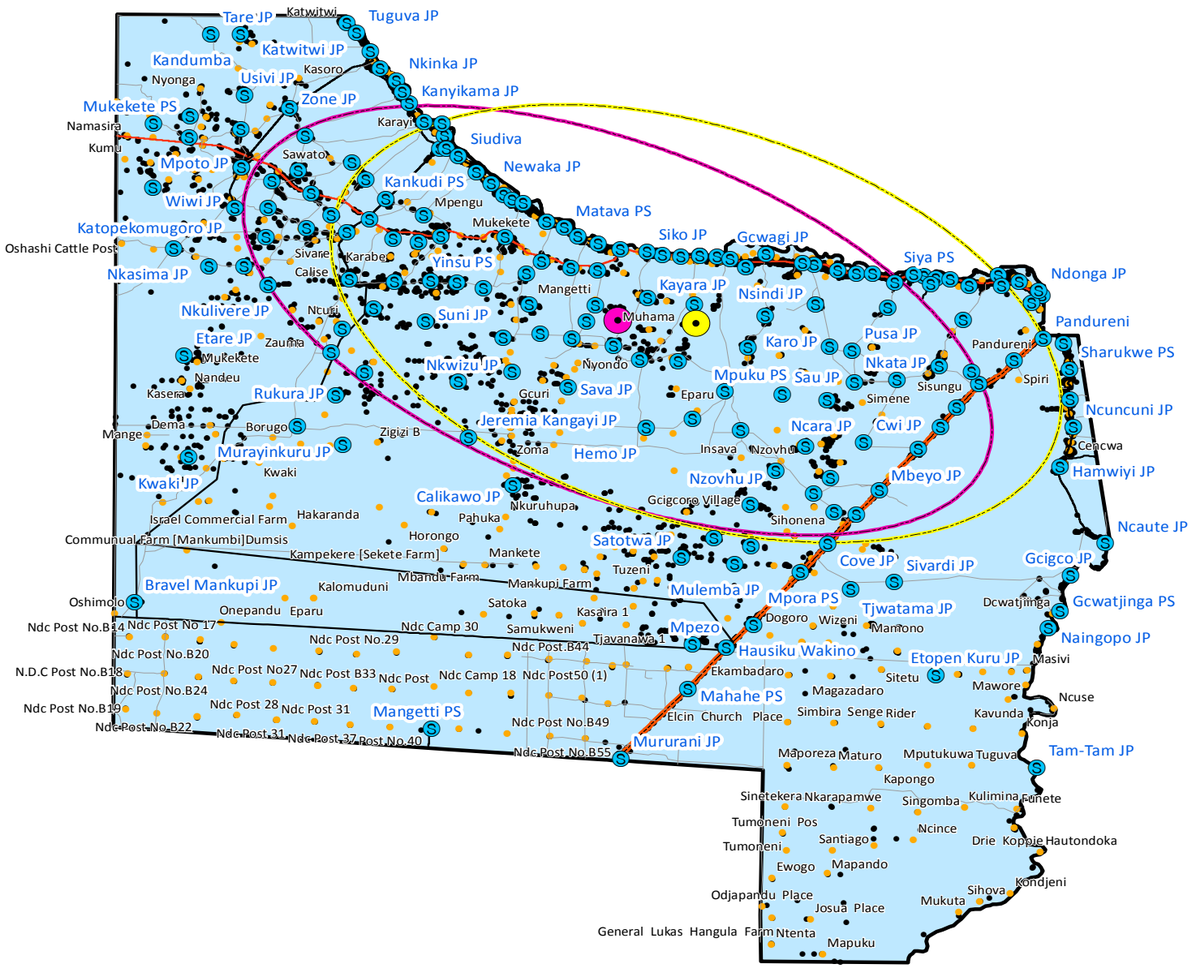
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 58.9 % were within 59.9 km from the mean center.
Schools: 56.9% were within 62.9 km from the mean center.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.2.7 KAVANGO WEST REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



Legend

- Verified Dwelling Units
- Localities
- Schools
- Mean Verified Dwelling Units
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Dwelling Units
- Directional Distribution Schools
- Kavango West Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

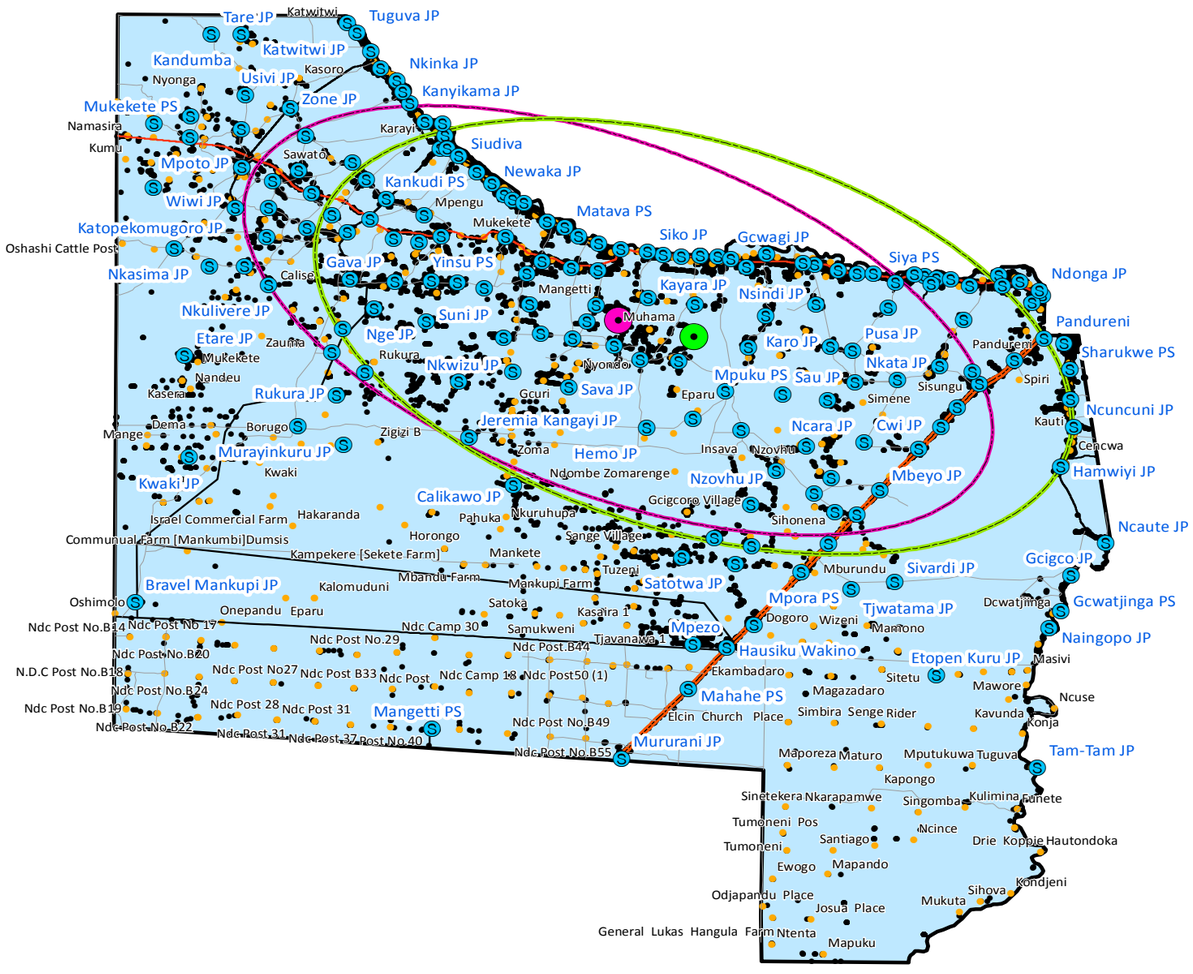
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 109.5° (degrees), East-West
Schools: 110.6° (degrees), East-West

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.2.8 KAVANGO WEST REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



Legend

- Surveyed Structures
- Localities
- Schools
- Mean Surveyed Structures
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Surveyed Structure
- Directional Distribution Schools
- Kavango West Region

Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

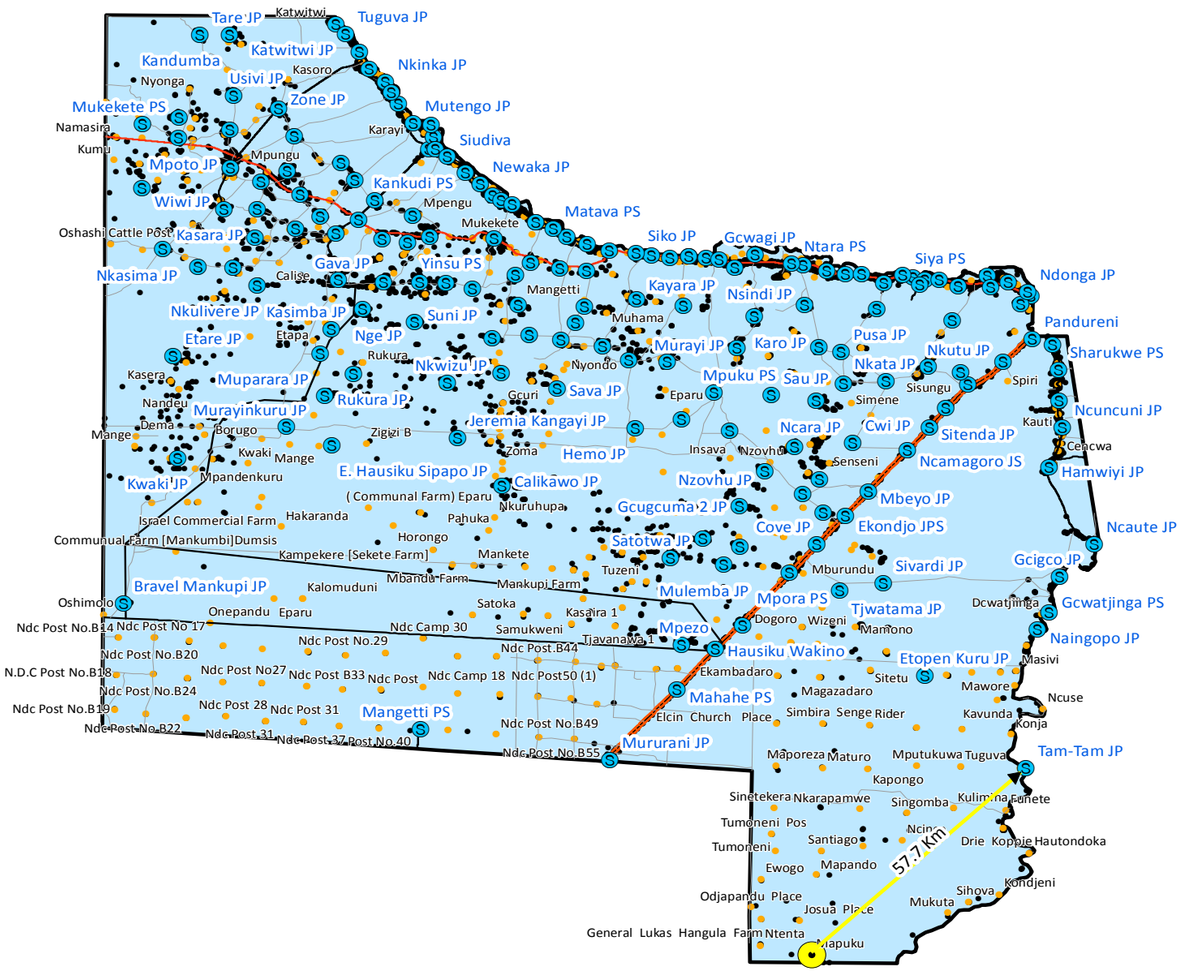
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 106.7° (degrees), East-West
Schools: 110.6° (degrees), East-West

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.2.9 KAVANGO WEST REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



Legend

- Verified Dwelling Units
- Localities
- Schools
- Furthest Verified Dwelling Unit
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kavango West Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest school in Kavango West Region in 2007.

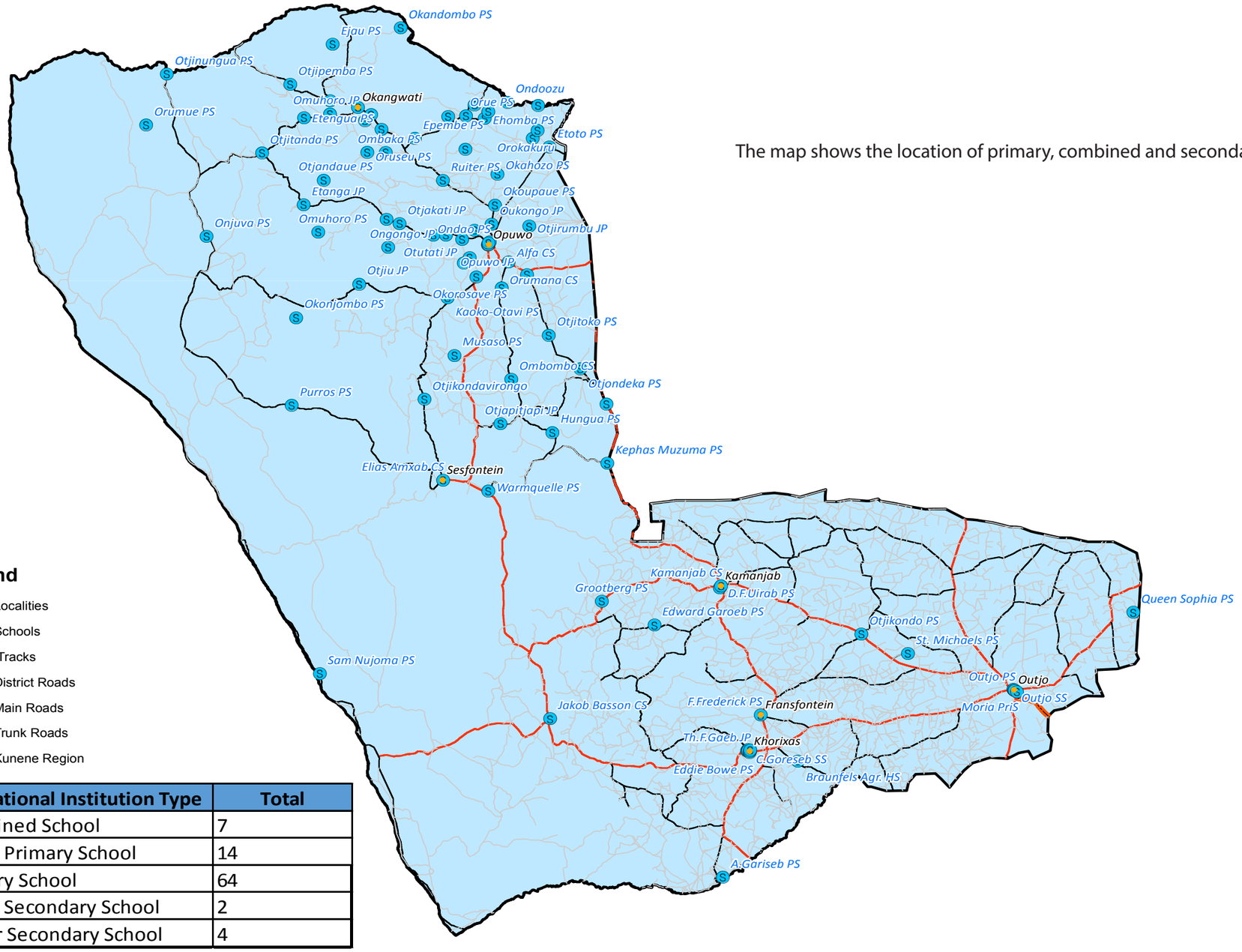
People in and around Mapuku travelled the furthest distance of approximately 57.37 km to the nearest school in Kavango West Region in 2007, although they might have been served by a neighbouring region.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

EDUCATION

- KUNENE

Figure 1.3.1 KUNENE REGION – SCHOOLS IN 2007



The map shows the location of primary, combined and secondary schools in the Kunene Region in 2007.

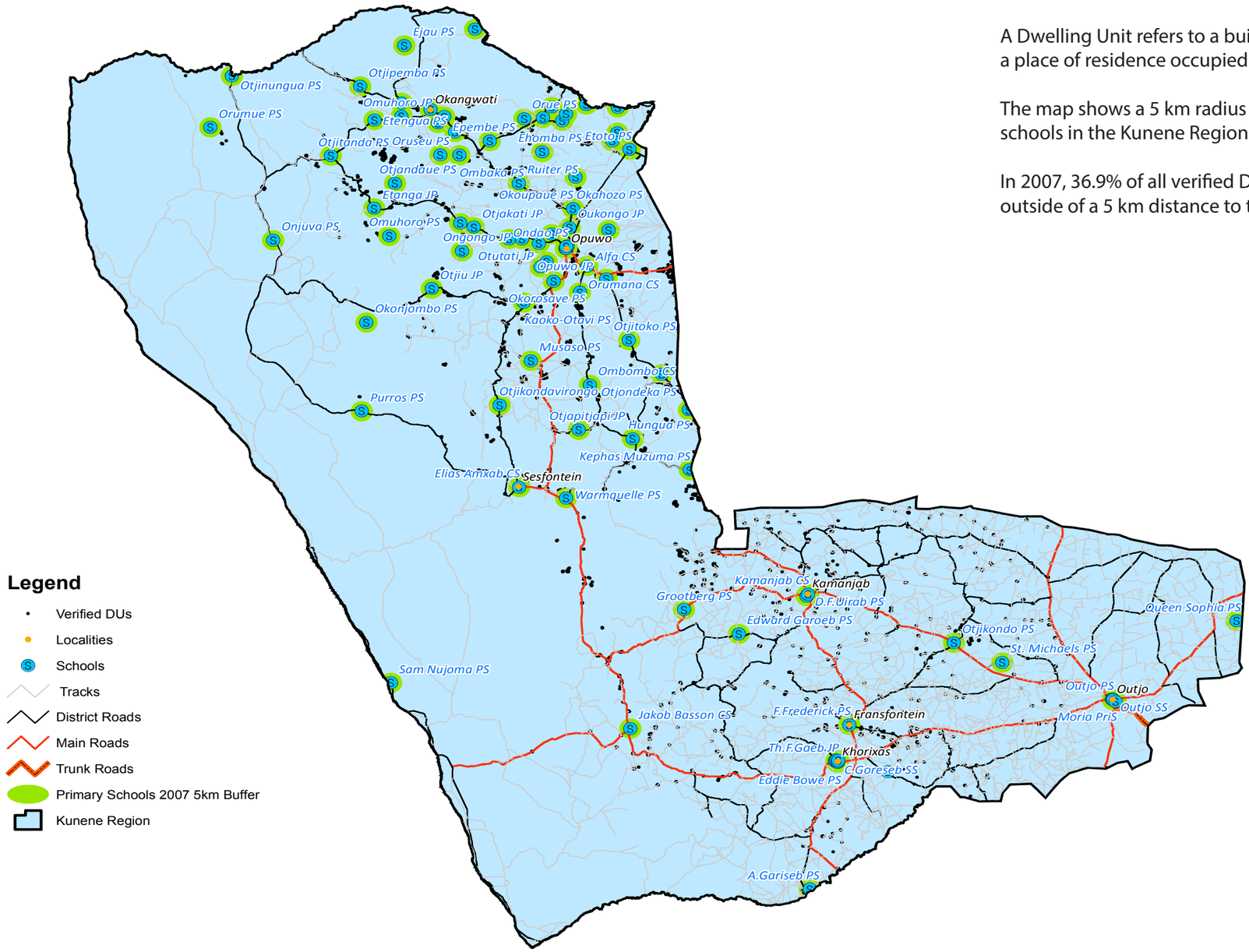
Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kunene Region

Educational Institution Type	Total
Combined School	7
Junior Primary School	14
Primary School	64
Junior Secondary School	2
Senior Secondary School	4

Source: Schools, Ministry of Education 2007.

Figure 1.3.2 KUNENE REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



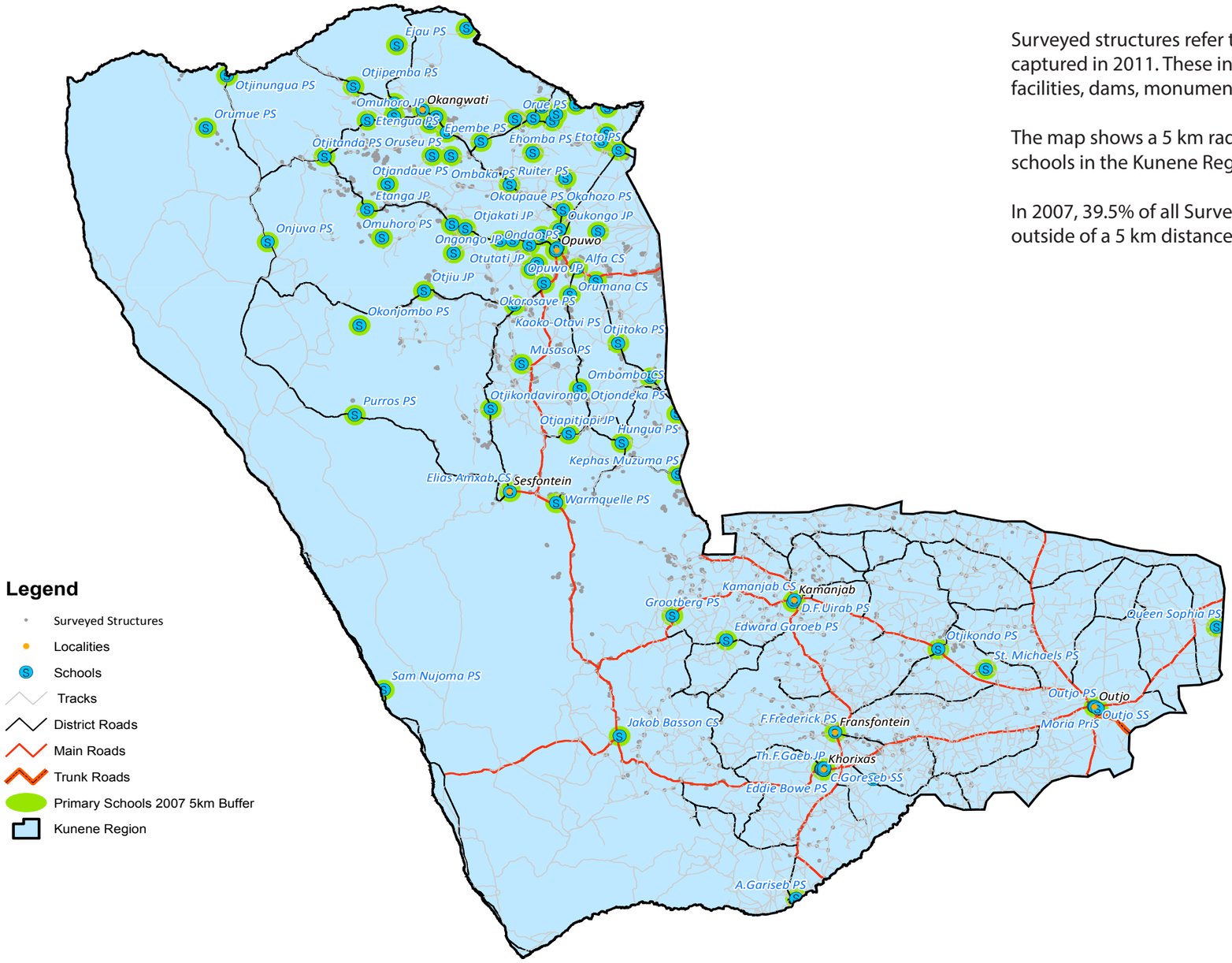
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Kunene Region.

In 2007, 36.9% of all verified Dwelling Units in the Kunene Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.3.3 KUNENE REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



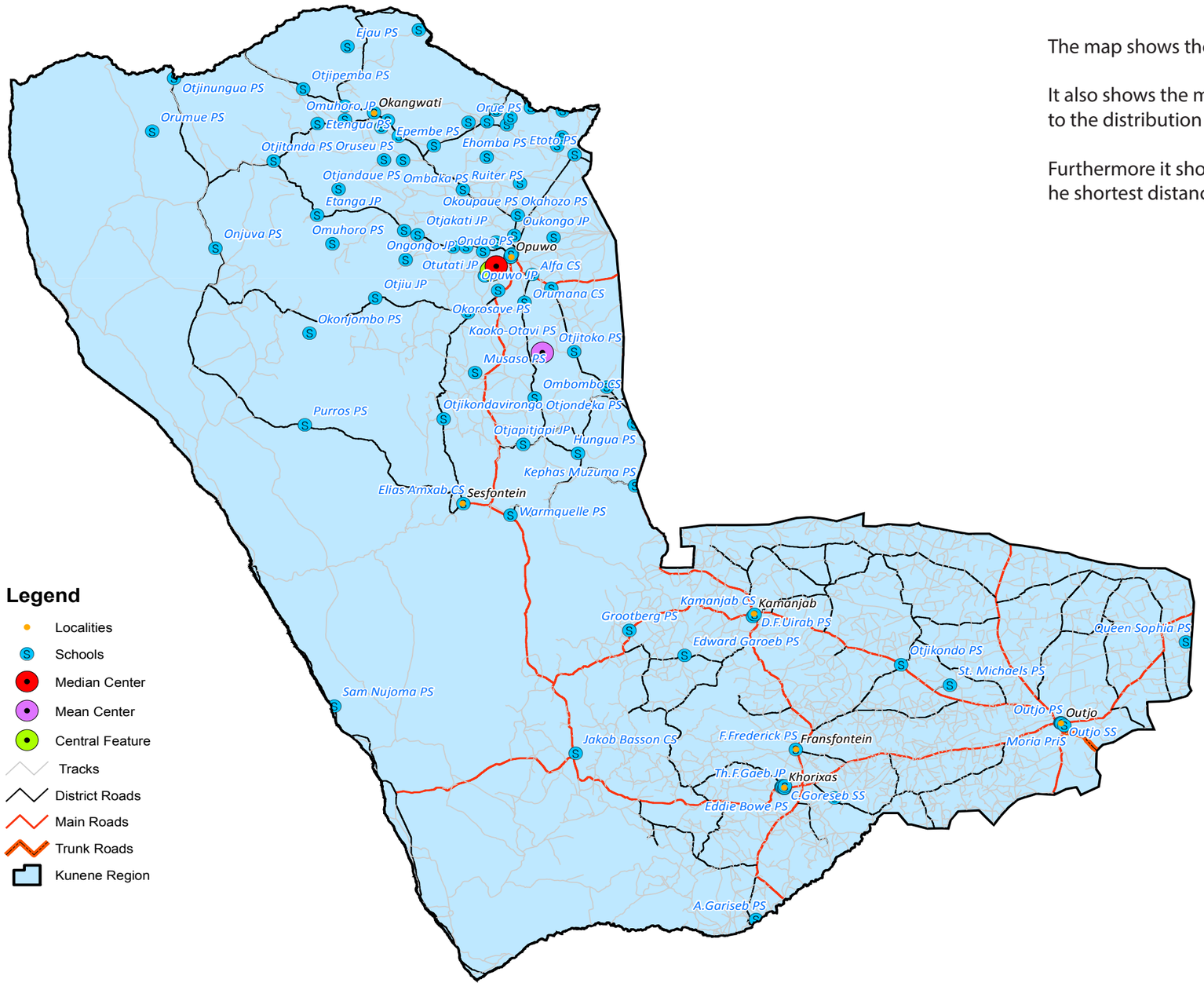
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Kunene Region.

In 2007, 39.5% of all Surveyed Structures in the Kunene Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.3.4 KUNENE REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



Legend

- Localities
- Schools
- Median Center
- Mean Center
- Central Feature
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kunene Region

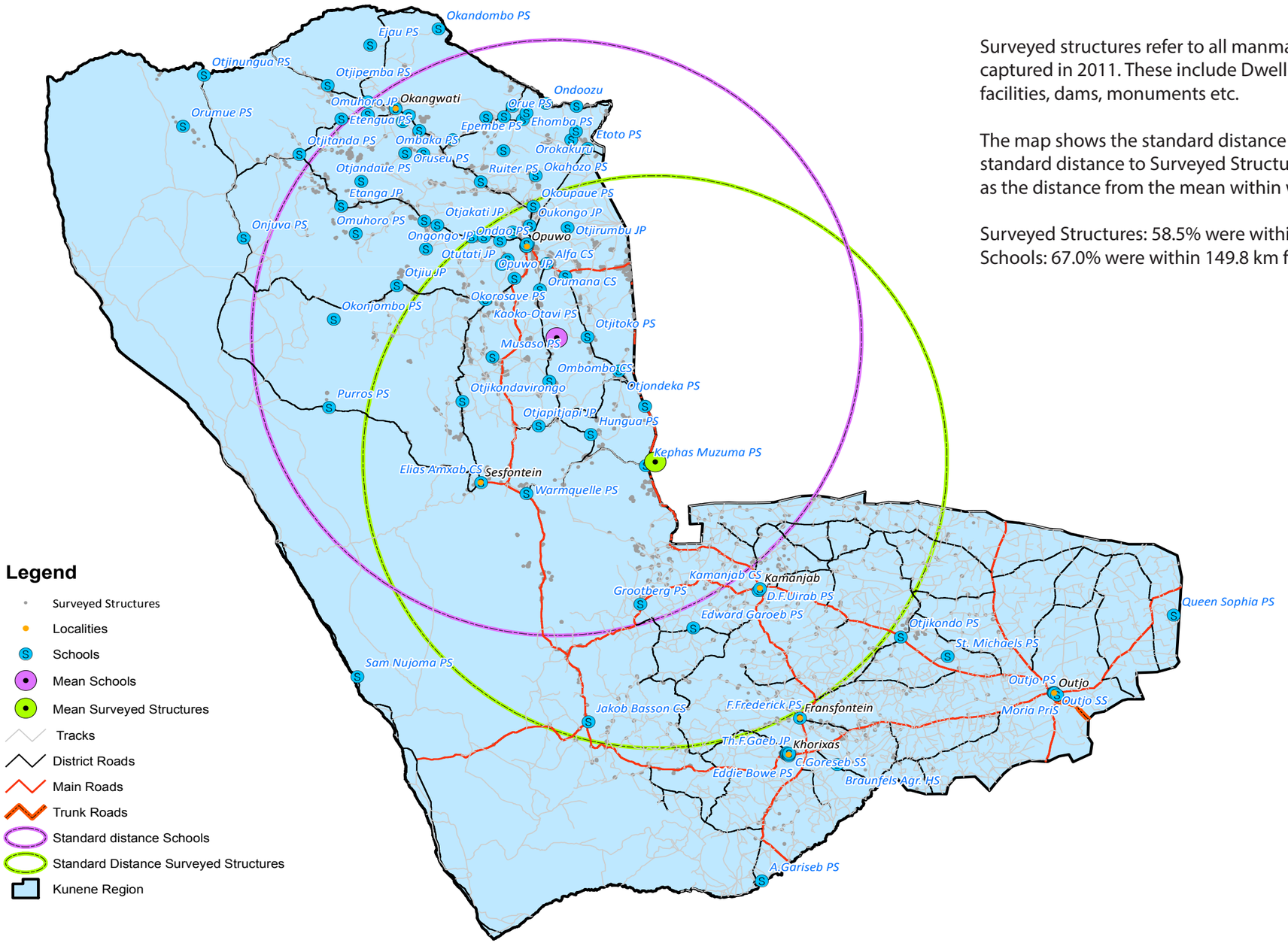
The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Kunene Region.

Furthermore it shows the median center, which is the location having t he shortest distance to all schools in relation to their distribution.

Source: Schools, Ministry of Education 2007.

Figure 1.3.5 KUNENE REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007



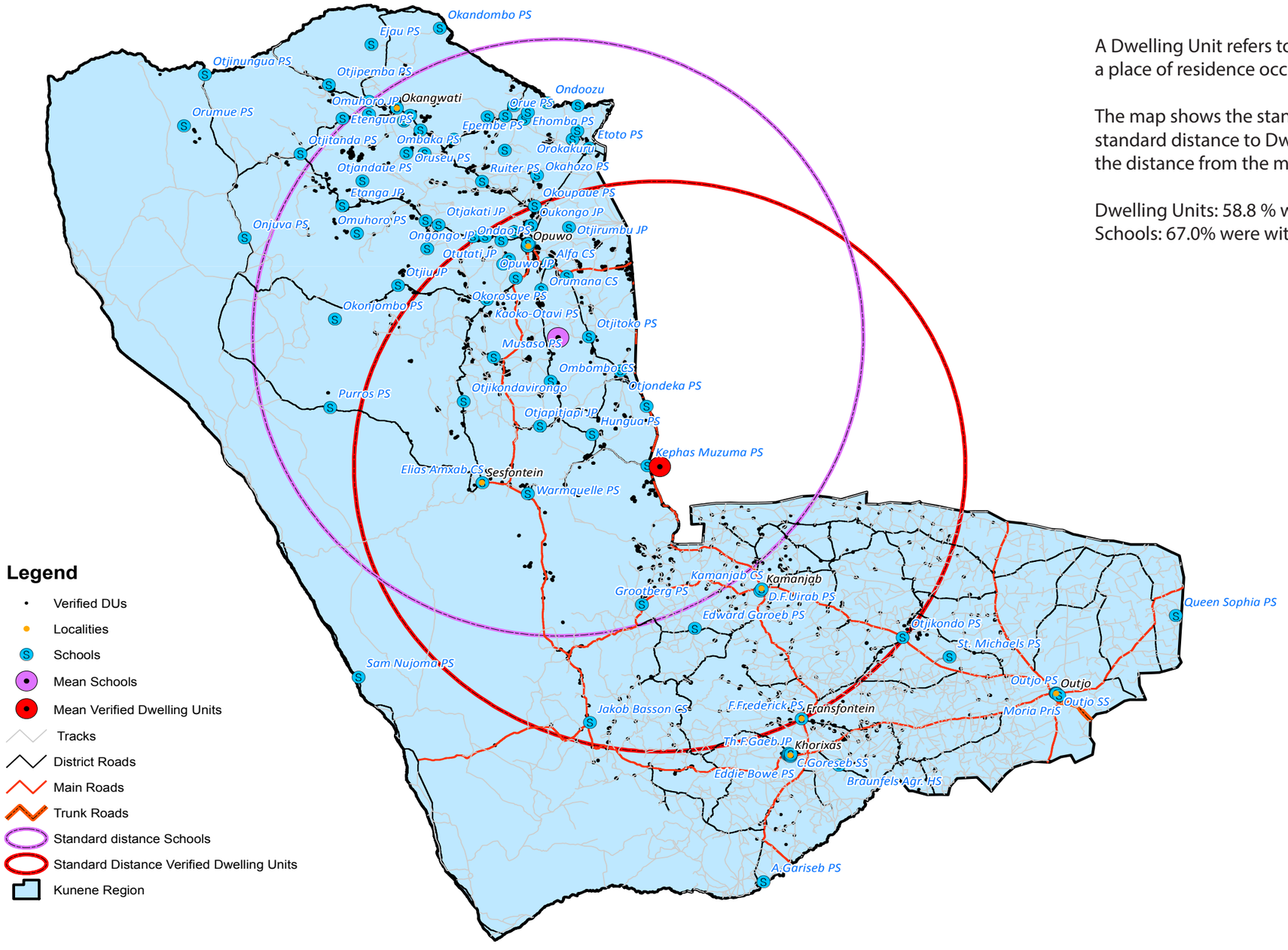
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 58.5% were within 143.9 km from the mean center.
Schools: 67.0% were within 149.8 km from the mean center.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.3.6 KUNENE REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



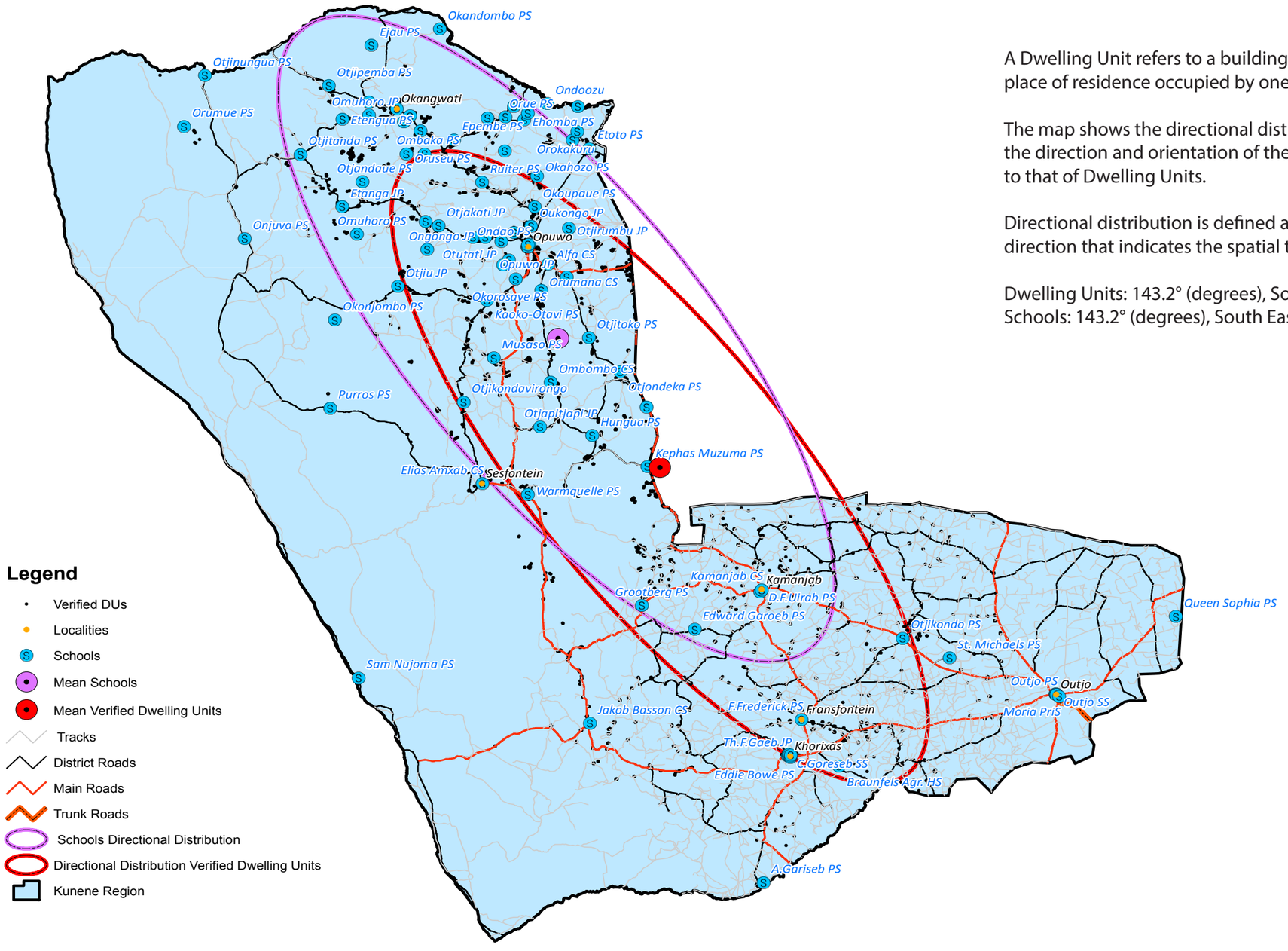
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 58.8 % were within 142.5 km from the mean center.
Schools: 67.0% were within 149.8 km from the mean center.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.3.7 KUNENE REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

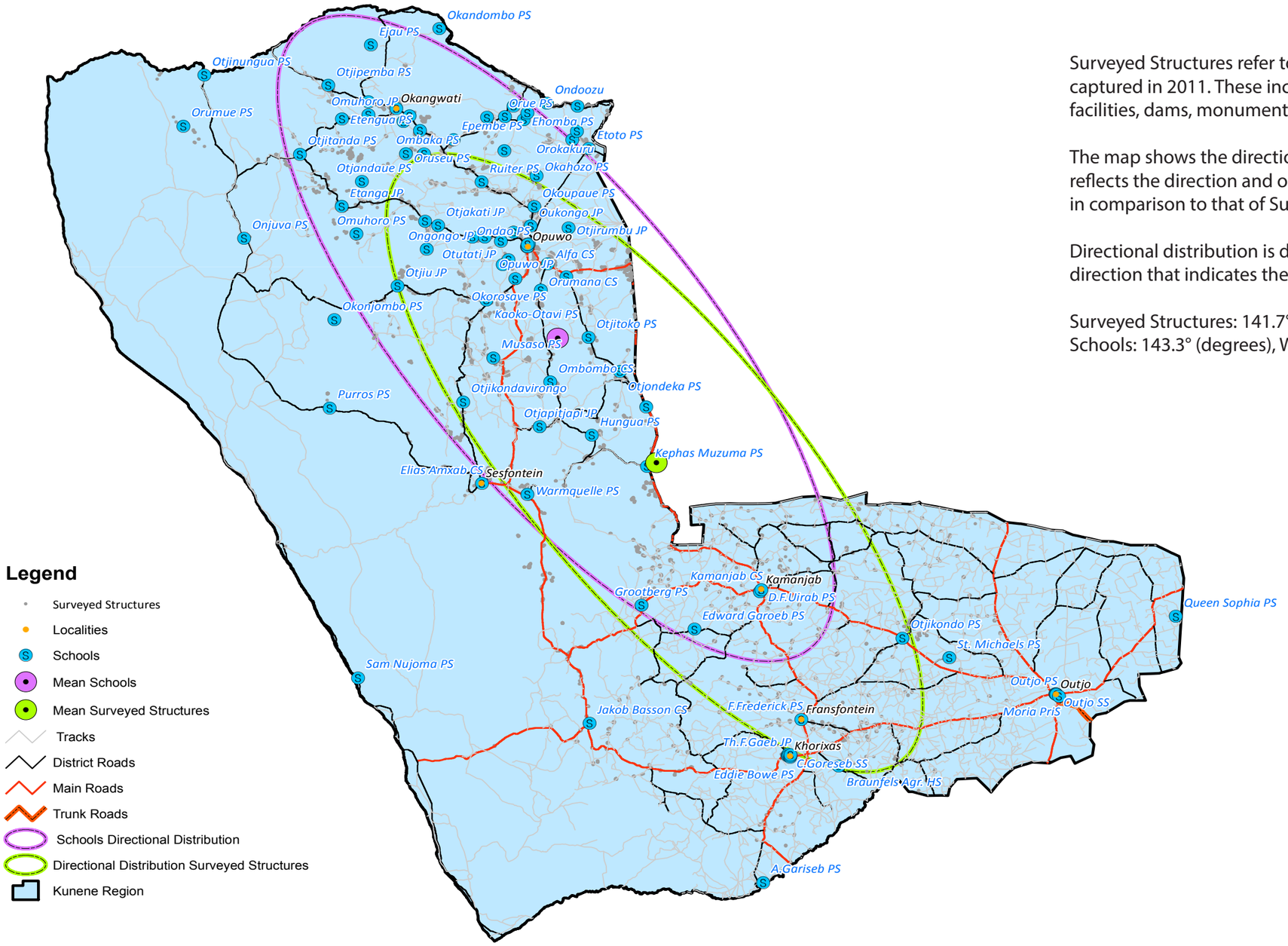
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 143.2° (degrees), South East-North West
Schools: 143.2° (degrees), South East-North West

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.3.8 KUNENE REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

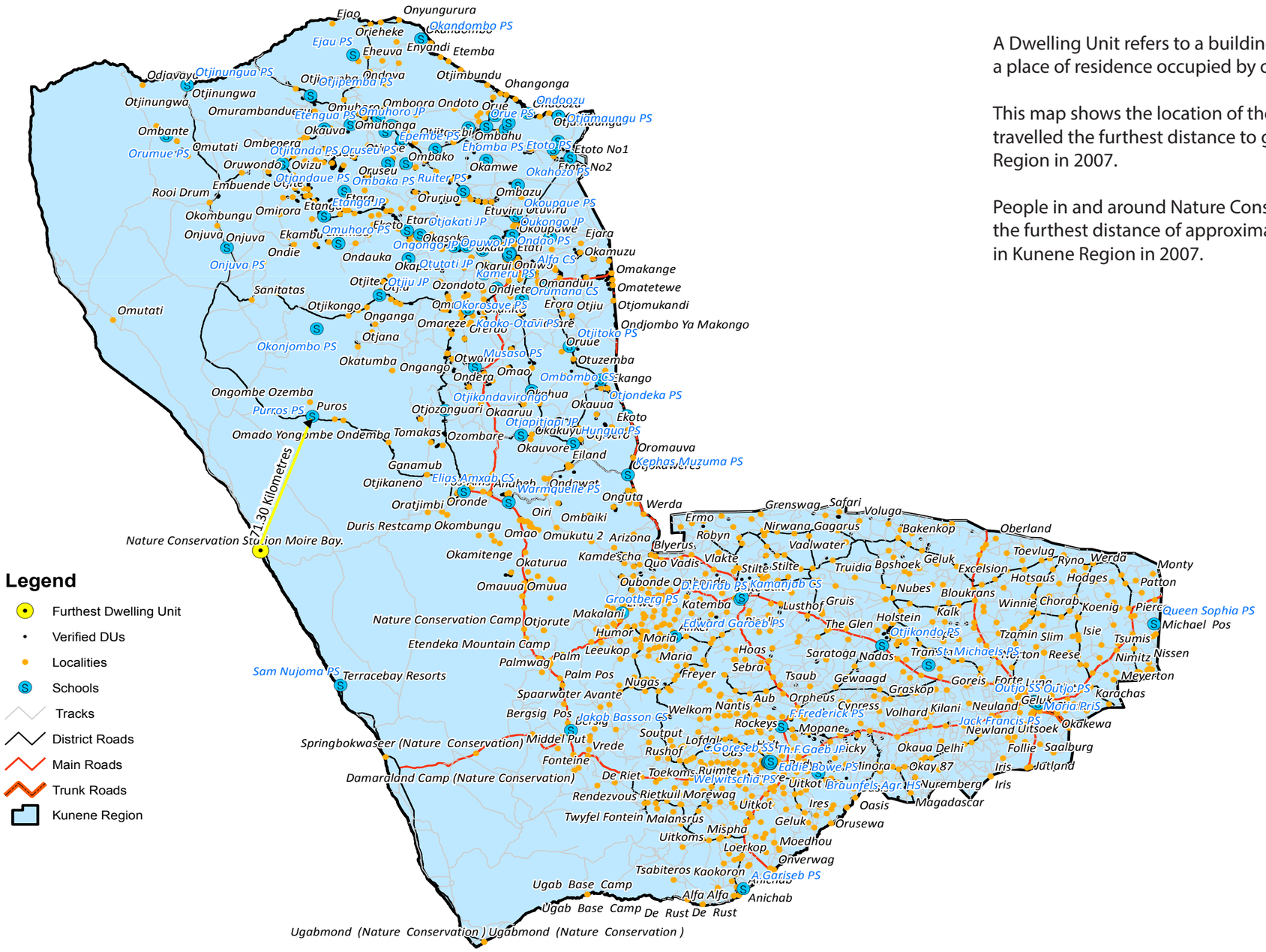
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 141.7° (degrees), South East-North West
Schools: 143.3° (degrees), West-East South East-North West

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.3.9 KUNENE REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travelled the furthest distance to get to the nearest school in Kunene Region in 2007.

People in and around Nature Conservation Station Moire Bay travelled the furthest distance of approximately 71.30 Km to the nearest school in Kunene Region in 2007.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

EDUCATION

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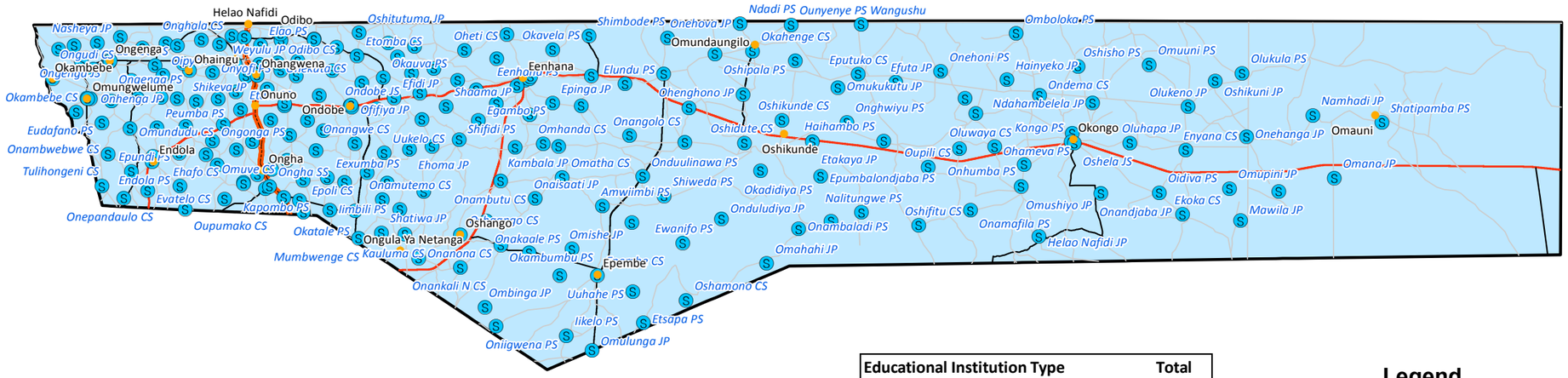
OHANGWENA

Figure 1.4.1 OHANGWENA REGION – SCHOOLS IN 2007



Educational Institution Type	Total
Junior Primary School	58
Junior Secondary School	10
Primary School	95
Private School	1
Secondary School	1
Senior Secondary School	5
Combined School	64

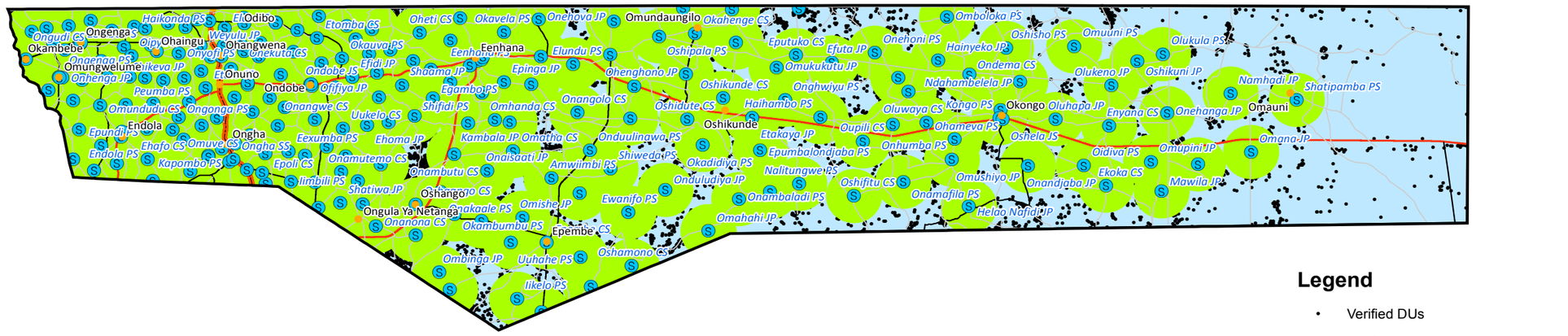
Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Ohangwena Region

The map shows the location of primary, combined and secondary schools in the Ohangwena Region in 2007.

Source: Schools, Ministry of Education 2007.

Figure 1.4.2 OHANGWENA REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



Legend

- Verified DUs
- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Primary Schools 2007 5 km Buffer
- Ohangwena Region

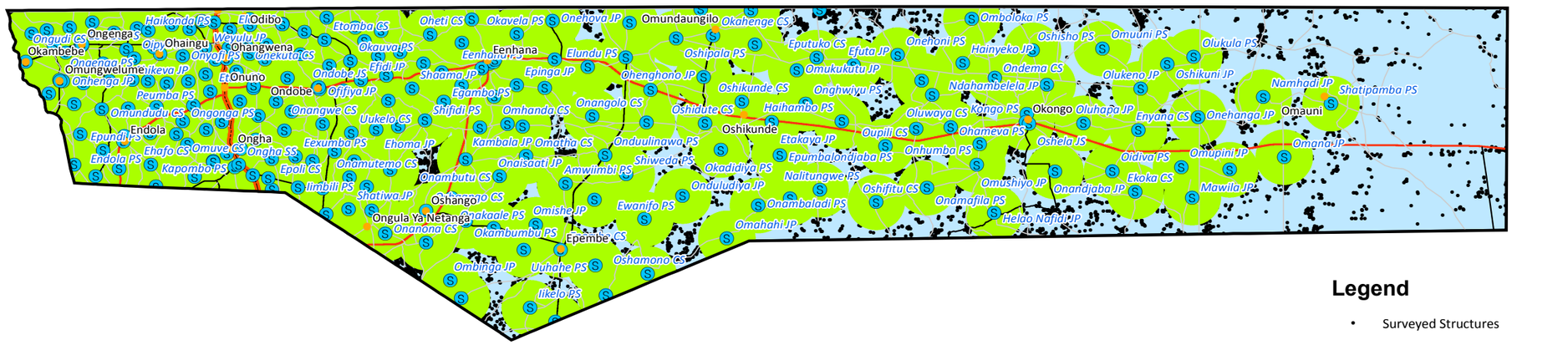
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Ohangwena Region.

In 2007, 4.4% of all verified Dwelling Units in the Ohangwena Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.4.3 OHANGWENA REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



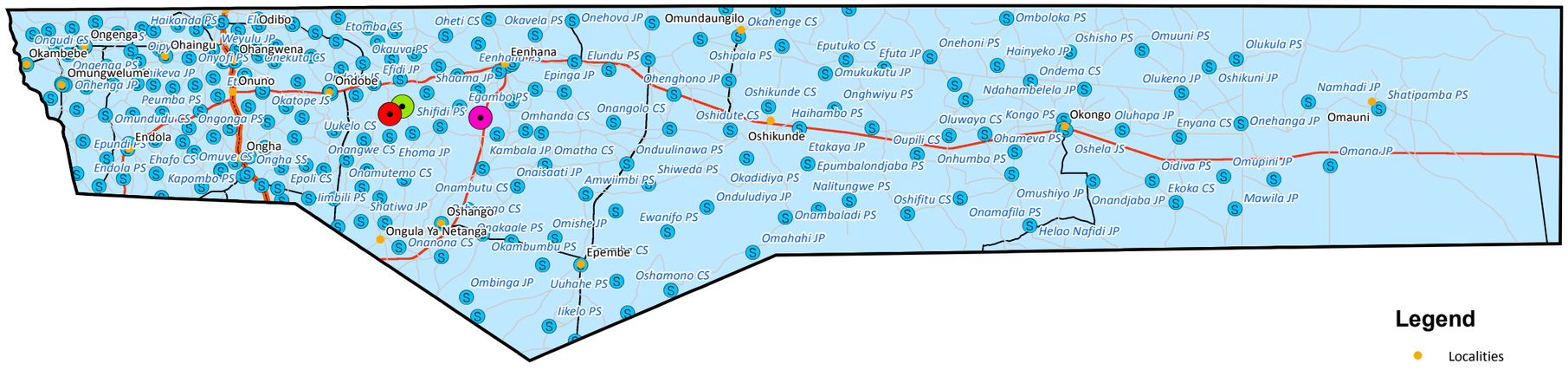
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Ohangwena Region.

In 2007, 5.5% of all Surveyed Structures in the Ohangwena Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.4.4 OHANGWENA REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



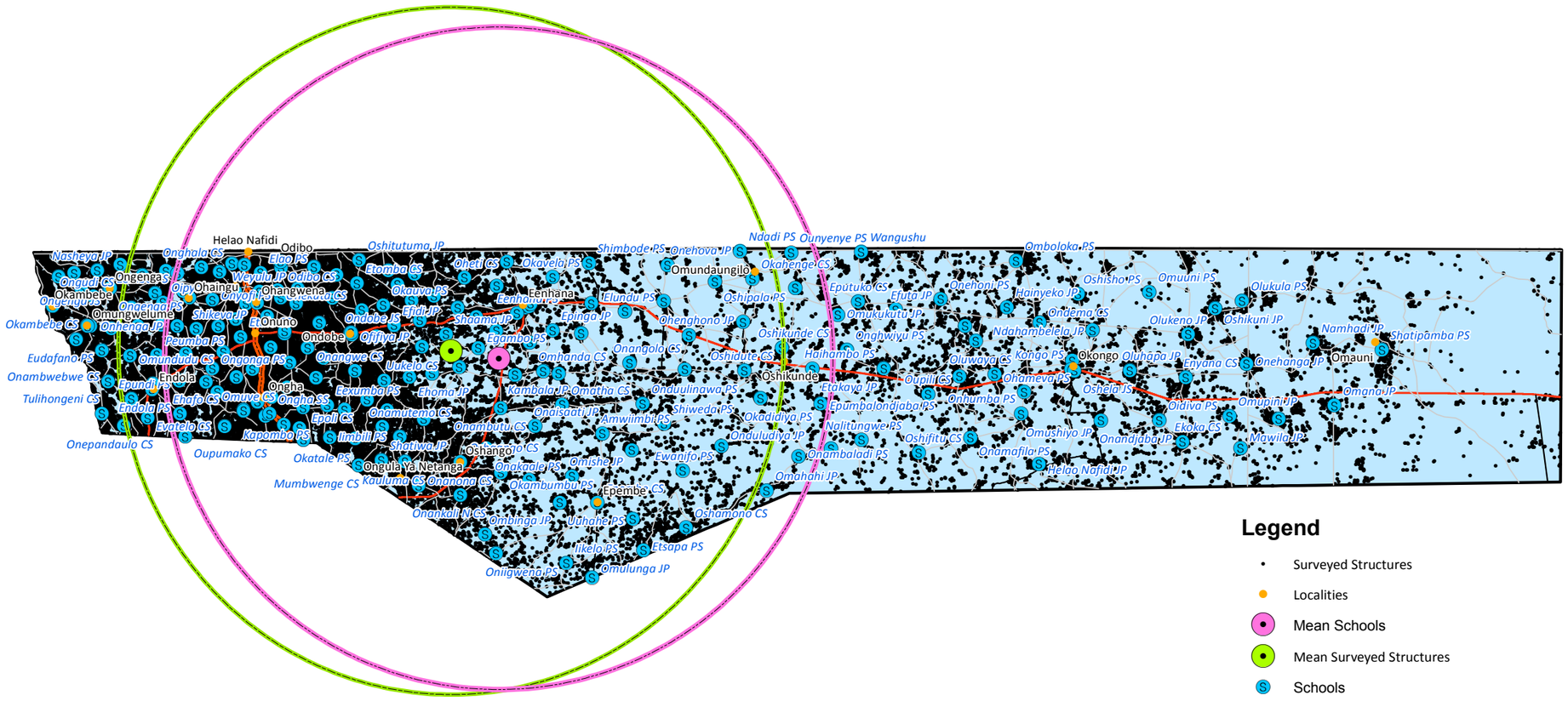
The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Ohangwena Region.

Furthermore it shows the median center, which is the location having the shortest distance to all schools in relation to their distribution.

Source: Schools, Ministry of Education 2007.

Figure 1.4.5 OHANGWENA REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007



Legend

- Surveyed Structures
- Localities
- Mean Schools
- Mean Surveyed Structures
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Schools Standard Distance
- Surveyed Structures Standard Distance
- Ohangwena Region

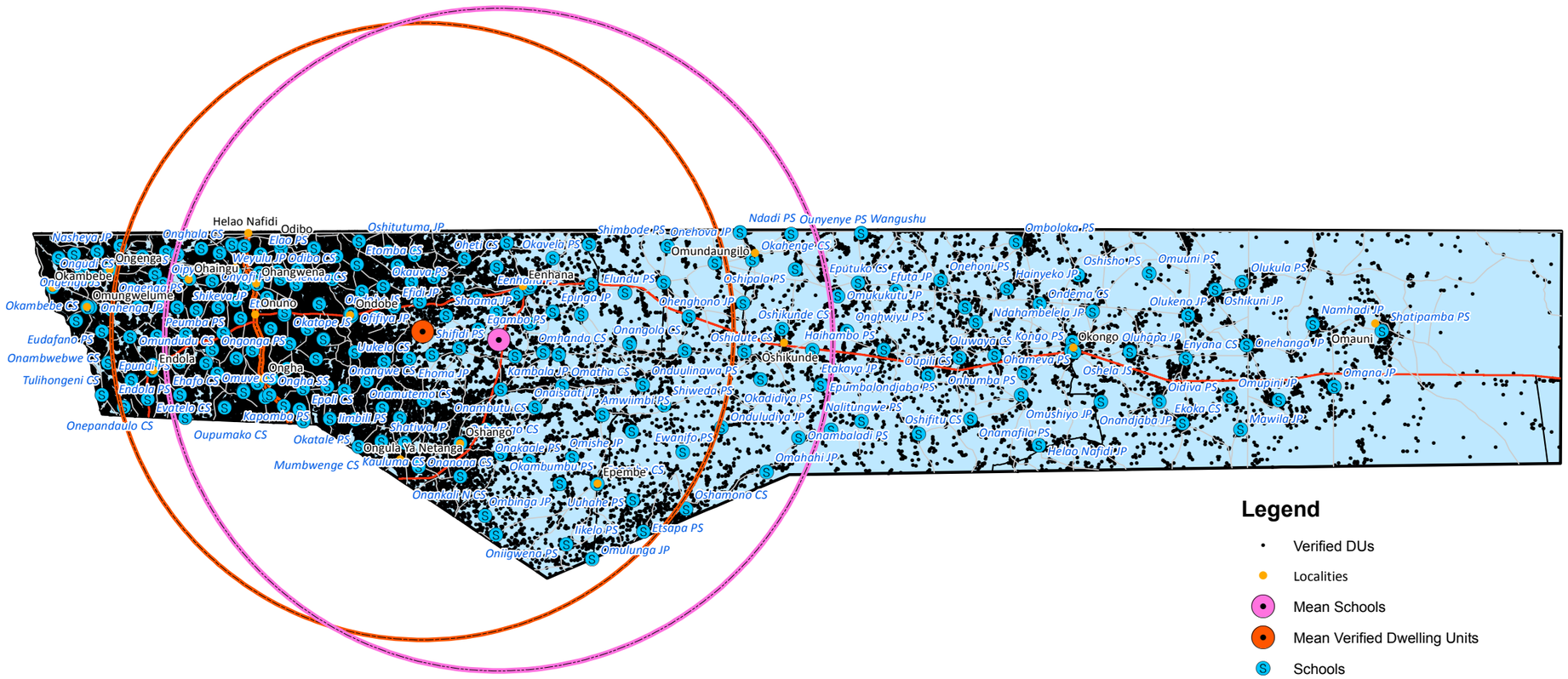
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 75.2% were within 59.5 km from the mean center.
Schools: 67.9% were within 57 km from the mean center.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.4.6 OHANGWENA REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



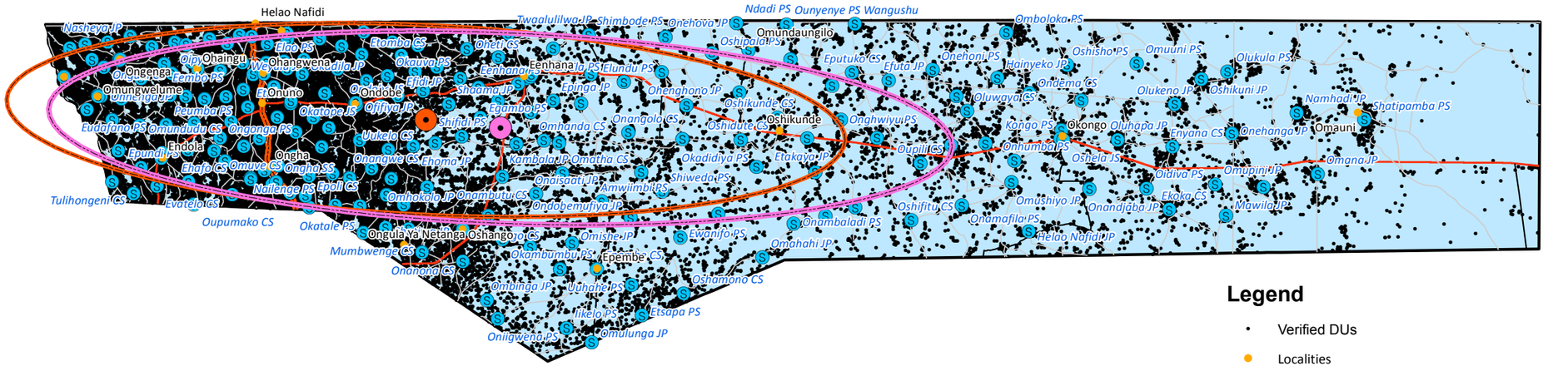
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 77.1 % were within 53 km from the mean center.
Schools: 67.9% were within 57 km from the mean center.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.4.7 OHANGWENA REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

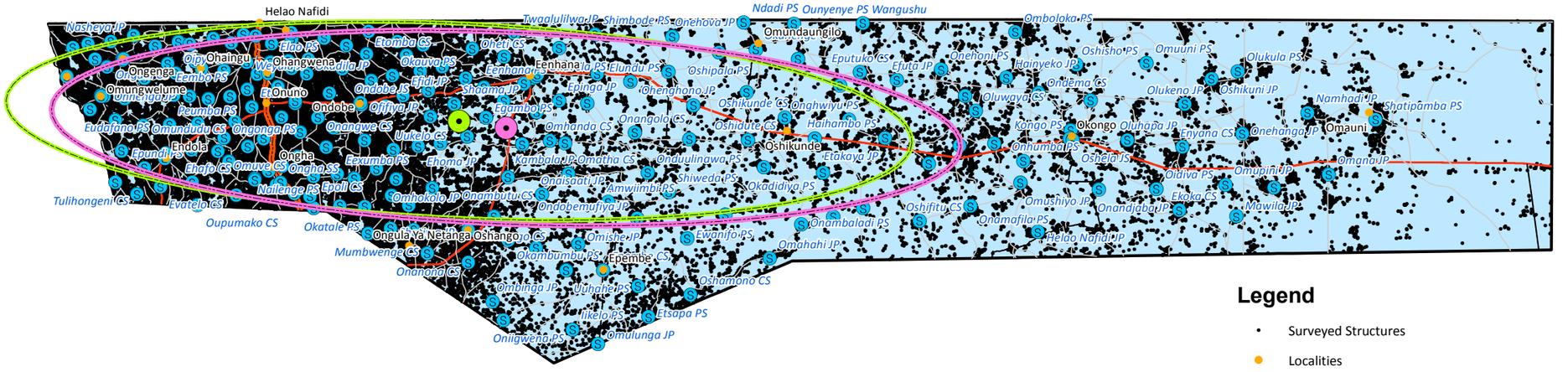
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 92.8° (degrees), West-East
Schools: 92.4° (degrees), West-East

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.4.8 OHANGWENA REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

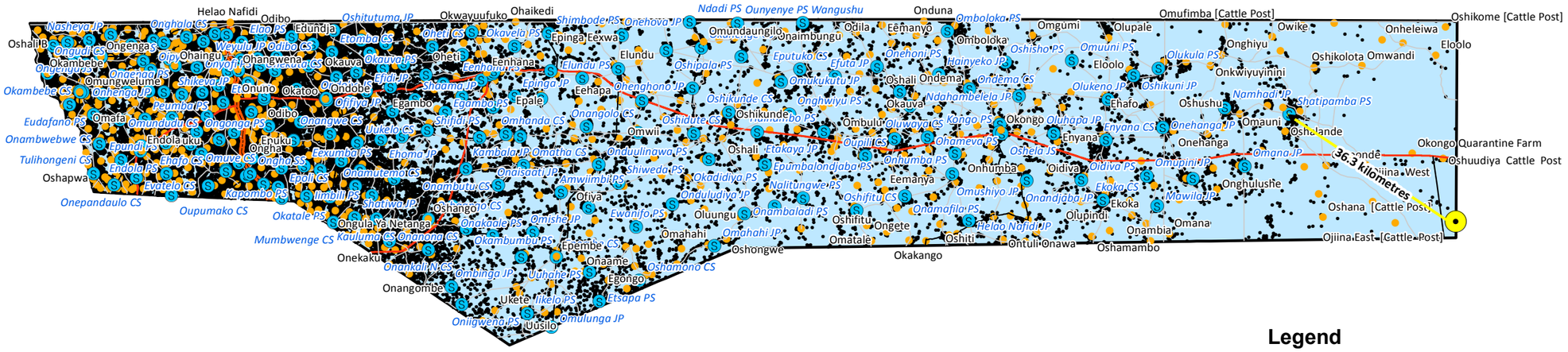
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 92.8° (degrees), West-East
Schools: 92.4° (degrees), West-East

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.4.9 OHANGWENA REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travelled the furthest distance to get to the nearest school in Ohangwena Region in 2007.

People in and around Ojiina East (Cattle Post) travelled the furthest distance of approximately 36.3 km to the nearest school in Ohangwena Region in 2007, although they might have been served by a neighbouring region.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

EDUCATION

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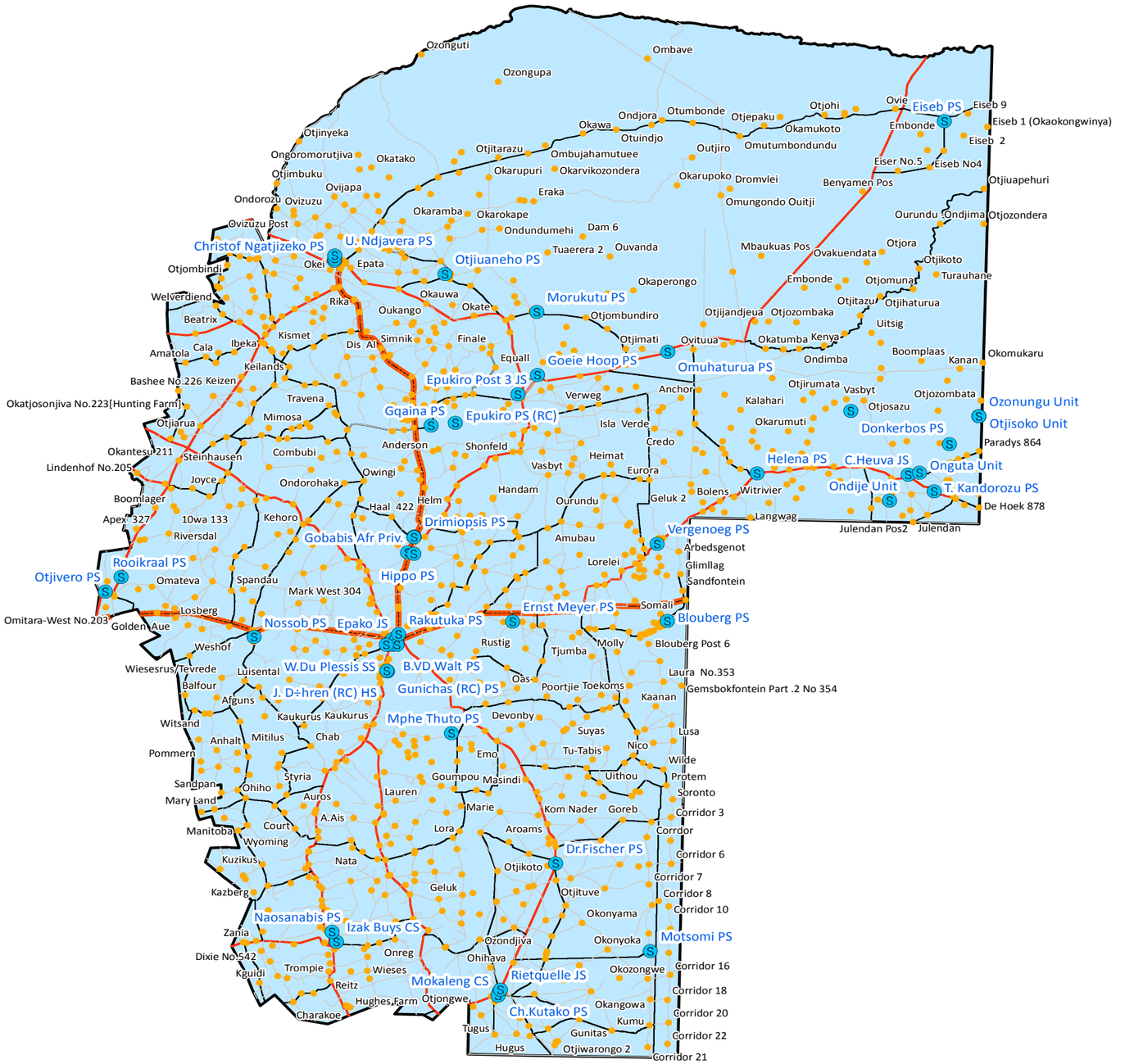
OMAHEKE

Figure 1.5.1 OMAHEKE REGION – SCHOOLS IN 2007



Legend

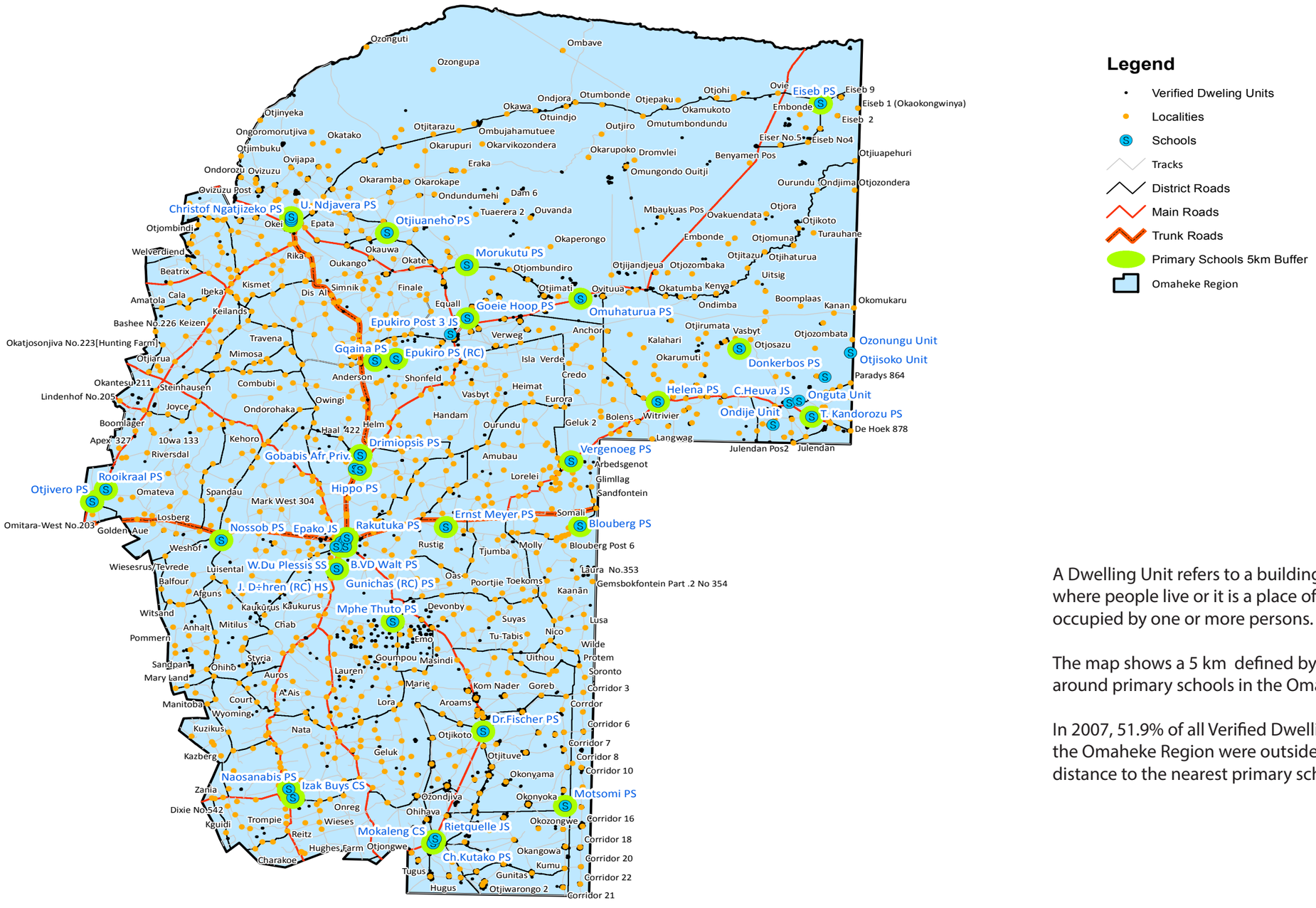
- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Omaheke Region

School Type	Total
Junior Secondary School	5
Primary School	29
Private School	11
Secondary School	1
Combined School	2

The map shows the location of primary, combined and secondary schools in the Omaheke Region in 2007.

Source: Schools, Ministry of Education 2007.

Figure 1.5.2 OMAHEKE REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



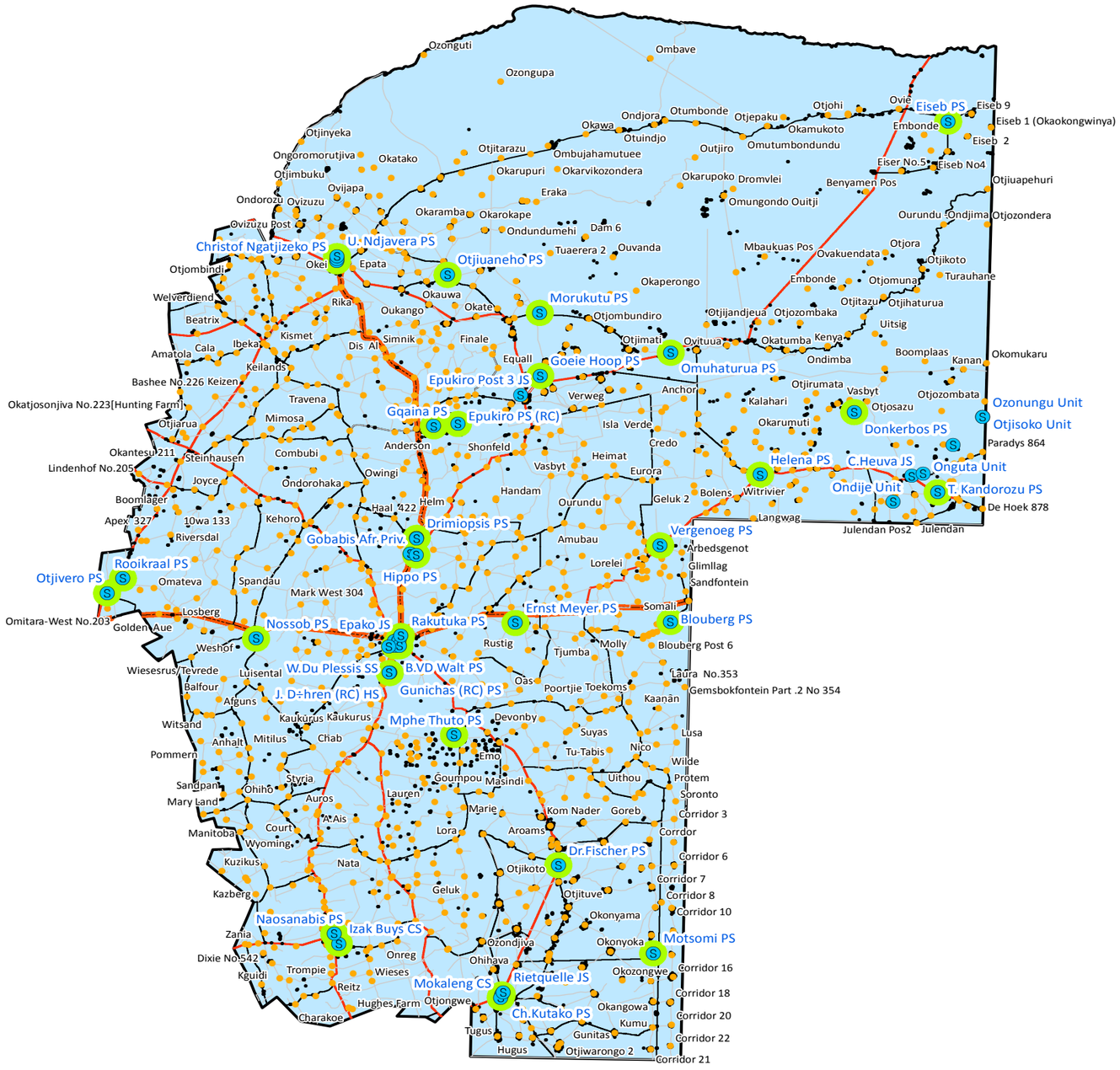
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km defined by a buffer zone around primary schools in the Omaheke Region.

In 2007, 51.9% of all Verified Dwelling Units in the Omaheke Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.5.3 OMAHEKE REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



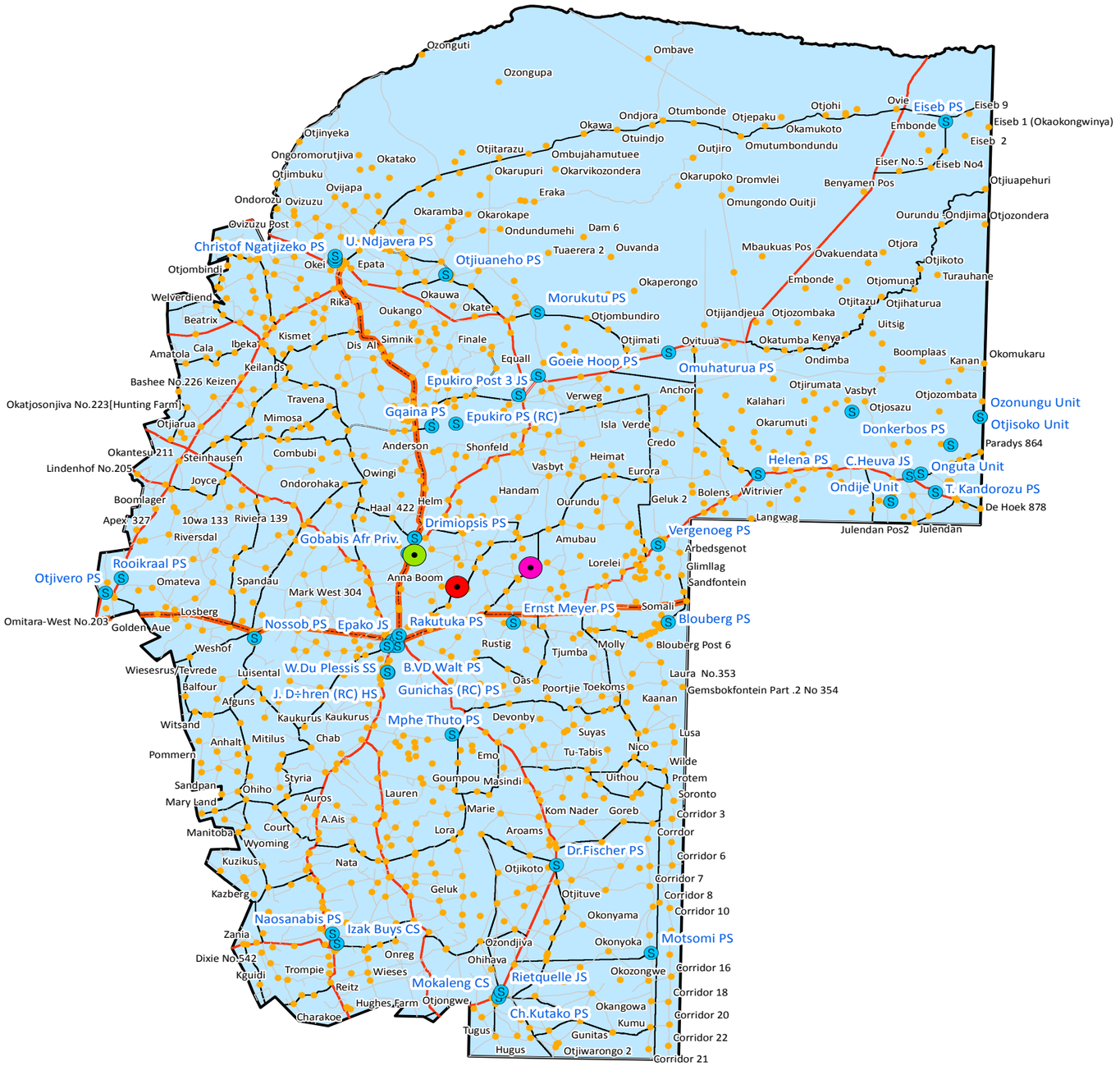
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km defined by a buffer zone around primary schools in the Omaheke Region.

In 2007, 57.4% of all Surveyed Structures in the Omaheke Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.5.4 OMAHEKE REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



Legend

- Localities
- Schools
- Median Center
- Mean Center
- Central Feature
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Omaheke Region

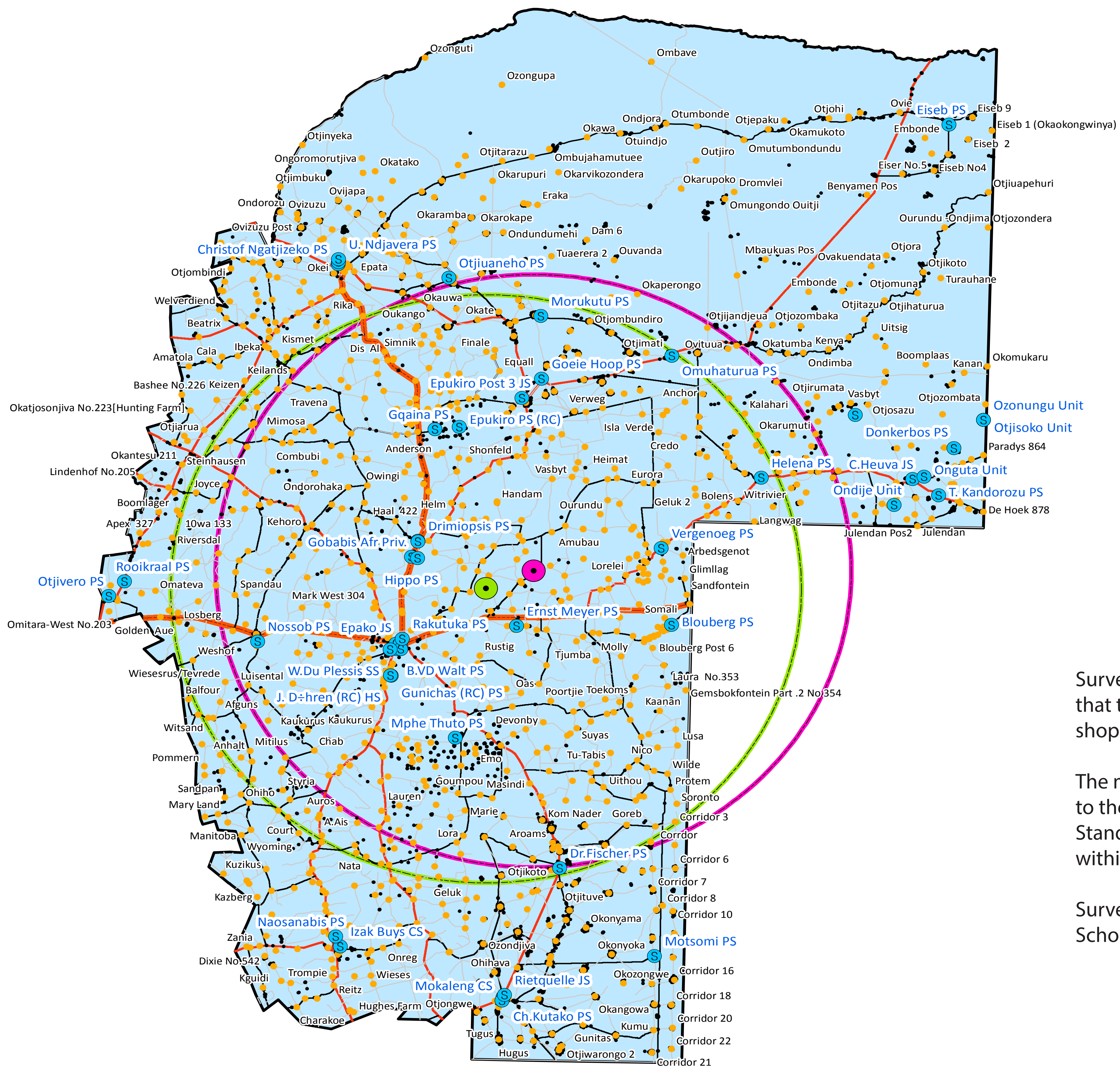
The map shows the most central school defined as the central feature.

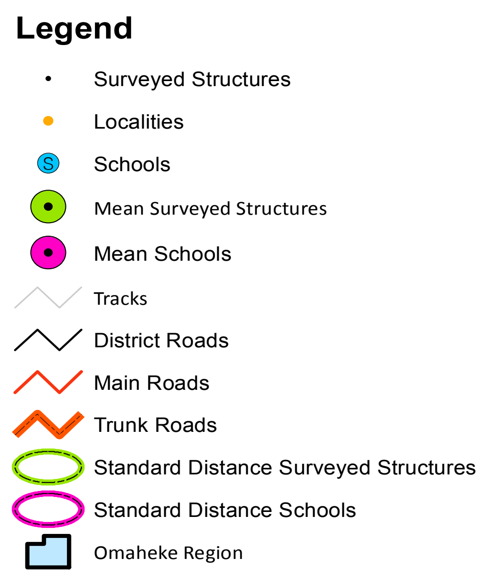
It also shows the mean center which is the average location in relation to the distribution of all schools in the Omaheke Region.

Furthermore it shows the median center, which is the location having the shortest distance to all schools in relation to their distribution.

Source: Schools, Ministry of Education 2007.

Figure 1.5.5 OMAHEKE REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007





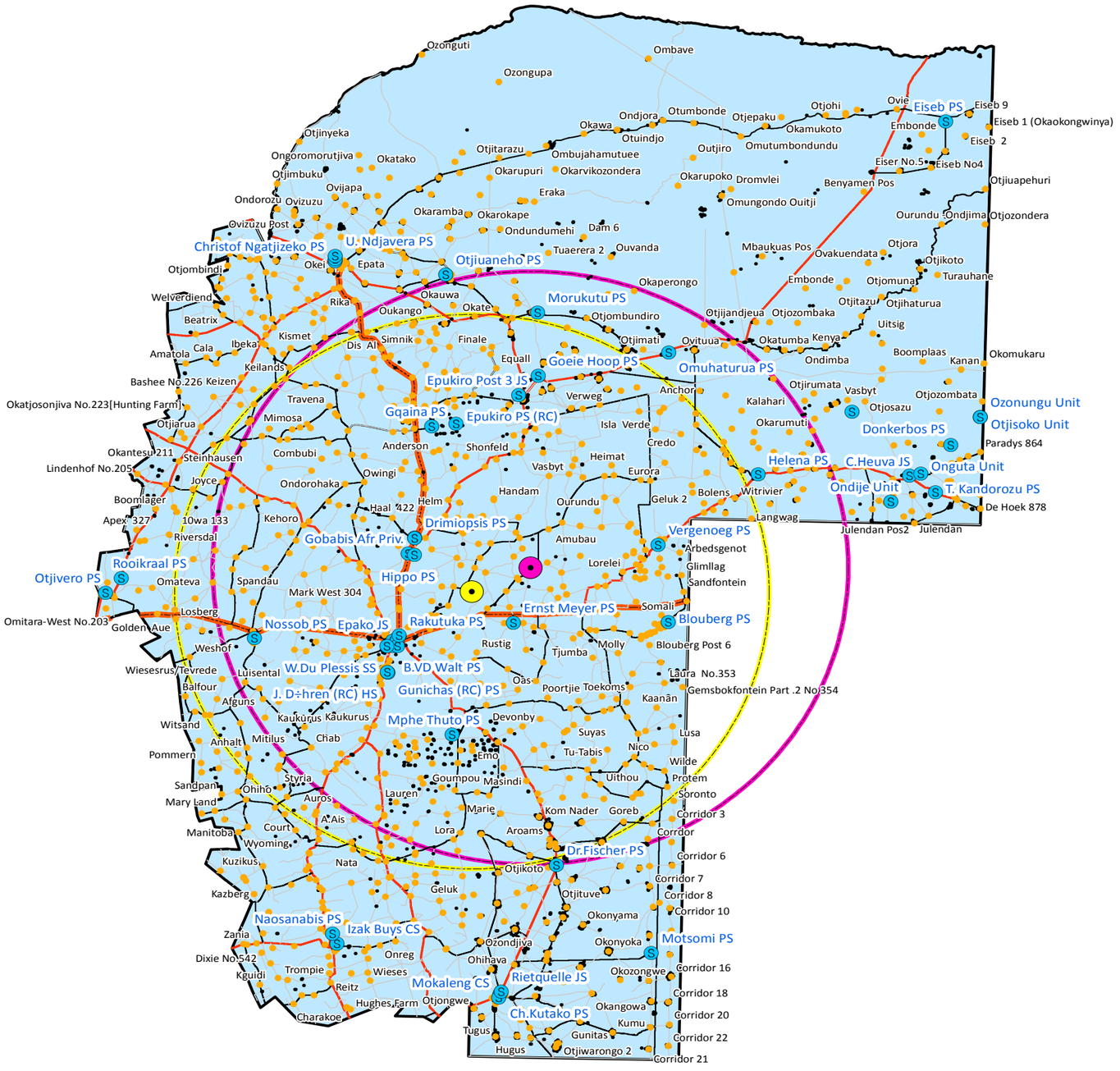
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 56.8% were within 112.4 km from the mean center.
Schools: 54.7% were within 113.3 from the mean center.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.5.6 OMAHEKE REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



Legend

- Verified Dweling Units
- Localities
- Schools
- Mean Verified Dwelling Units
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Verified Dwelling Units
- Standard Distance Schools
- Omaheke Region

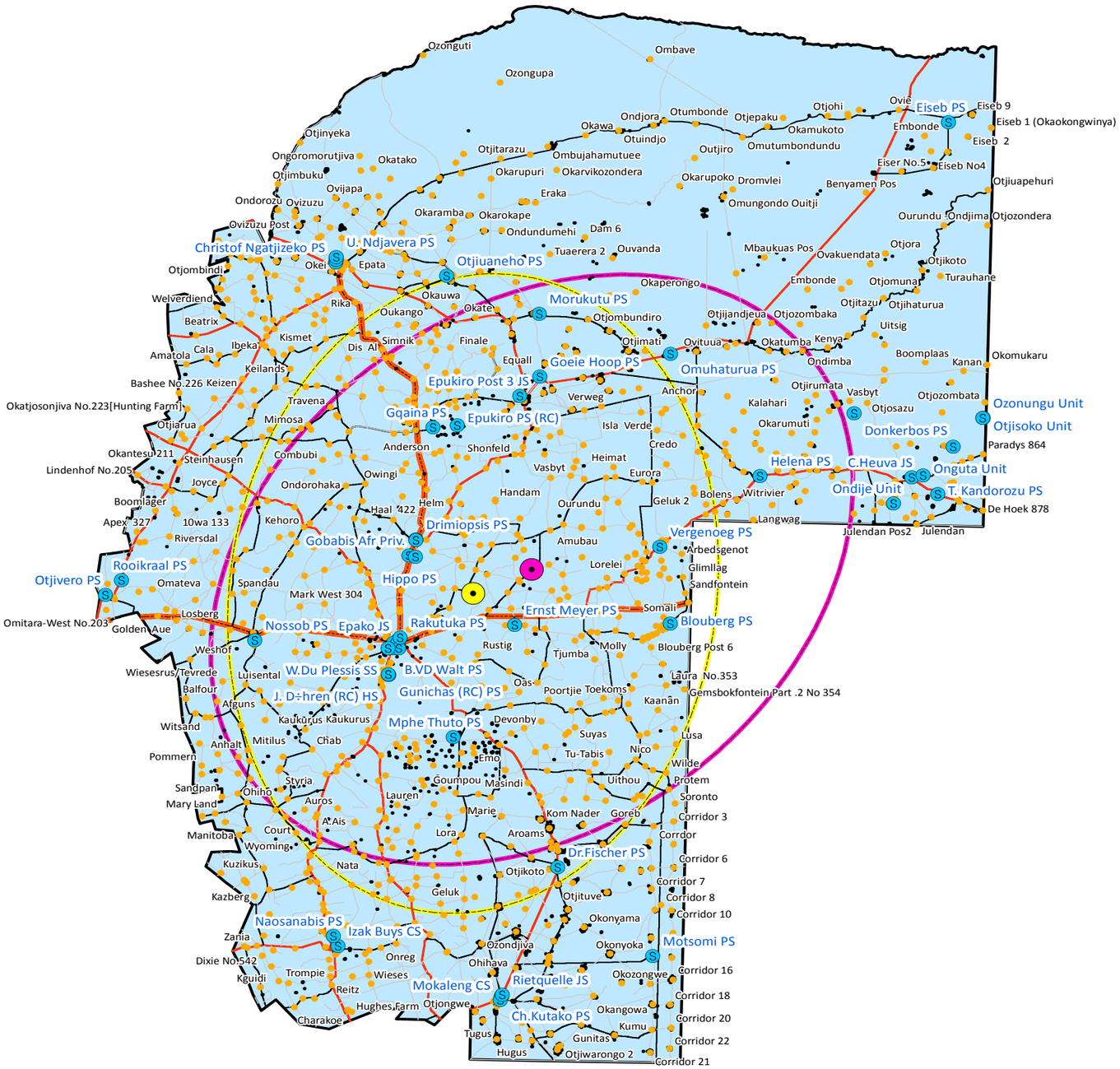
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 57.8% were within 105.9 from the mean center.
Schools: 54.7% were within 113.3 from the mean center.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.5.7 OMAHEKE REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



Legend

- Verified Dweling Units
- Localities
- Schools
- Mean Verified Dwelling Units
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Verified Dwelling Units
- Directional Distribution Schools
- Omaheke Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

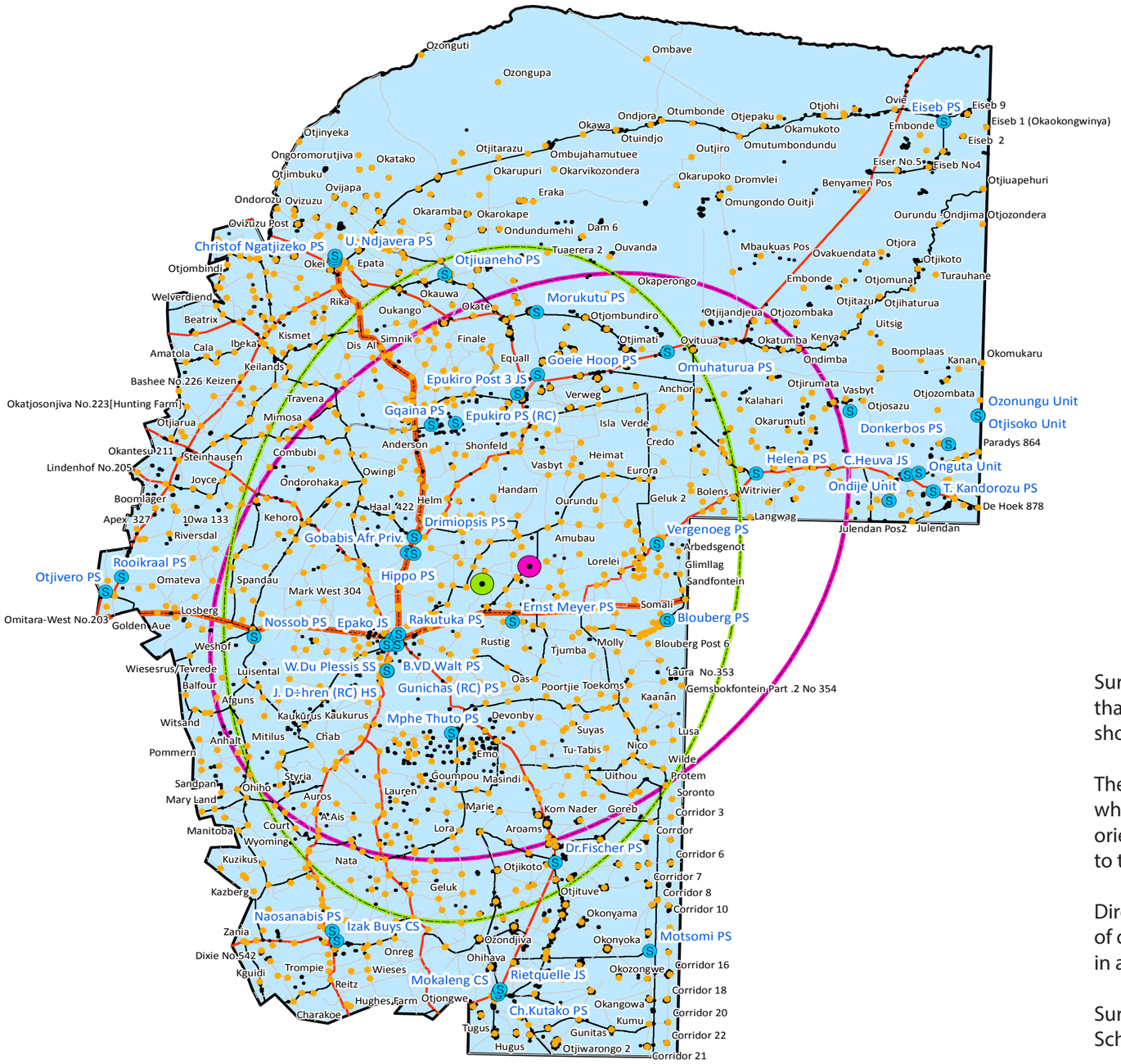
The map shows the directional distribution, which is an ellipse that reflects the direction and orientationof the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 7.1° (degrees), North-South
Schools: 46.5° (degrees), North East-South West

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.5.8 OMAHEKE REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

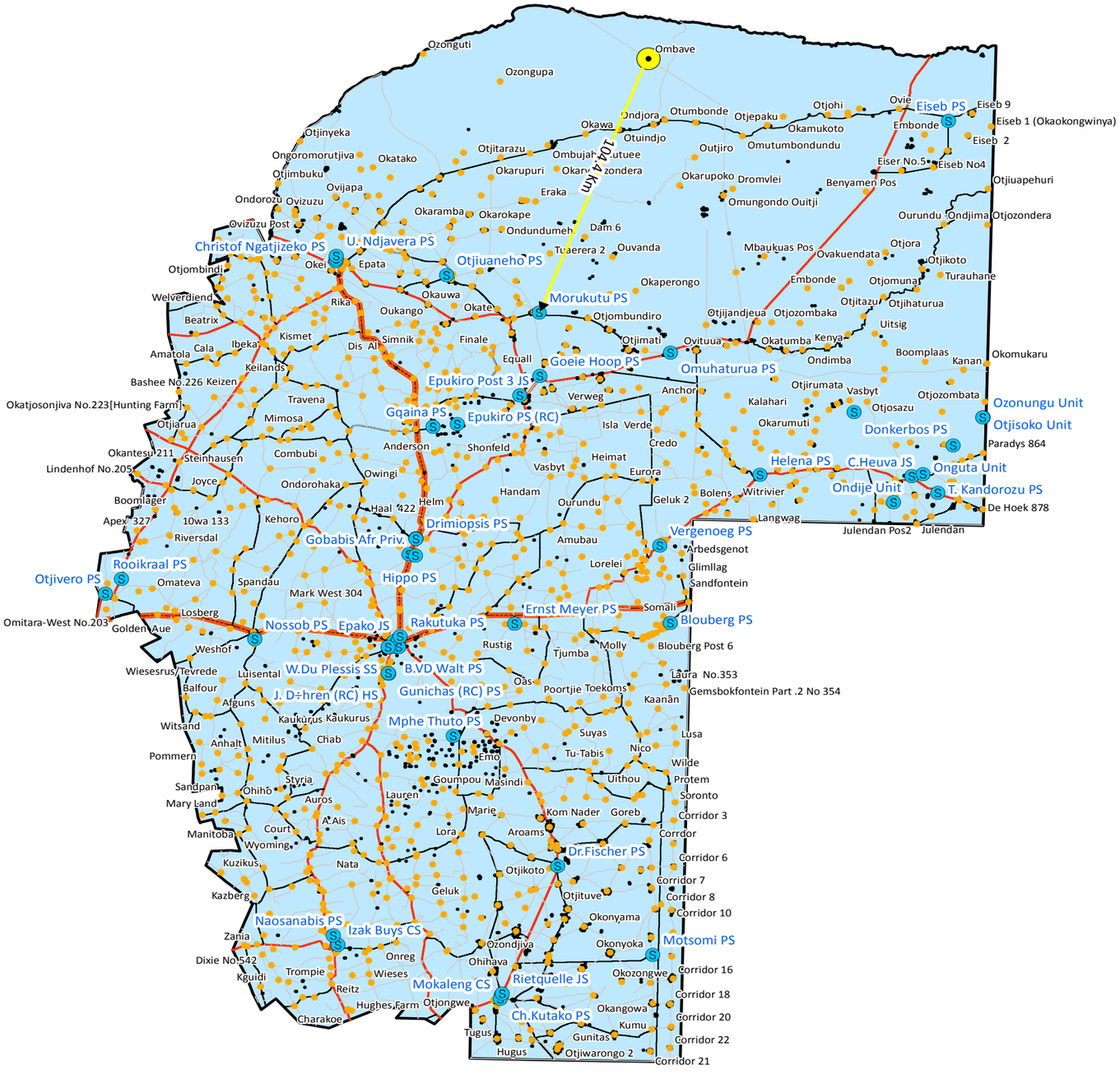
Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 10.4° (degrees), North-South
Schools: 46.5° (degrees), North East-South West

Figure 1.5.9 OMAHEKE REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest school in Omaheke Region in 2007.

People in and around Ombave travelled the furthest distance of approximately 104.4 km to the nearest school in Omaheke Region in 2007, although they might have been served by a neighbouring region.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

EDUCATION

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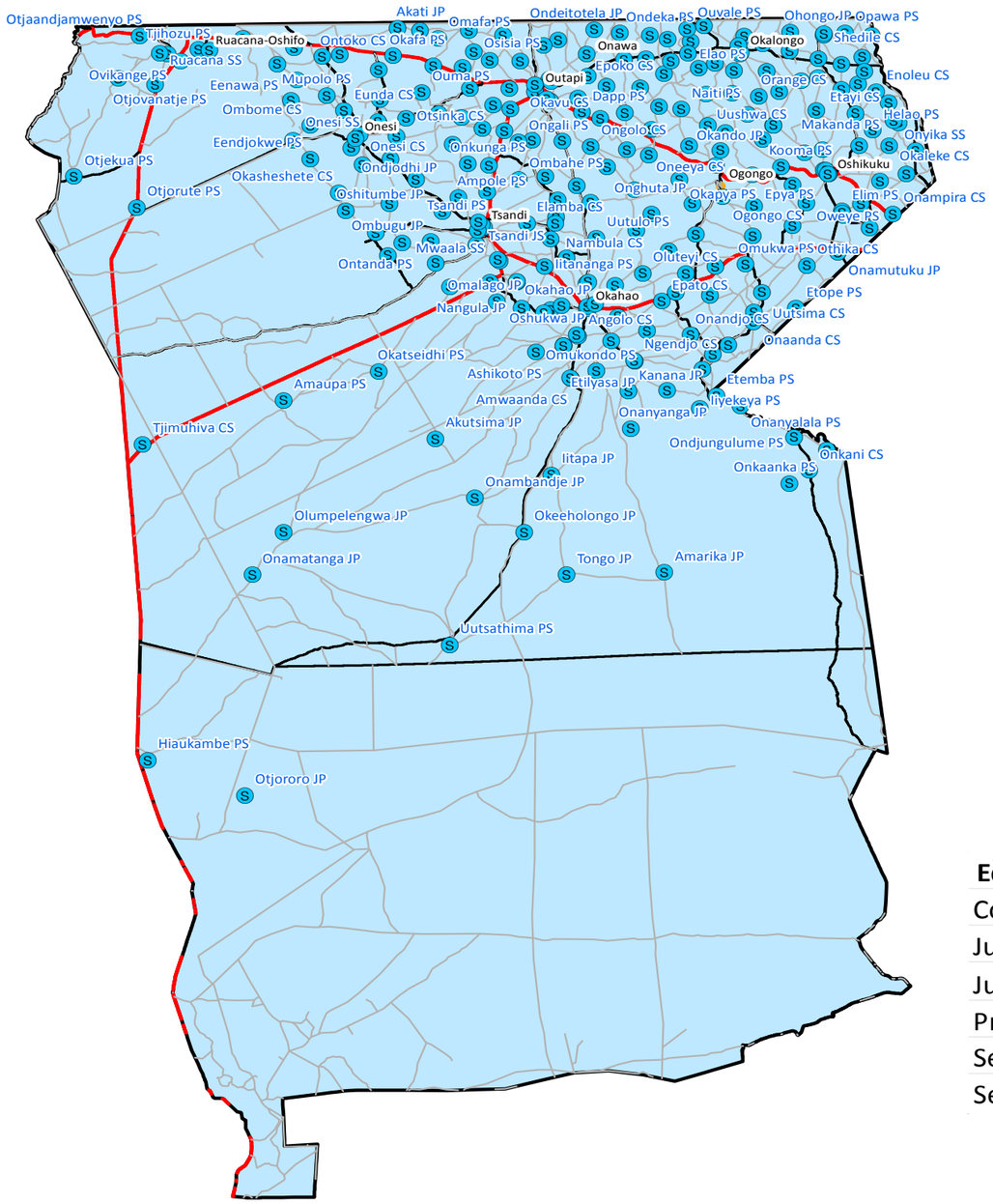
OMUSATI

Figure 1.6.1 OMUSATI REGION – SCHOOLS IN 2007



The map shows the location of primary, combined and secondary schools in the Omusati Region in 2007.

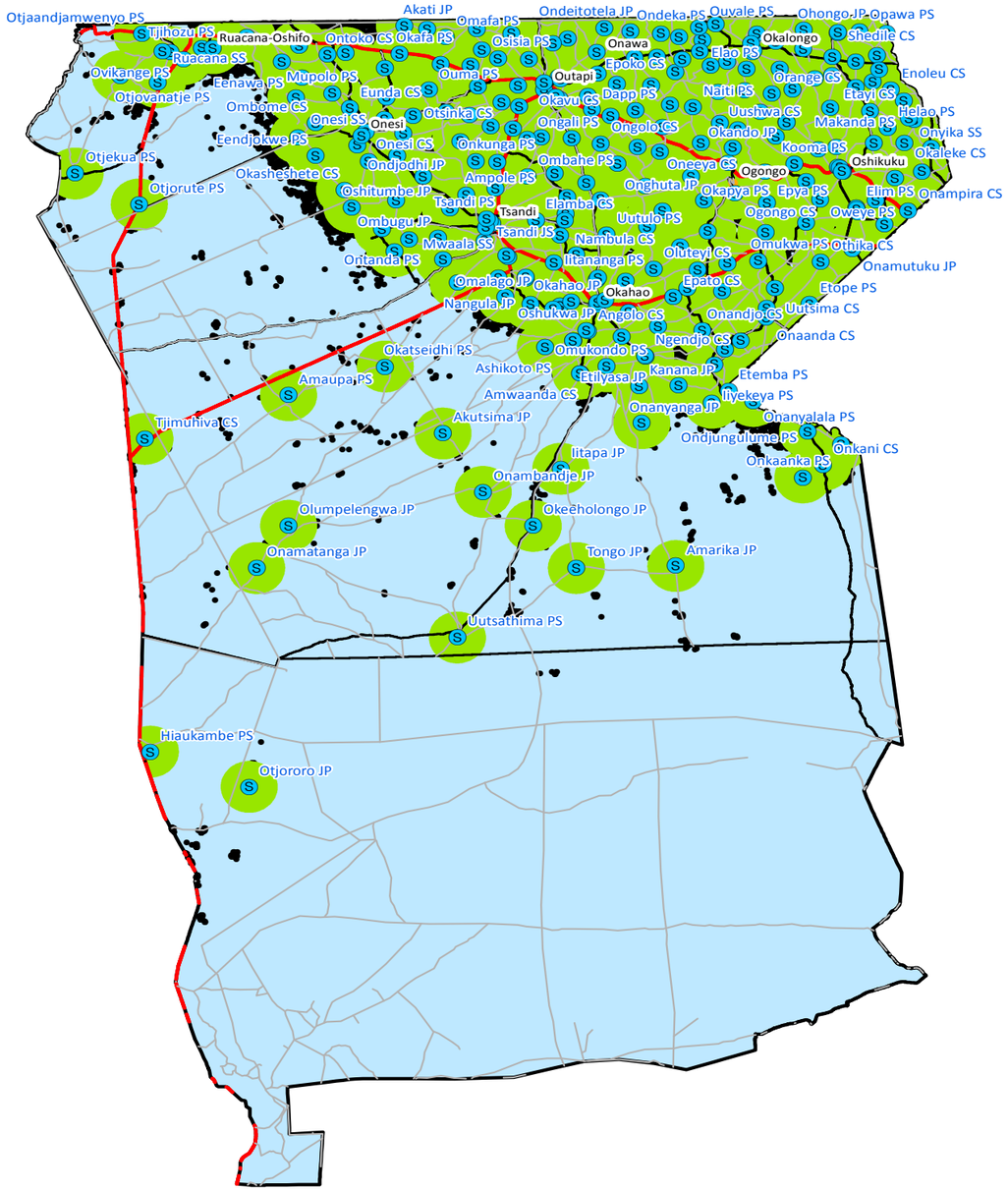
Educational Institution Type	Total
Comined School	85
Junior Primary School	48
Junior Secondarary School	9
Primary School	116
Senior Primary School	1
Senior Secondarary School	11

Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Omusati Region

Source: Schools, Ministry of Education 2007.

Figure 1.6.2 OMUSATI REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Omusati Region.

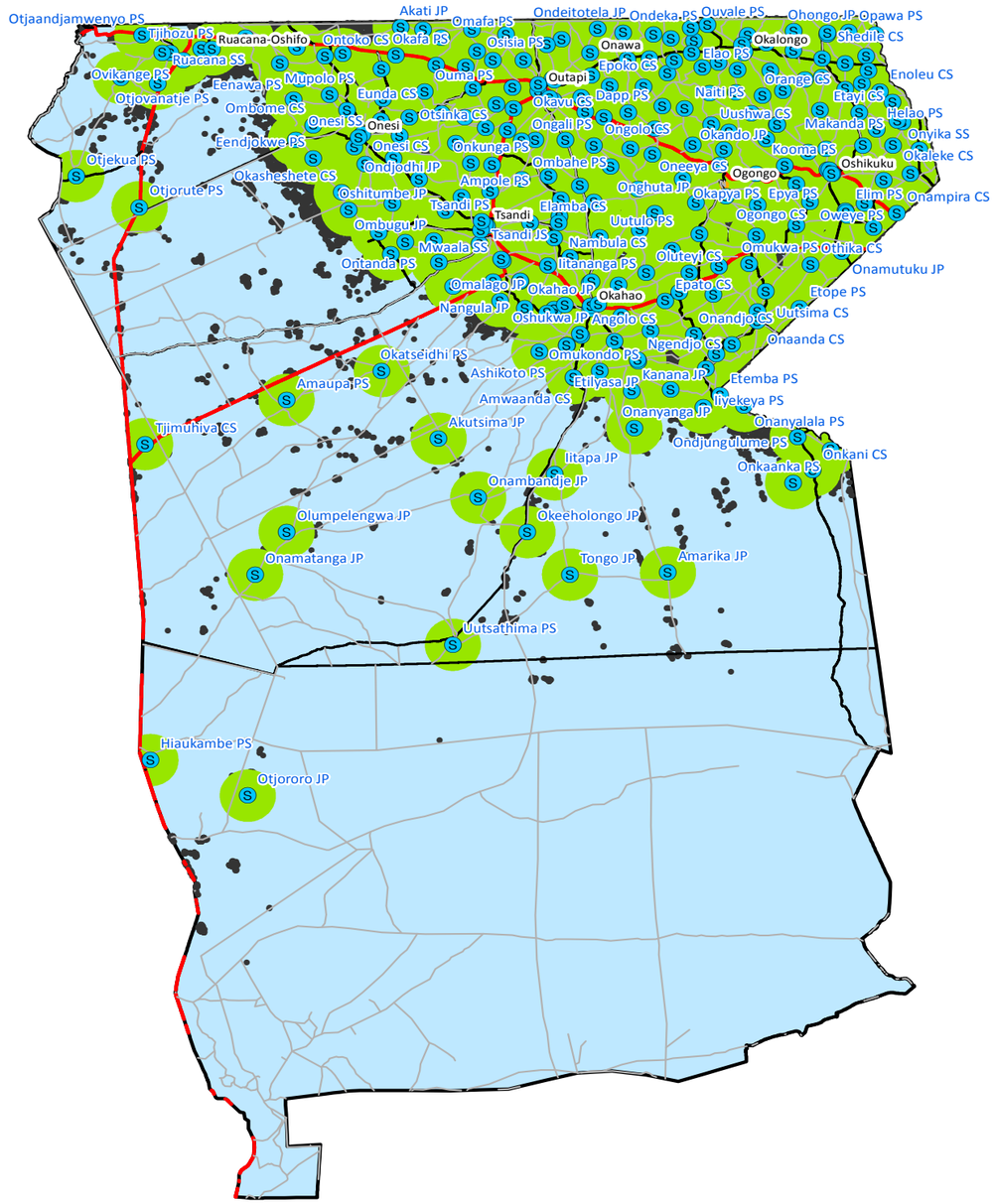
In 2007, 3% of all verified Dwelling Units in the Omusati Region were outside of a 5 km distance to the nearest primary school.

Legend

- Verified DUs
- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Primary Schools 5 km Buffer
- Omusati Region

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.6.3 OMUSATI REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Omusati Region.

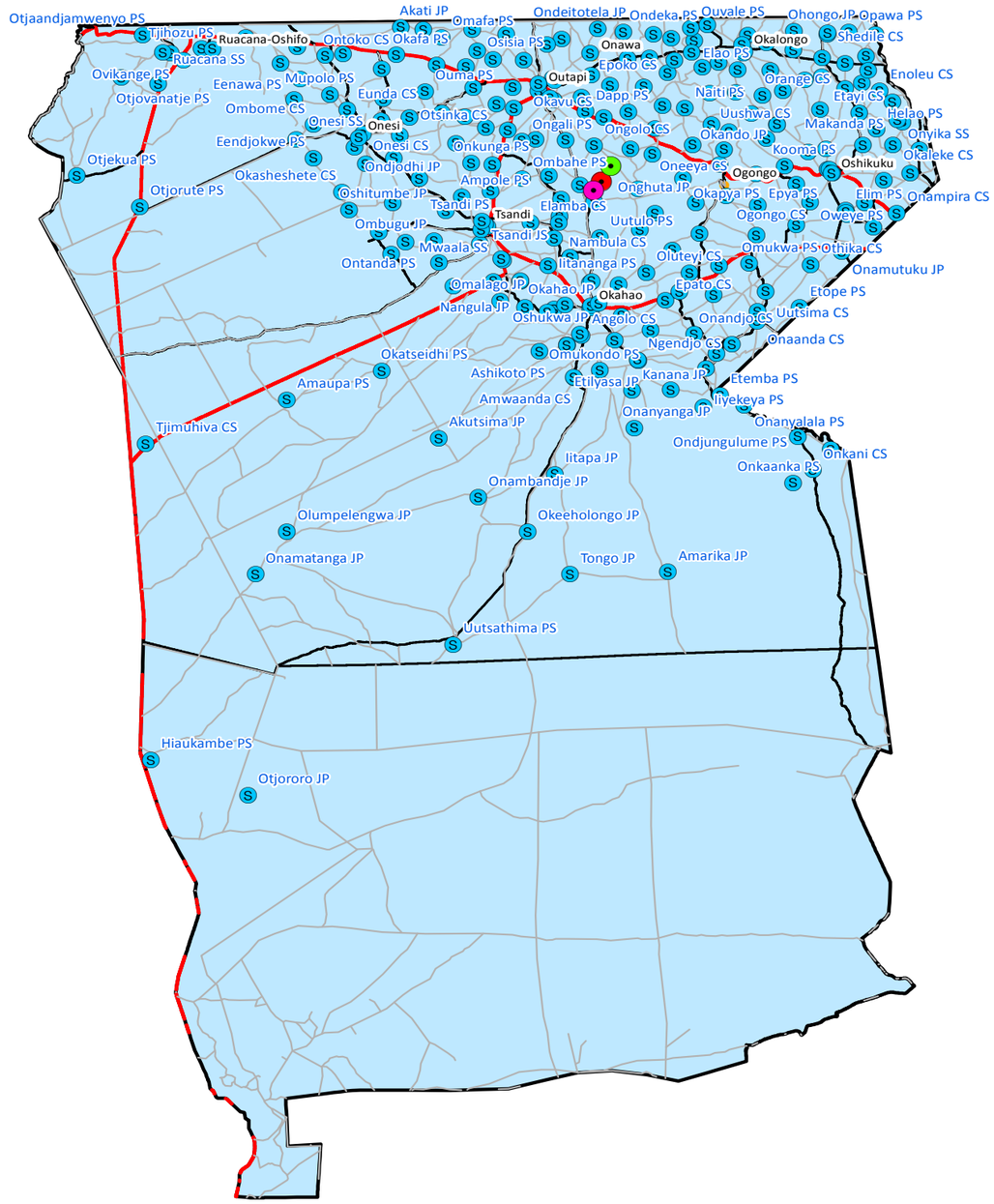
In 2007, 4.7% of all Surveyed Structures in the Omusati Region were outside of a 5 km distance to the nearest primary school.

Legend

- Surveyed Structures
- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Primary Schools 5 km Buffer
- Omusati Region

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.6.4 OMUSATI REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Omusati Region.

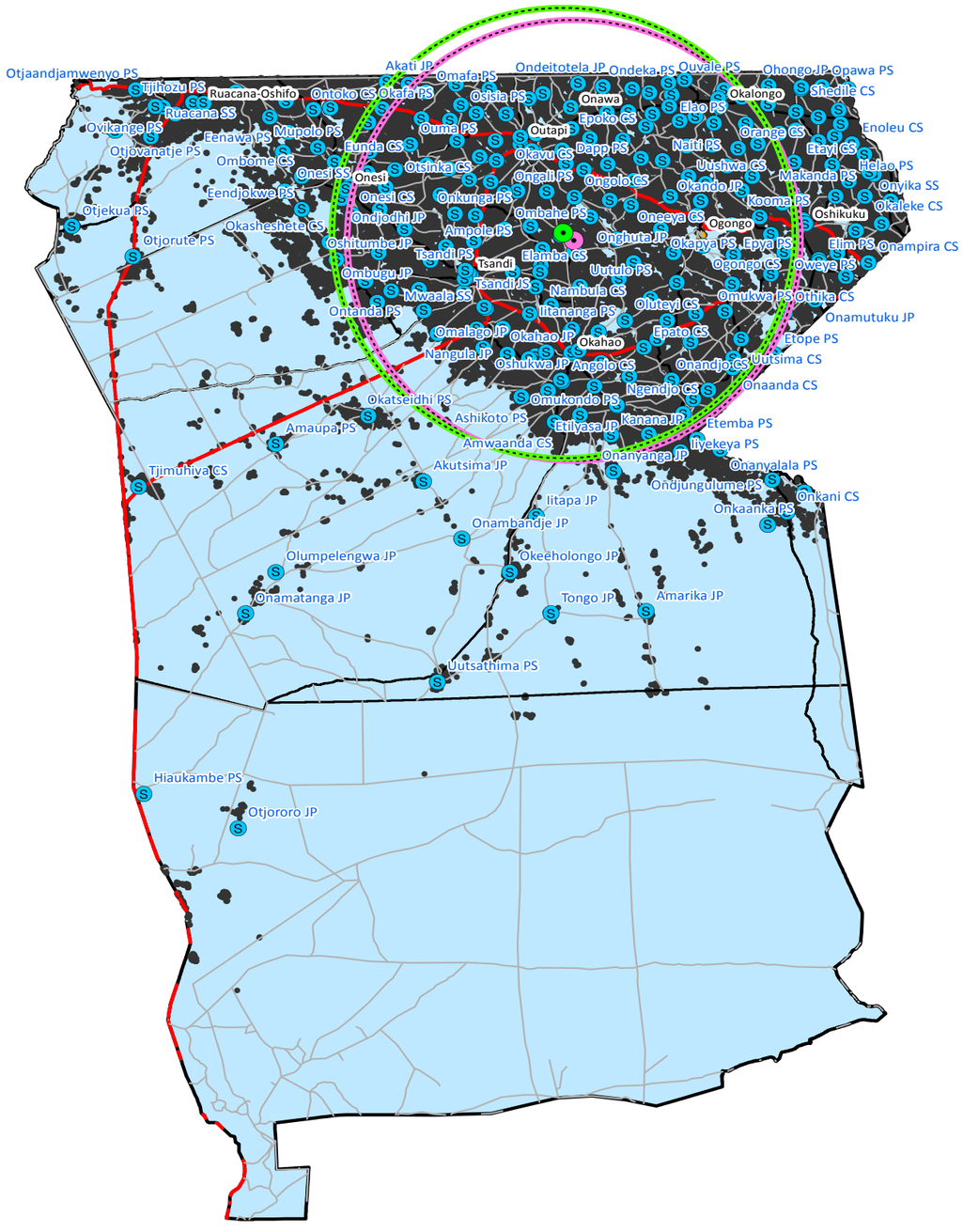
Furthermore it shows the median center, which is the location having the shortest distance to all schools in relation to their distribution.

Legend

- Localities
- Schools
- Mean Center
- Median Center
- Central Feature
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Omusati Region

Source: Schools, Ministry of Education 2007.

Figure 1.6.5 OMUSATI REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

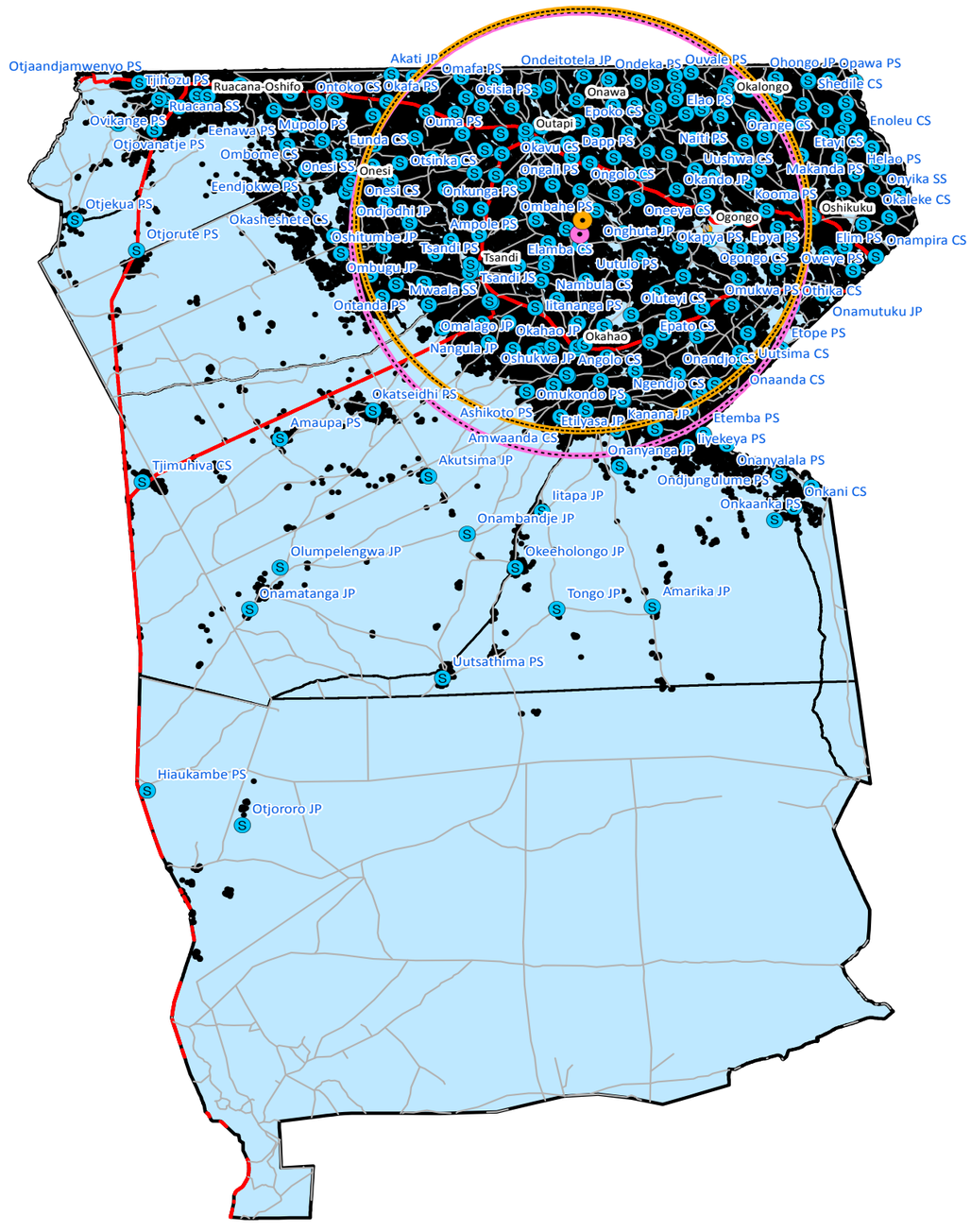
Surveyed Structures: 34.5% were within 44.5 km from the mean center.
Schools: 34% were within 43.6 km from the mean center.

Legend

- Surveyed Structures
- Localities
- Schools
- Mean Surveyed Structures
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Standard Distance Surveyed Structures
- Schools Standard Distance
- Omusati

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.6.6 OMUSATI REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

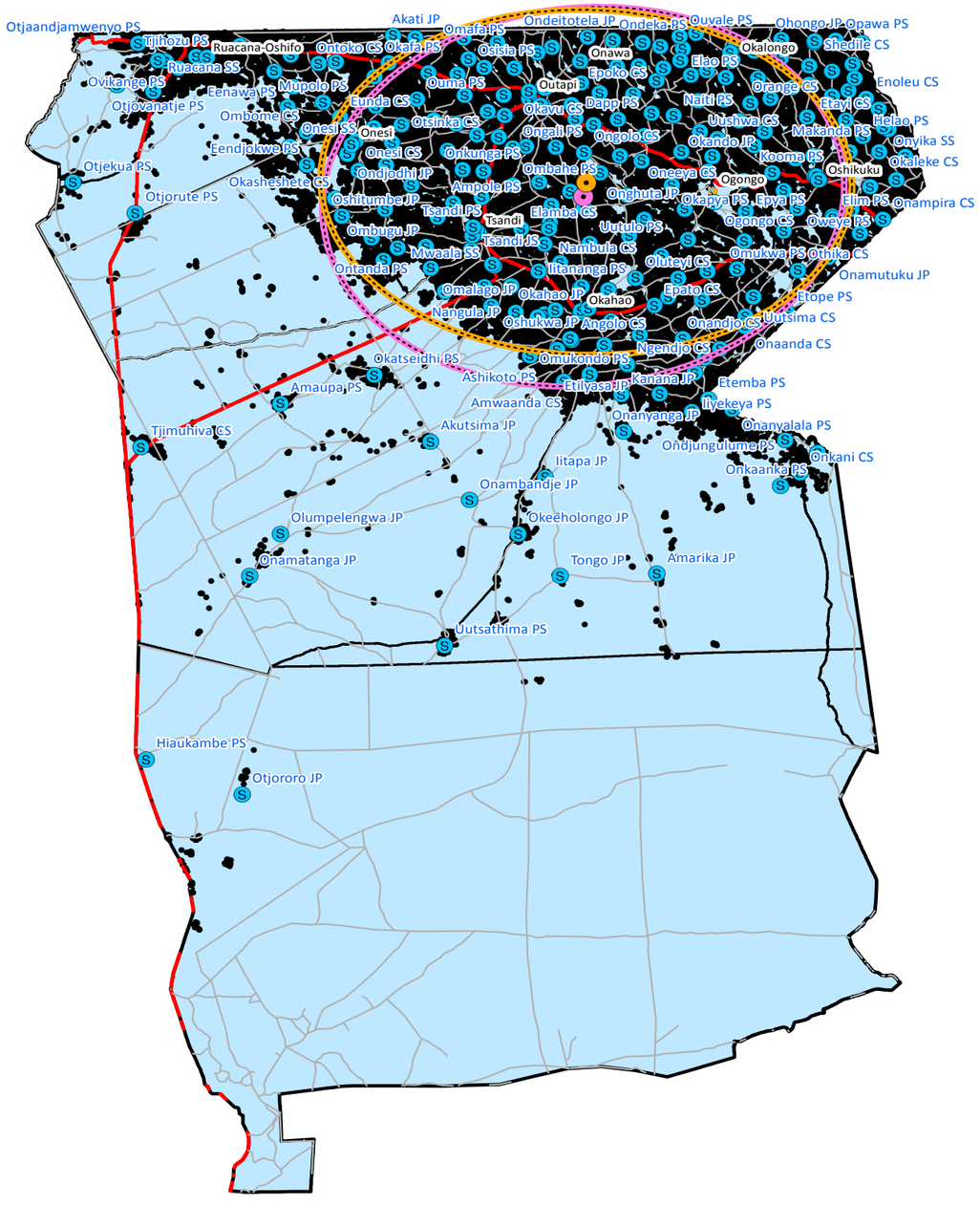
Dwelling Units: 35.1 % were within 41 km from the mean center.
Schools: 34.1% were within 43.6 km from the mean center.

Legend

- Verified DUs
- Localities
- Schools
- Mean Verified Dwelling Units
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Standard Distance Verified Dwelling Units
- Schools Standard Distance
- Omusati

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.6.7 OMUSATI REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

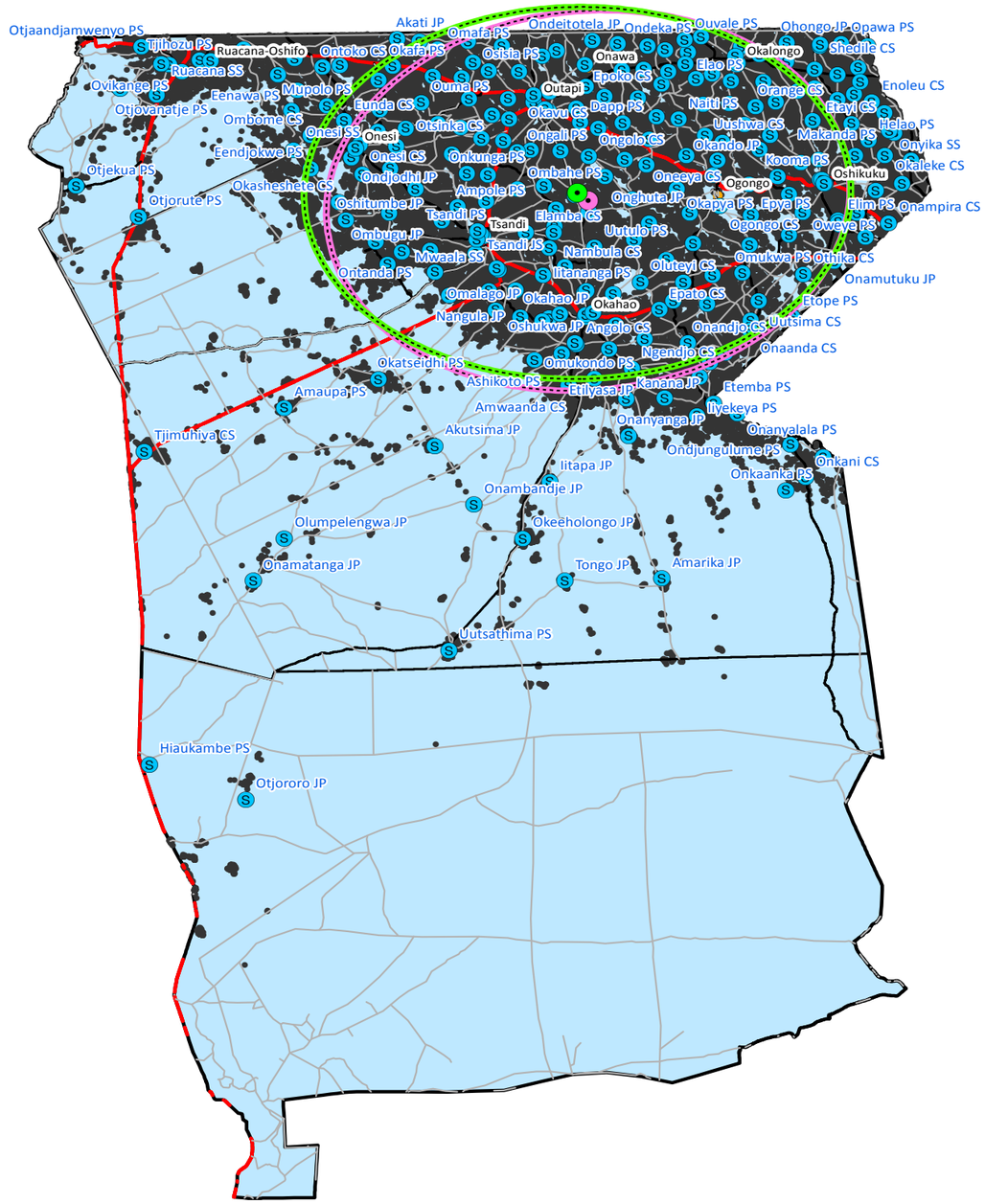
Dwelling Units: 89.5° (degrees), West-East
Schools: 84.6° (degrees), West-East

Legend

- Verified DUs
- Localities
- Schools
- Mean Verified Dwelling Units
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Directional Distribution Dwelling Units
- Schools Directional Distribution
- Omusati Region

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.6.8 OMUSATI REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

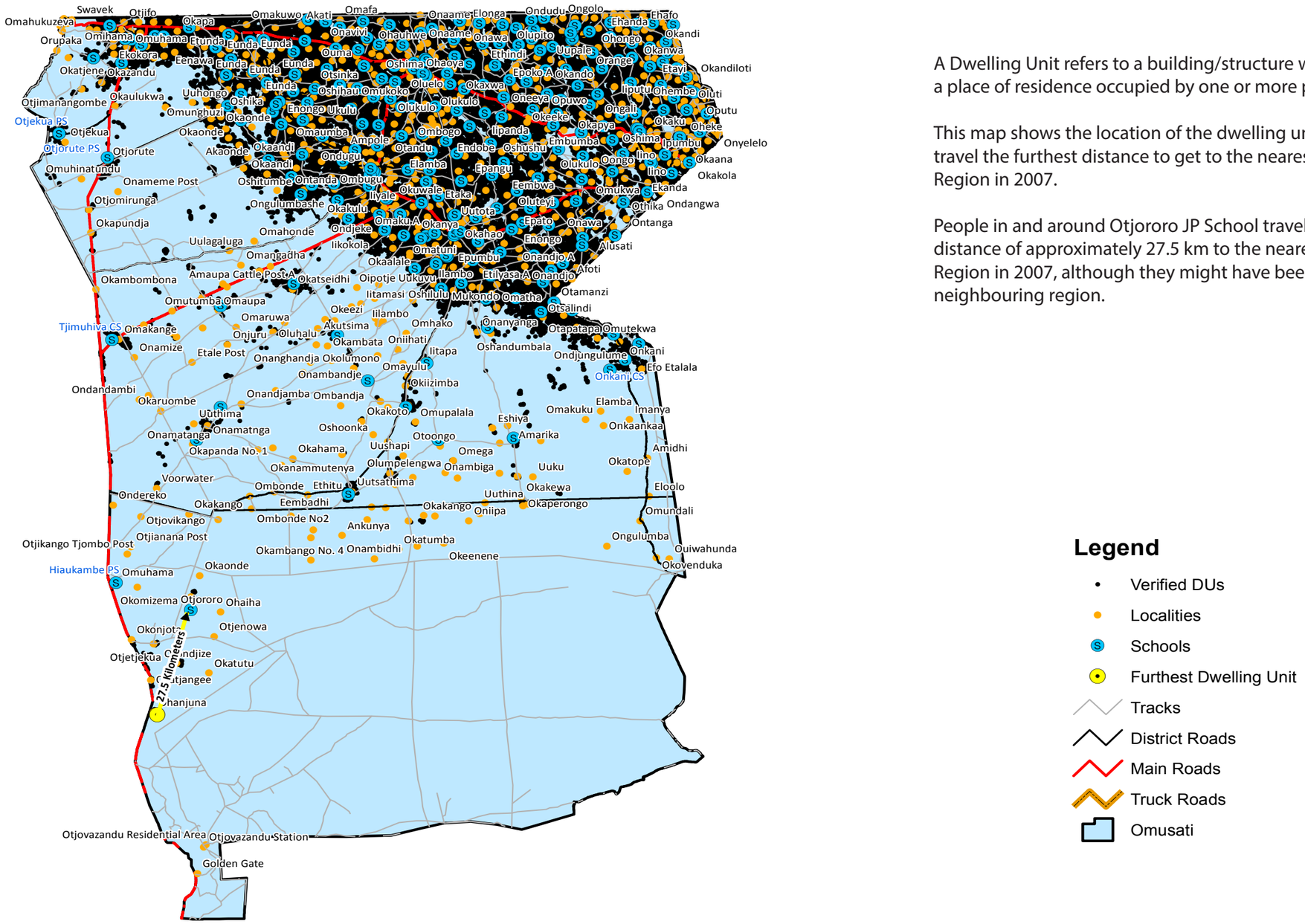
Surveyed Structures: 91.6° (degrees), West-East
Schools: 84.6° (degrees), West-East

Legend

- Surveyed Structures
- Localities
- Schools
- Mean Surveyed Structures
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Directional Distribution Surveyed Structures
- Schools Directional Distribution
- Omusati Region

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.6.9 OMUSATI REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest school in Omusati Region in 2007.

People in and around Otjororo JP School travelled the furthest distance of approximately 27.5 km to the nearest school in Omusati Region in 2007, although they might have been served by a neighbouring region.

Legend

- Verified DUs
- Localities
- Schools
- Furthest Dwelling Unit
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Omusati

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

EDUCATION

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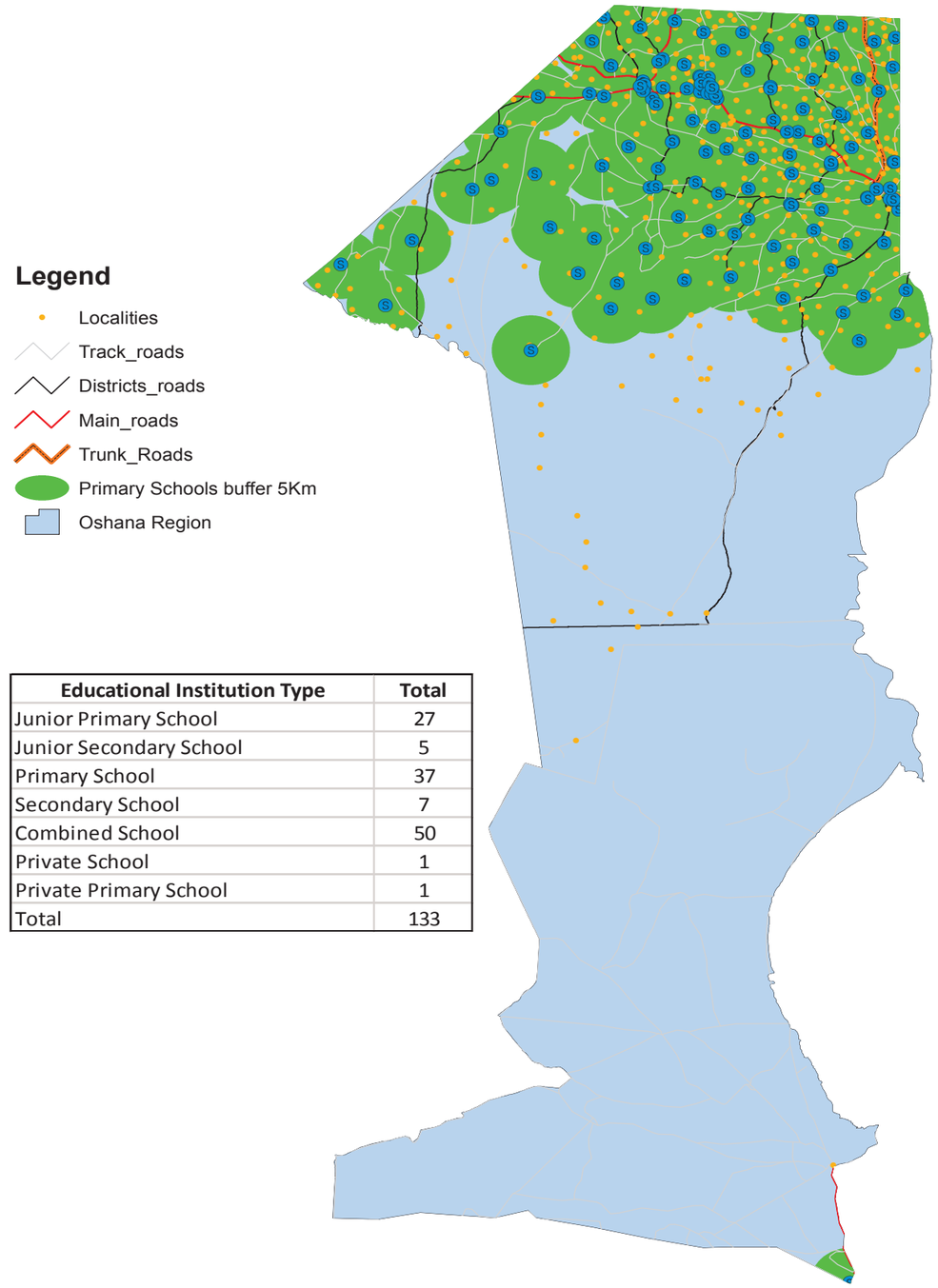
OSHANA

Figure 1.7.1 OSHANA REGION – SCHOOLS IN 2007



The map shows the location of primary, combined and secondary schools in the Oshana Region in 2007.

Educational Institution Type	Total
Junior Primary School	27
Junior Secondary School	5
Primary School	37
Secondary School	7
Combined School	50
Private School	1
Private Primary School	1
Total	133

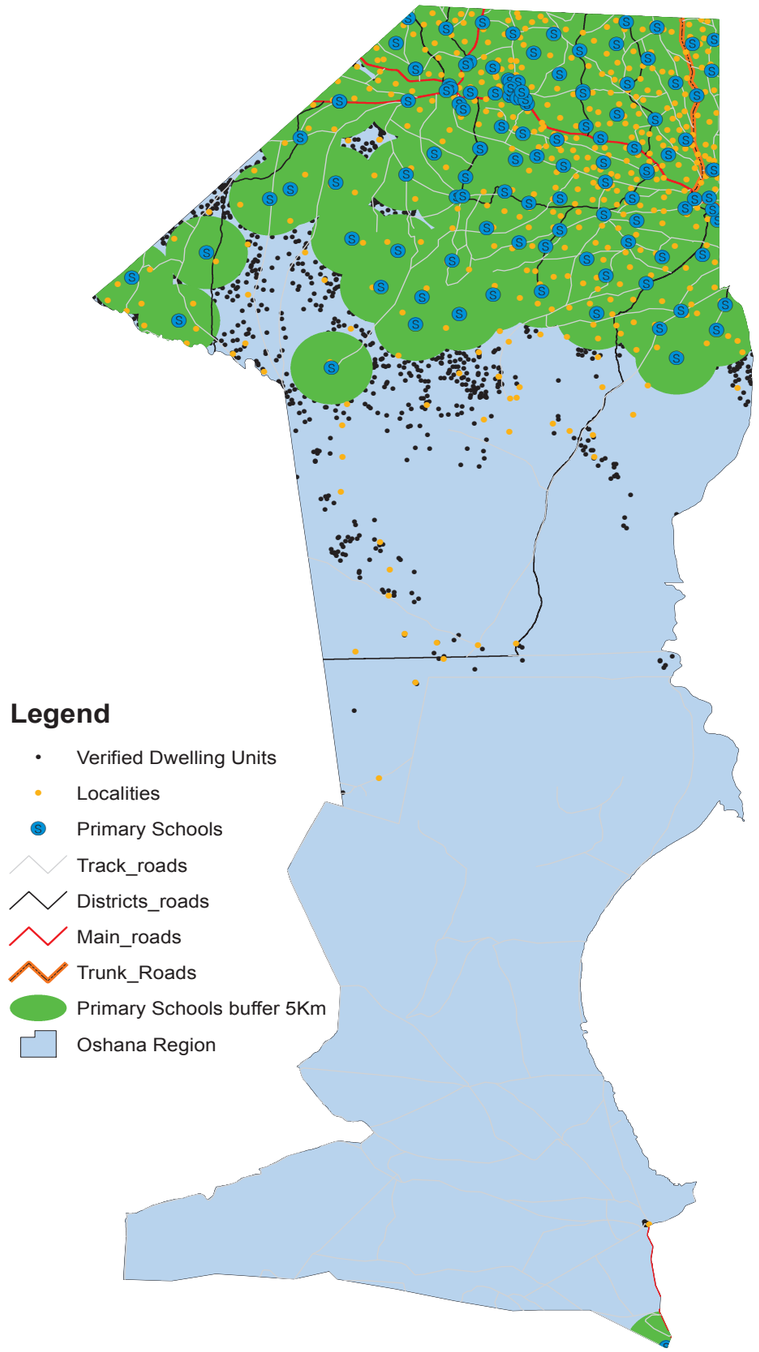
Source: Schools, Ministry of Education 2007.

Figure 1.7.2 OSHANA REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in Oshana Region.

In 2007, 1.9% of all Verified Dwelling Units in the Oshana Region are outside of a 5 km distance to the nearest primary school.



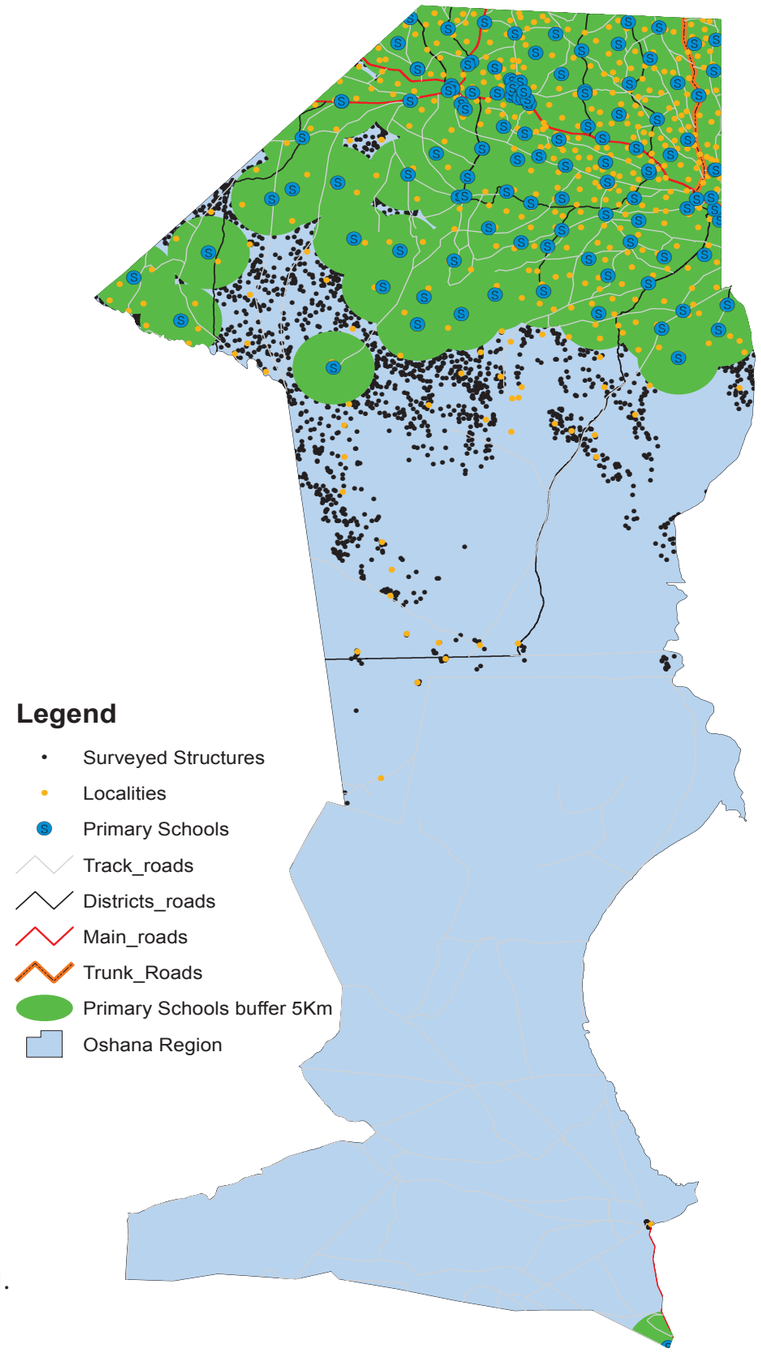
Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.7.3 OSHANA REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007

Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Oshana Region.

In 2007, 3.7% of all surveyed structures in the Oshana Region are outside of a 5 km distance to the nearest primary school.



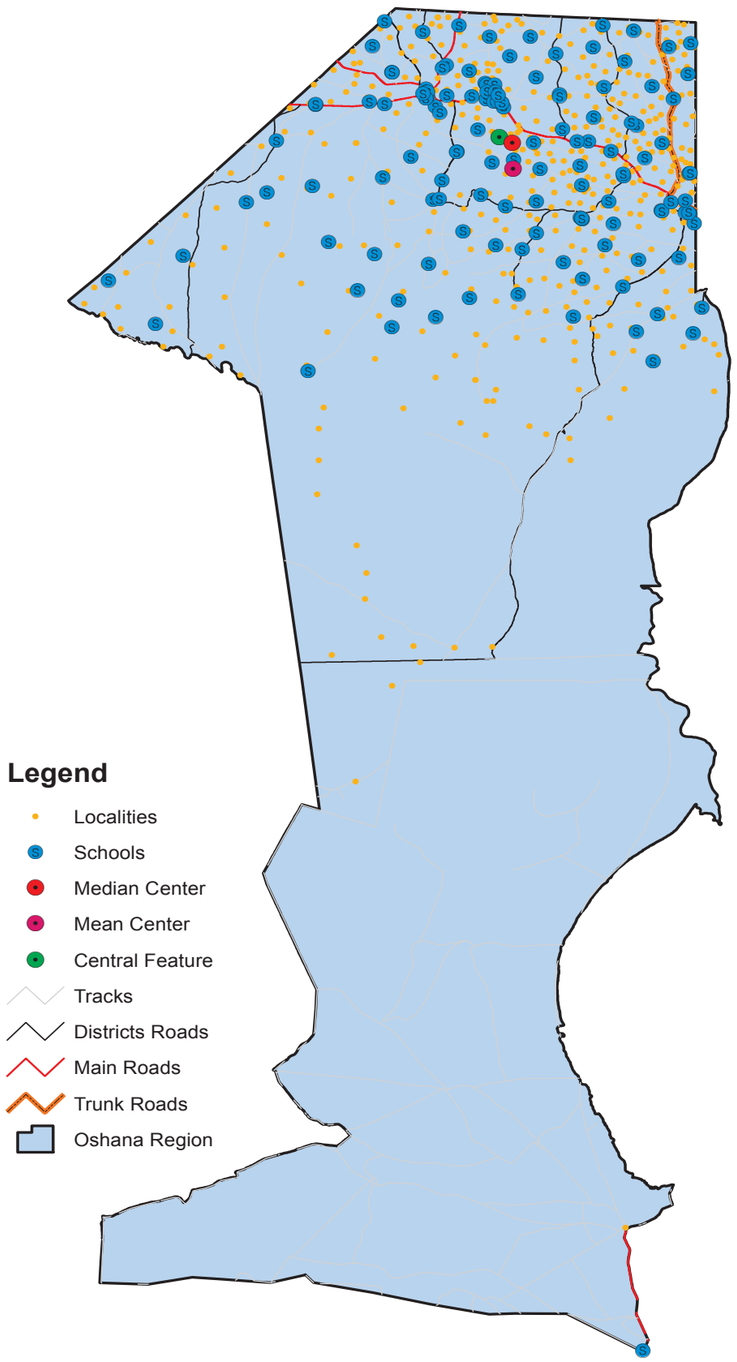
Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.7.4 OSHANA REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007

The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Oshana Region.

Furthermore it shows the median center, which is the location having the shortest distance to all schools in relation to their distribution.



Source: Schools, Ministry of Education 2007.

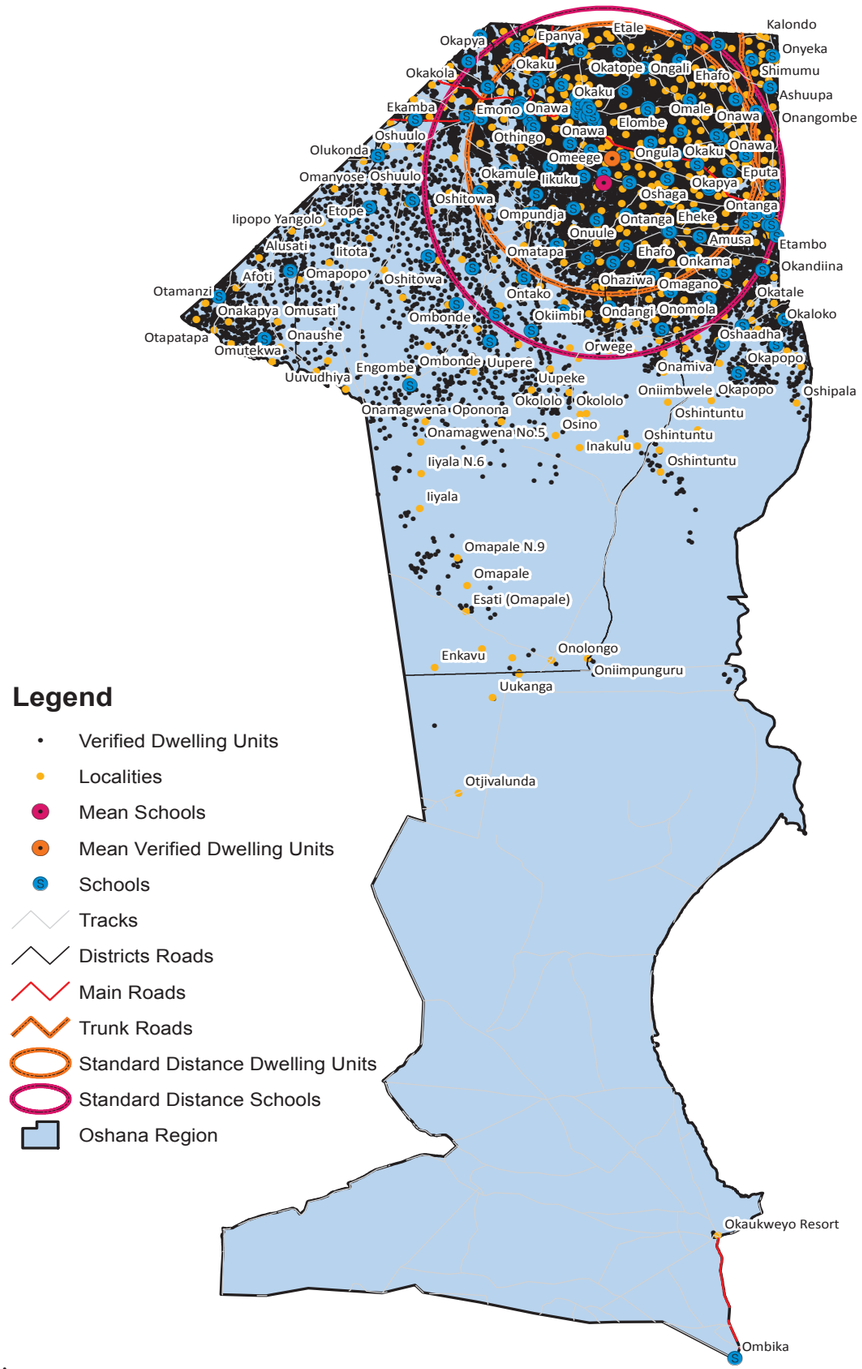
Figure 1.7.5 OSHANA REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007

Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 74.9% are within 21.5 km from mean center.

Schools: 87% are within 24 km radius from the mean center.



Legend

- Verified Dwelling Units
- Localities
- Mean Schools
- Mean Verified Dwelling Units
- Schools
- Tracks
- Districts Roads
- Main Roads
- Trunk Roads
- Standard Distance Dwelling Units
- Standard Distance Schools
- Oshana Region

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.7.6 OSHANA REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007

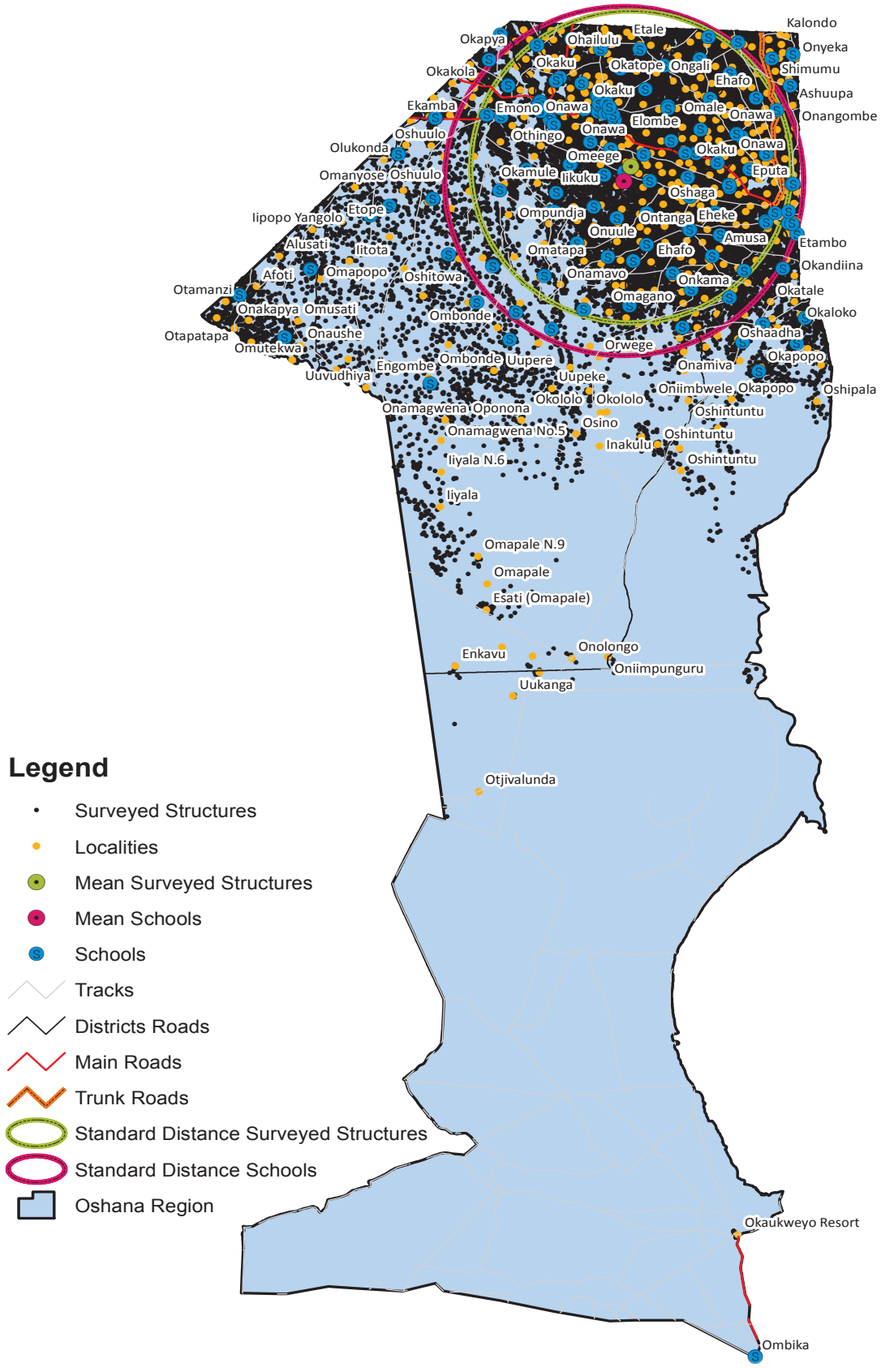
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to dwelling units.

Standard distance is defined as the distance from the mean within which most features are located.

Dwelling Units: 67.7 % are within 18.6 km radius from mean center.

Schools: 87% are within 24km radius from the mean center.



Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.7.7 OSHANA REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of dwelling units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 110.3° (degrees), SE-NW

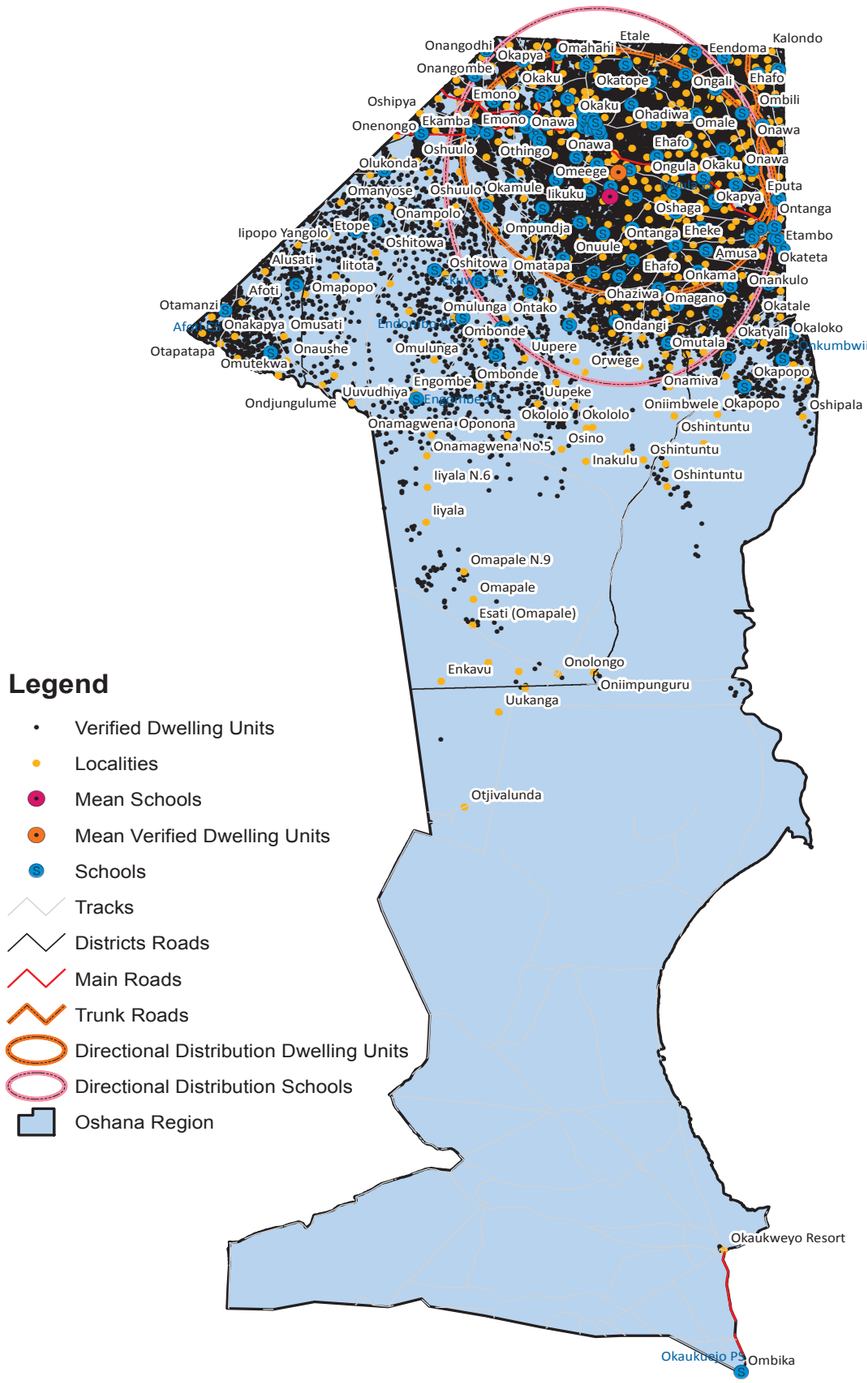
Schools: 167° (degrees), SE-NW

Case Study: Standard Distance Analysis

Standard distance measures the degree to which features are centrated or dispersed around the geometric mean center. It also measures the extent to which the distances between the mean center and the feature vary from the average distance.

The bigger the circle is, the more dispersed the features are from the mean center and the smaller the circle is, the more concentrated the features are around the mean center.

In this case we are comparing the compactness of Dwelling Units and schools in Oshana Region. Most schools in the region are located where most people are, although the dwelling units are slightly more dispersed than the schools. For example, planners might use this analysis to ensure that there are no situations where by schools are more concentrated in one area of the region while the people are more concentrated in another area of the region, very far from where the schools are.



Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.7.8 OSHANA REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007

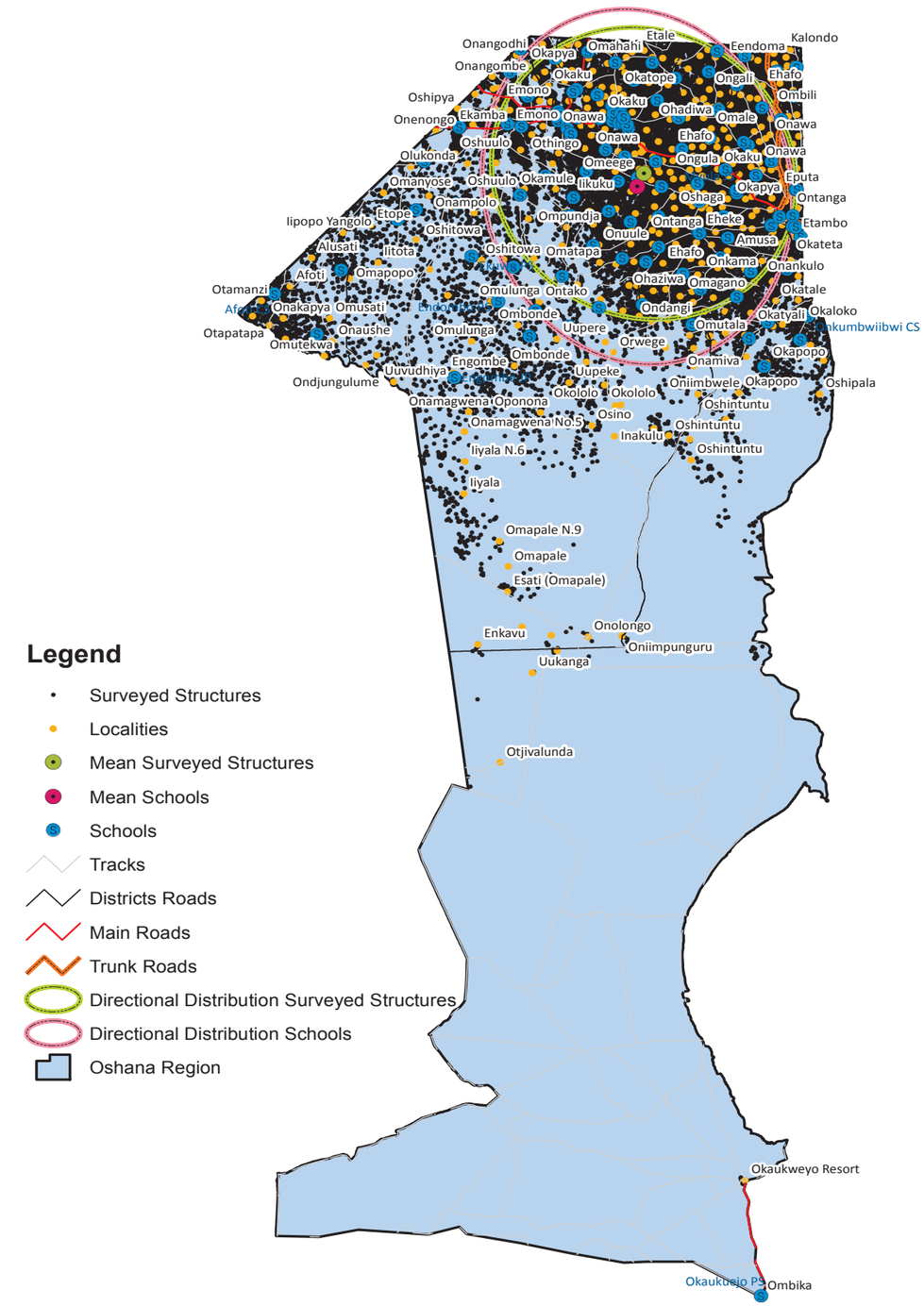
Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of surveyed structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 129.6° (degrees), SE-NW

Schools: 167° (degrees), SE-NW



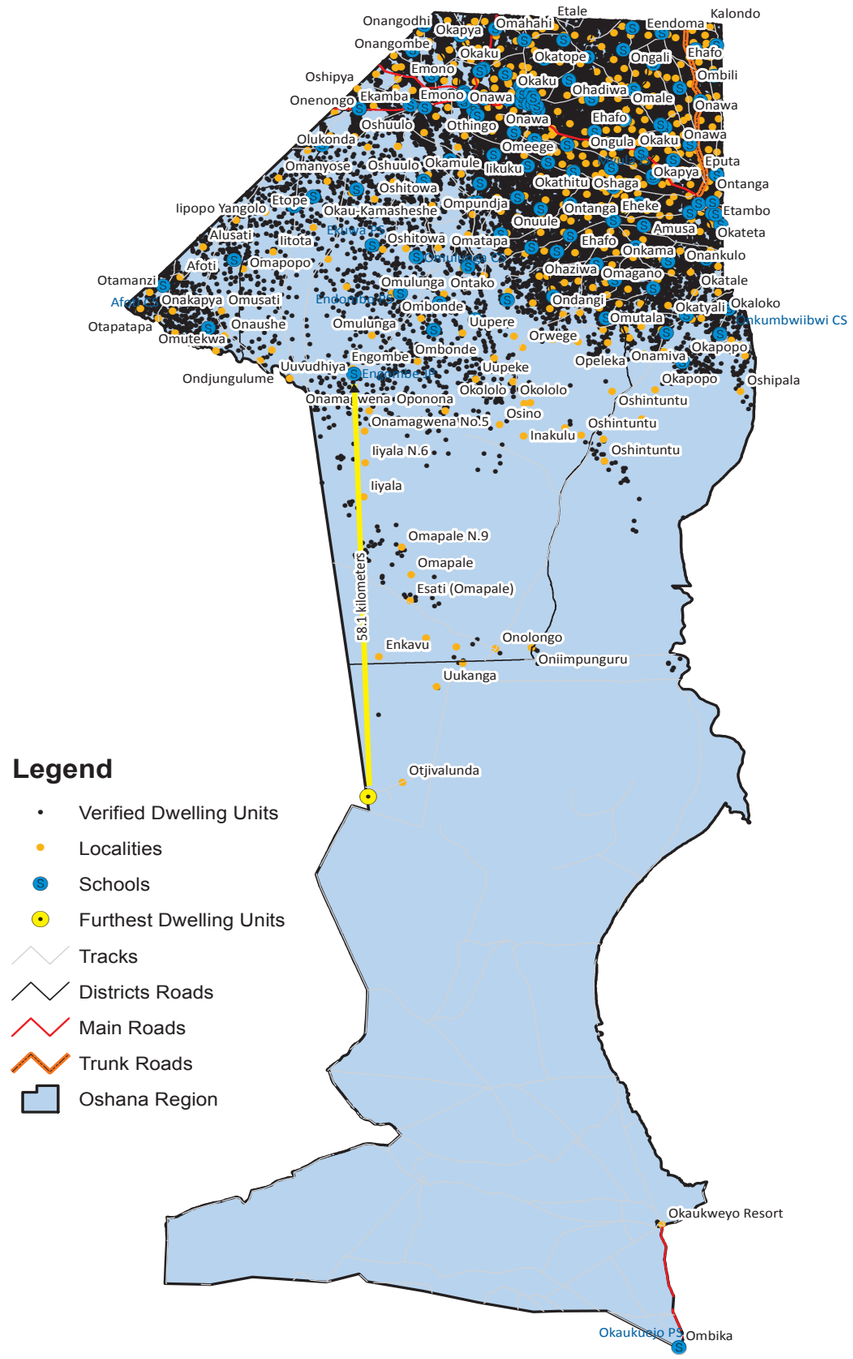
Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.7.9 OSHANA REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest school in Oshana Region in 2007.

People in and around Otjivalunda travelled the furthest distance of approximately 58.1 km to the nearest school in Oshana Region in 2007.



Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

EDUCATION

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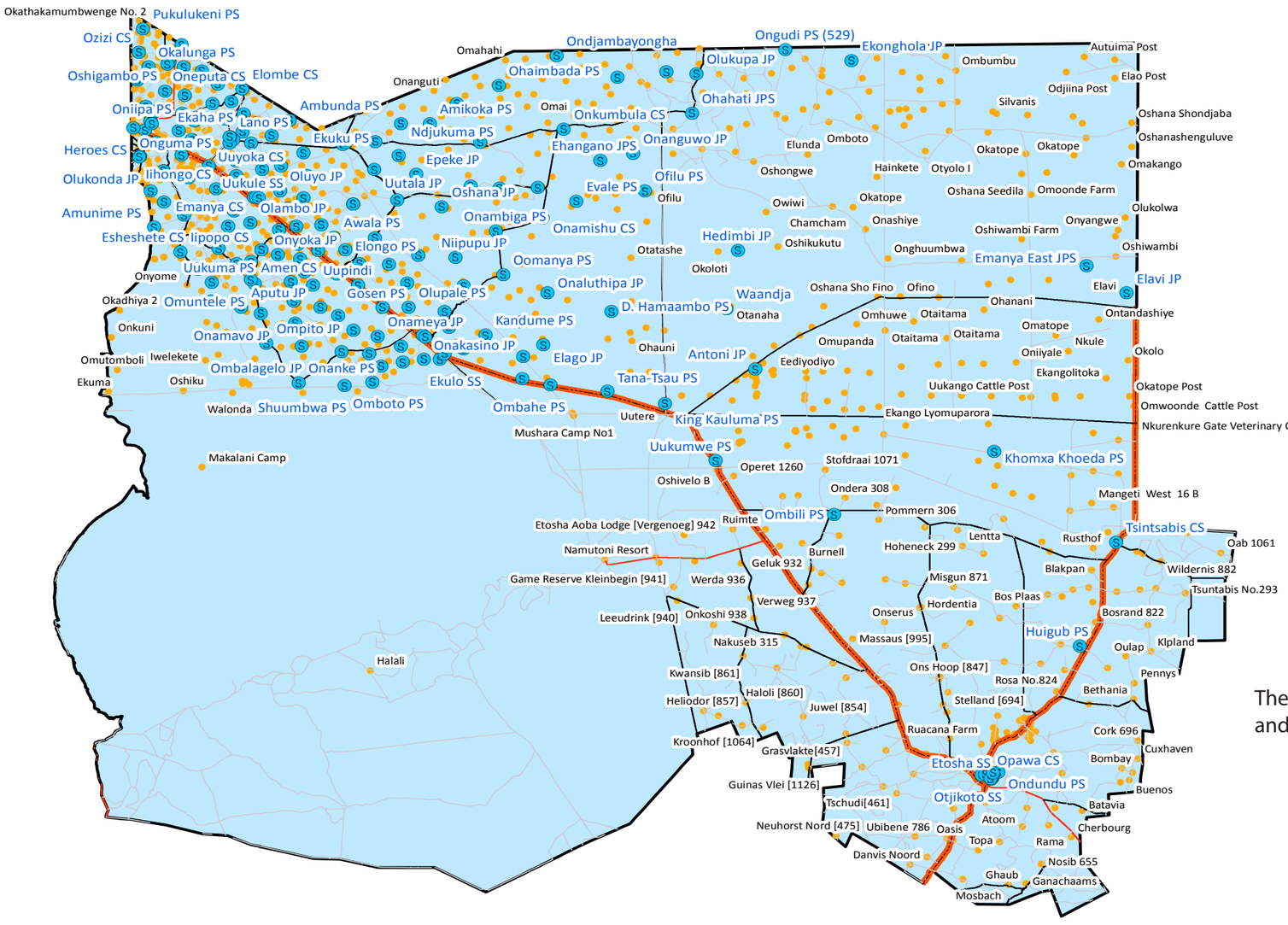
OSHIKOTO

Figure 1.8.1 OSHIKOTO REGION – SCHOOLS IN 2007

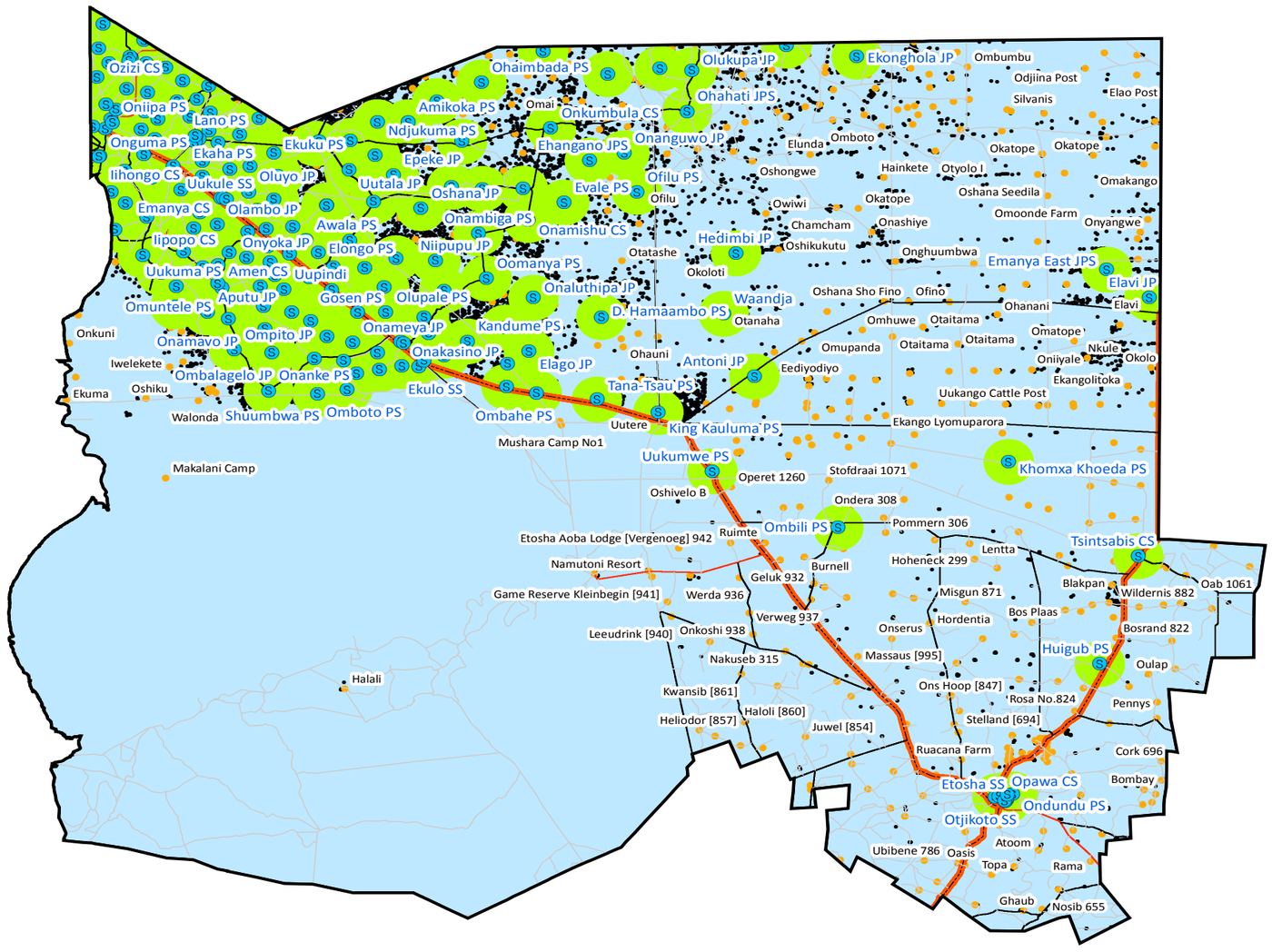


School Type	Total
Primary School	90
Junior Primary School	46
Junior Secondary School	2
Combined School	44
Senior Secondary School	6

The map shows the location of primary, combined and secondary schools in the Oshikoto Region in 2007.

Source: Schools, Ministry of Education 2007.

Figure 1.8.2 OSHIKOTO REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



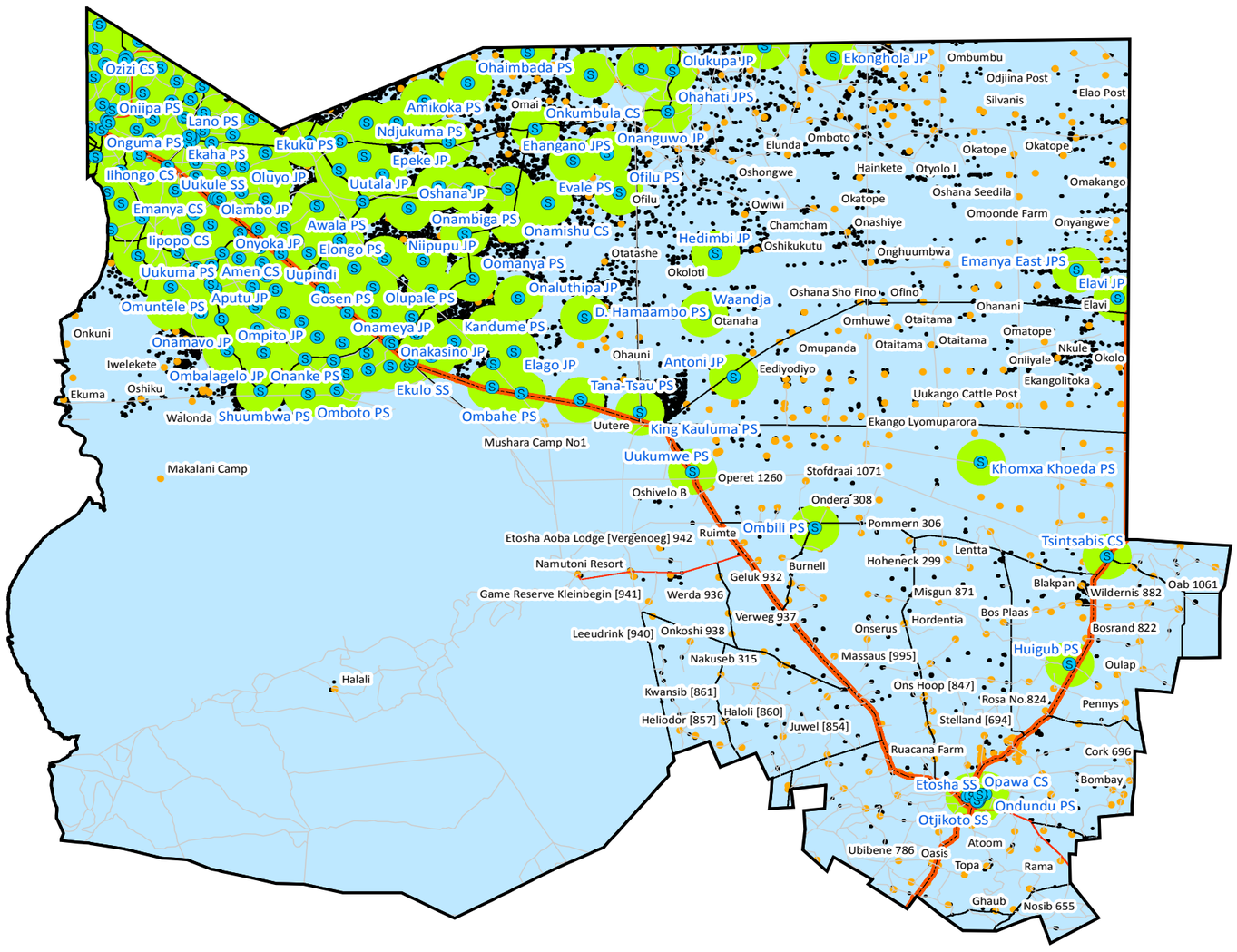
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Oshikoto Region.

In 2007, 13.5% of all Verified Dwelling Units in the Oshikoto Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.8.3 OSHIKOTO REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



Legend

- Surveyed Structures
- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Primary Schools 5 Km Buffer
- Oshikoto Region

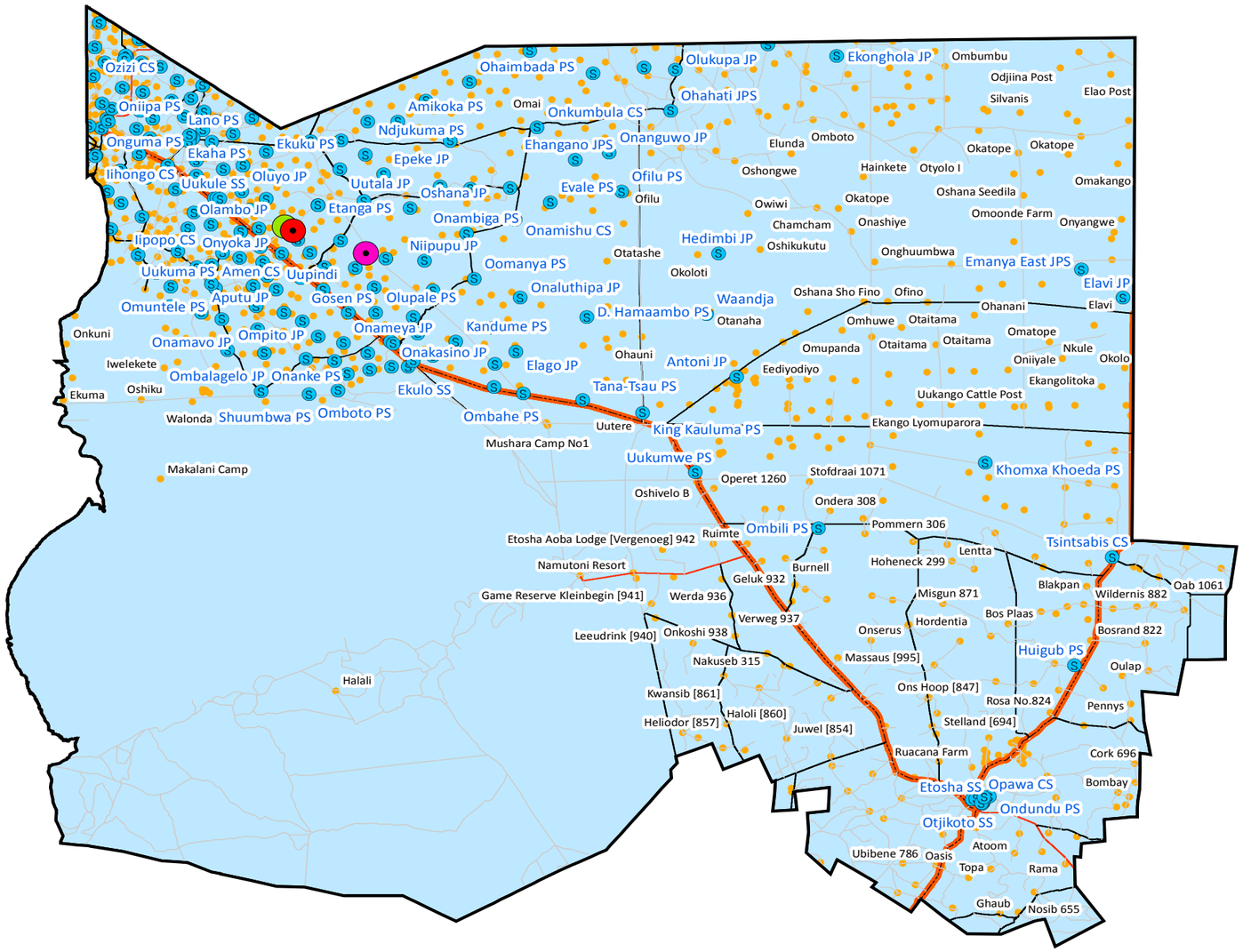
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Oshikoto Region.

In 2007, 16.6% of all Surveyed Structures in the Oshikoto Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.8.4 OSHIKOTO REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



Source: Schools, Ministry of Education 2007.

Legend

- Localities
- Schools
- Median Center
- Mean Center
- Central Feature
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Oshikoto Region

The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Oshikoto Region.

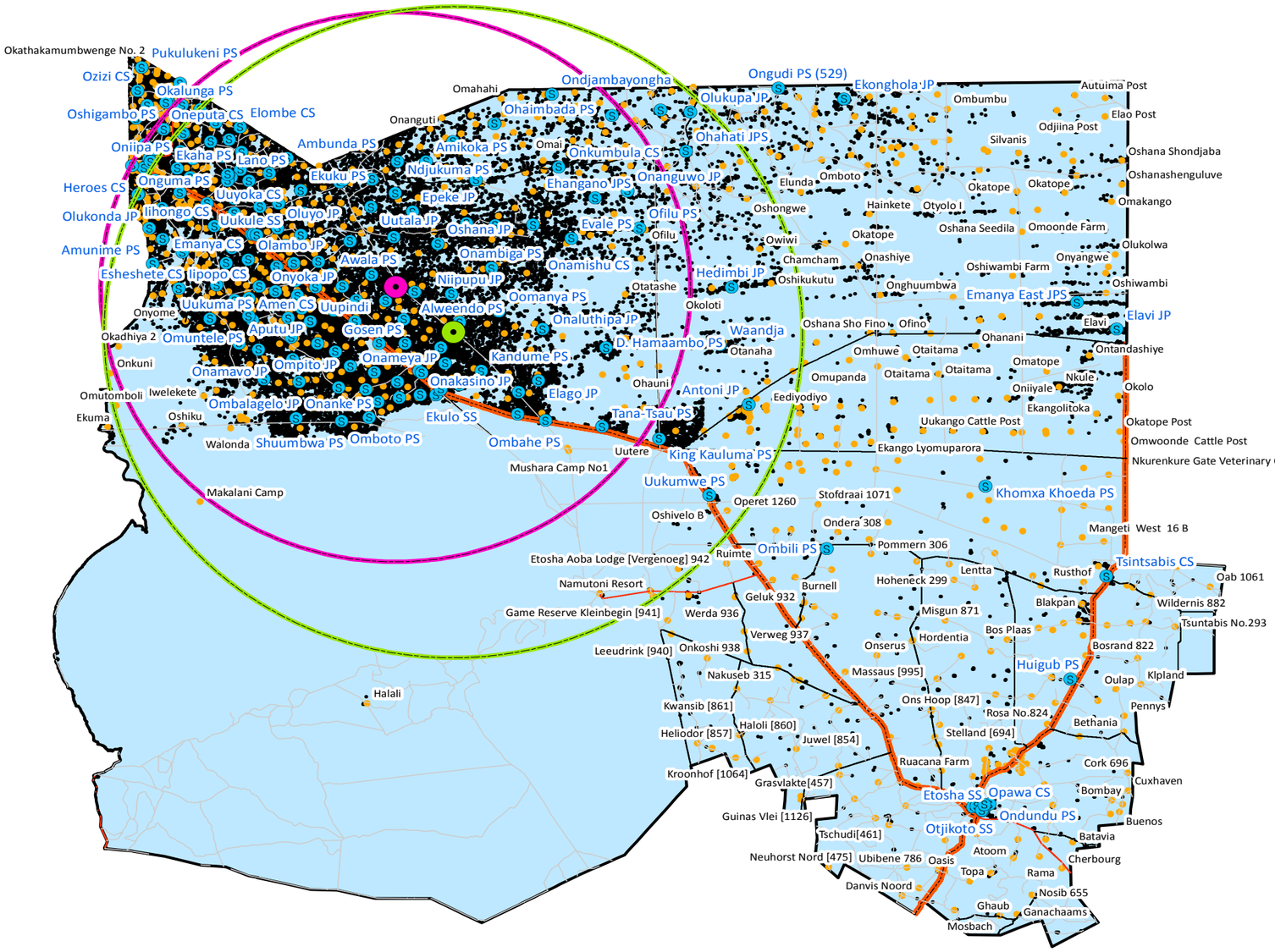
Furthermore it shows the median center, whichis the locationhaving the shortest distance to all schools in relation to their distribution.

Case Study: Median Feature Analysis

The median center tool is a measure of central tendency that is robust to outliers. It identifies the location that minimizes travel from it to all other features in the dataset. You would use the median center tool when you want a measure of central tendency that is robust to spatial outliers.

In this case the median center is at a location where by travel to most schools in Oshikoto Region is minimized. For example, if there is a need to construct a regional storage facility for books or food for a school feeding programme it would be constructed at this location as it is considered to be the fair location in terms of straight distance from it to all schools in relation to their distribution.

Figure 1.8.5 OSHIKOTO REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007



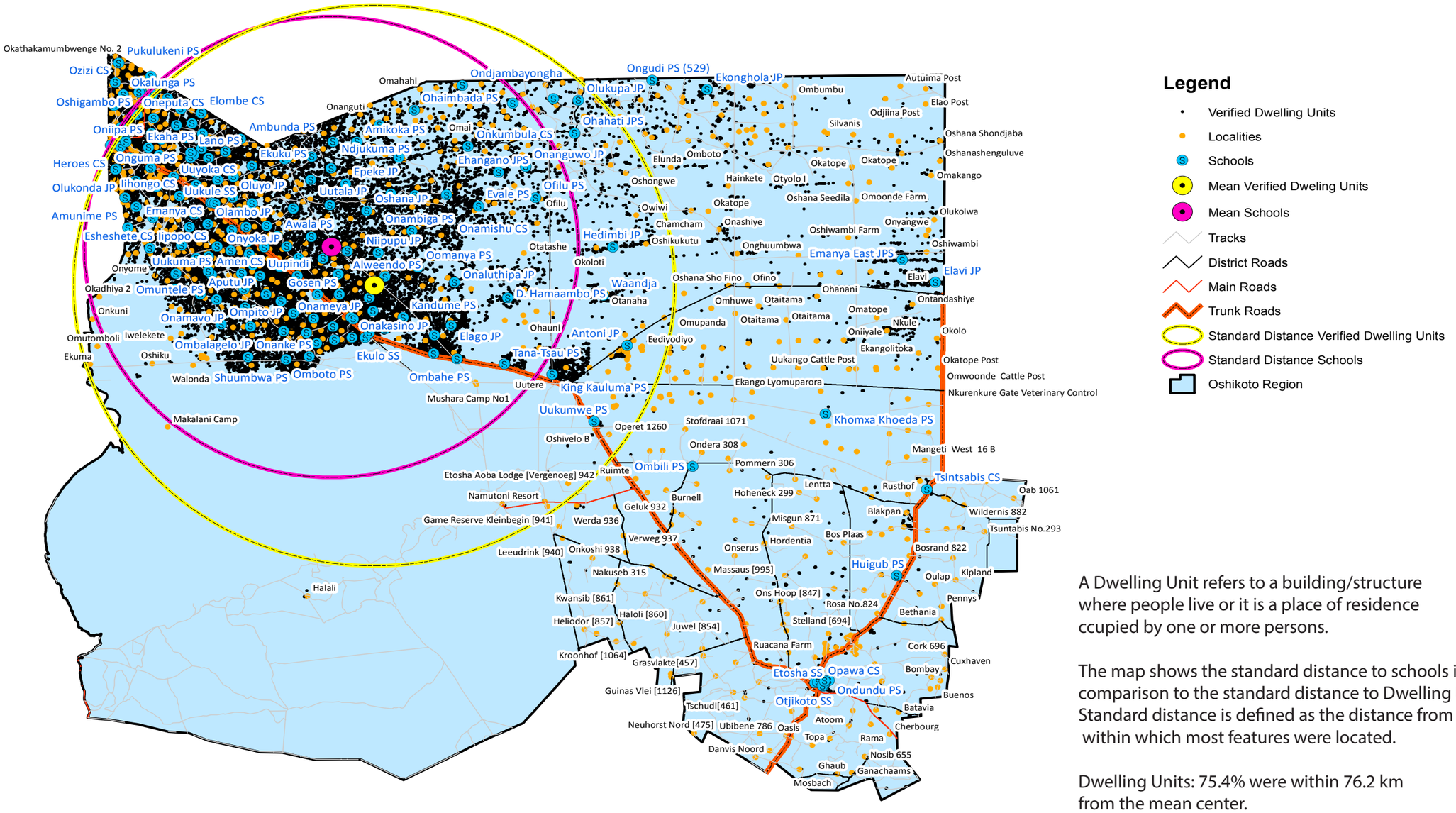
Surveyed structures refer to all manmade structures that the NSA had captured in 2011.These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 71.2% were within 74.2 km from the mean center.
Schools: 81.9% were within 62.7 km from the mean center.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.8.6 OSHIKOTO REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



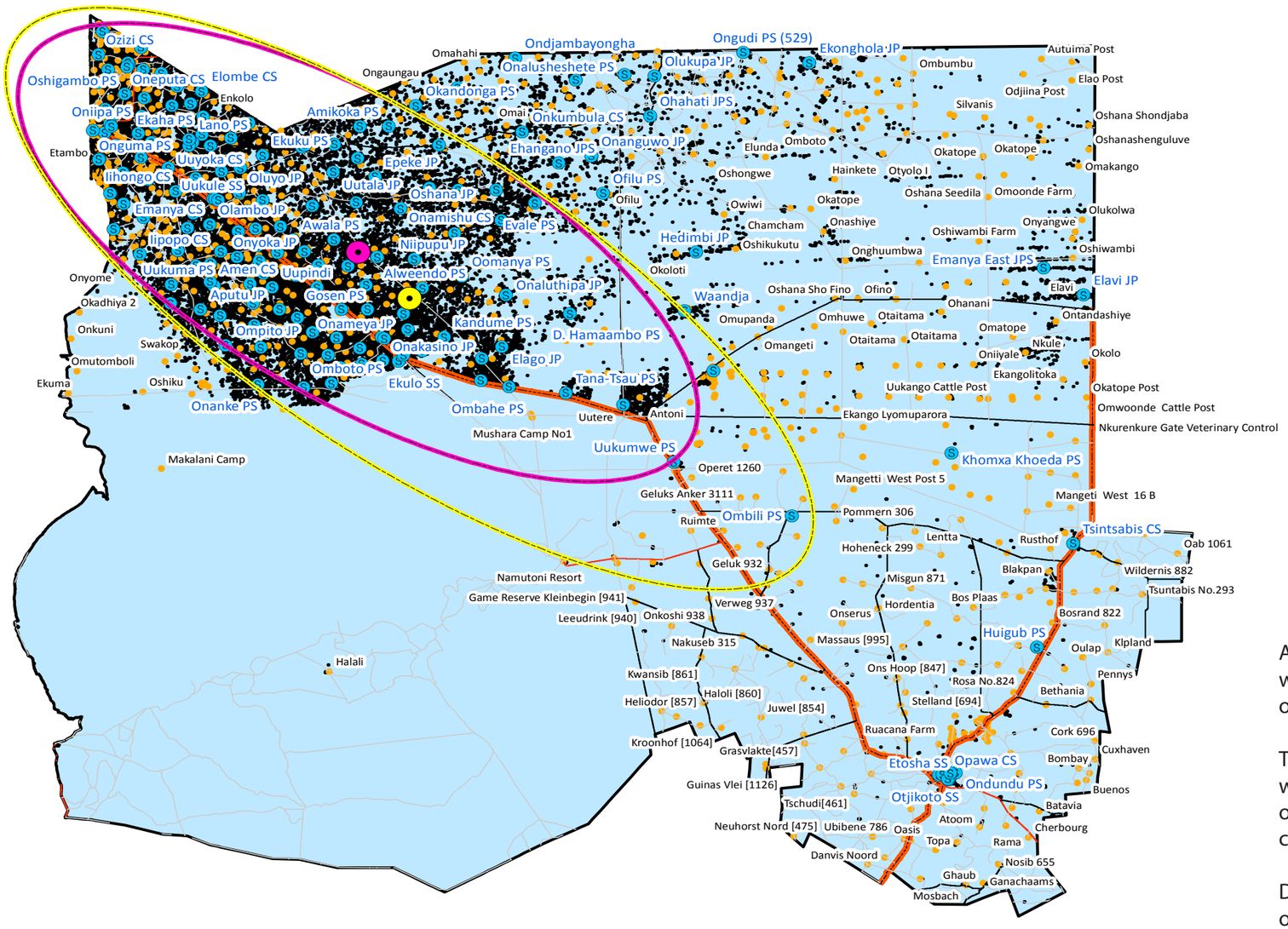
A Dwelling Unit refers to a building/structure where people live or it is a place of residence ccupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 75.4% were within 76.2 km from the mean center.
Schools: 81.9% were within 62.7 km from the mean center.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.8.7 OSHIKOTO REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



Legend

- Verified Dwelling Units
- Localities
- Schools
- Mean Verified Dweling Units
- Mean Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distibution Verified Dwelling Units
- Directonal Distribution Schools
- Oshikoto Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

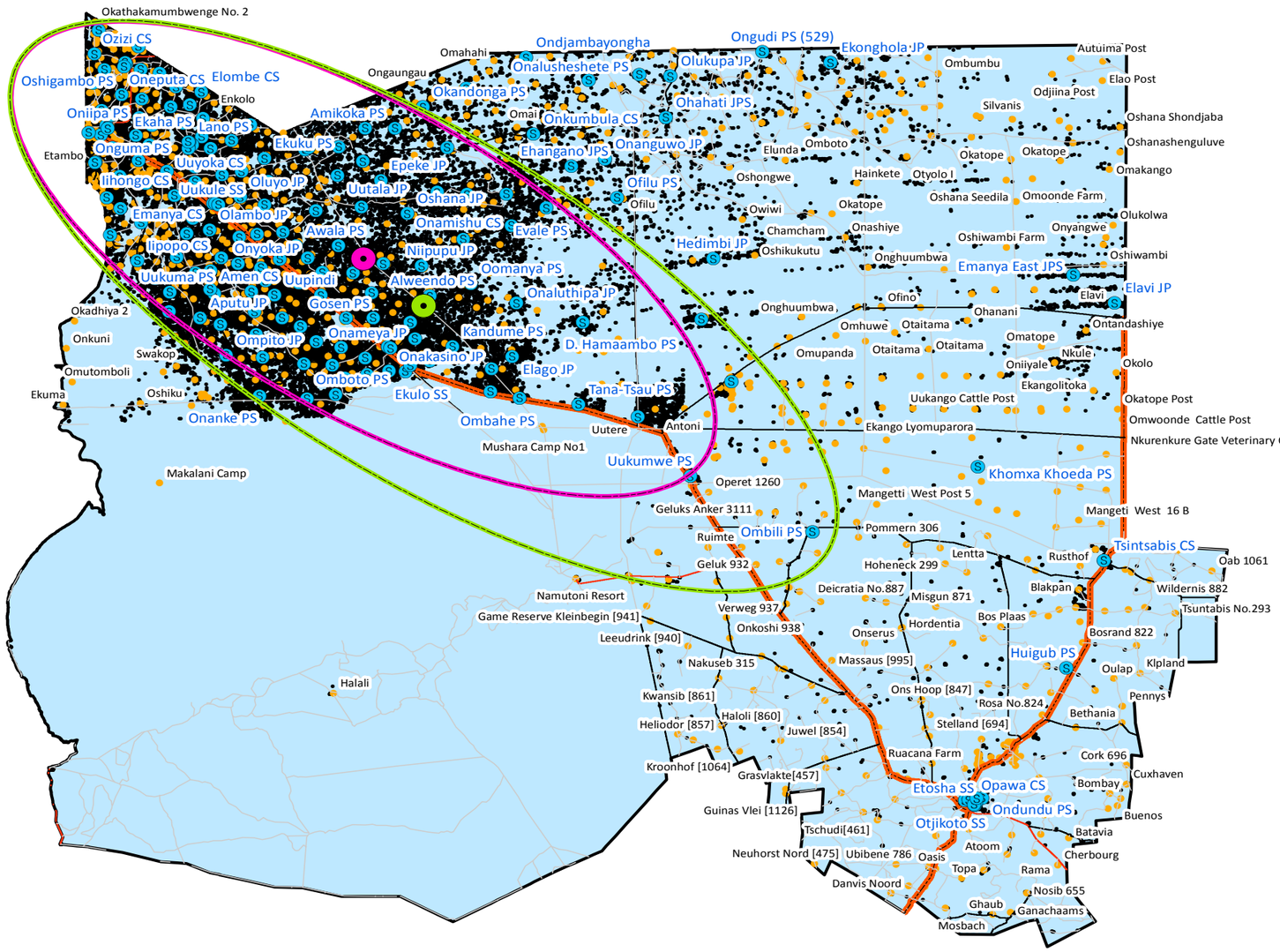
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 125.6° (degrees), South East-North West
Schools: 122.1° (degrees), South East-North West

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.8.8 OSHIKOTO REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

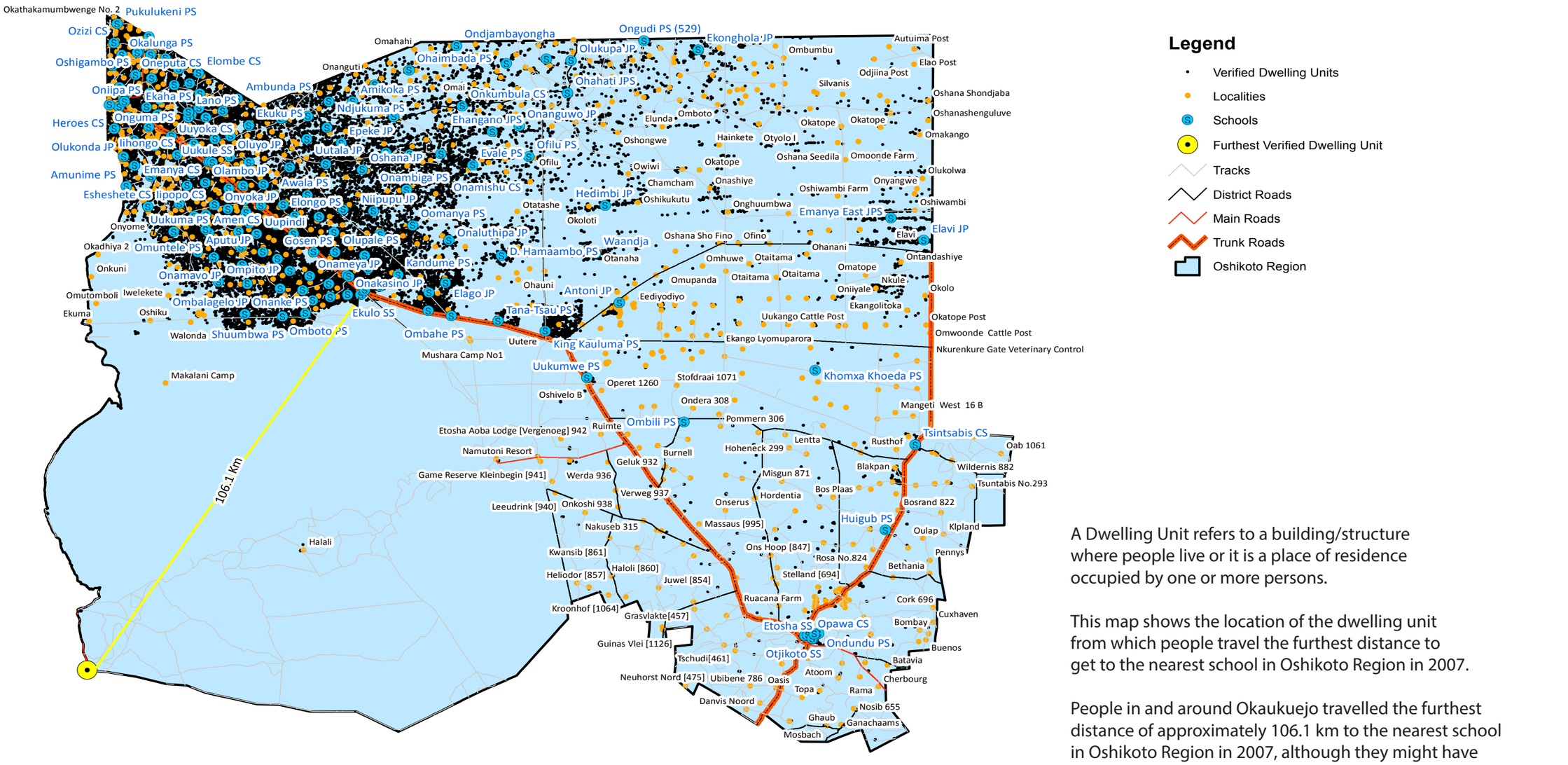
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 123.7° (degrees), South East-North West
Schools: 122.1° (degrees), South East-North West

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.8.9 OSHIKOTO REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



Legend

- Verified Dwelling Units
- Localities
- Schools
- Furthest Verified Dwelling Unit
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Oshikoto Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest school in Oshikoto Region in 2007.

People in and around Okaukuejo travelled the furthest distance of approximately 106.1 km to the nearest school in Oshikoto Region in 2007, although they might have been served by a neighbouring region.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

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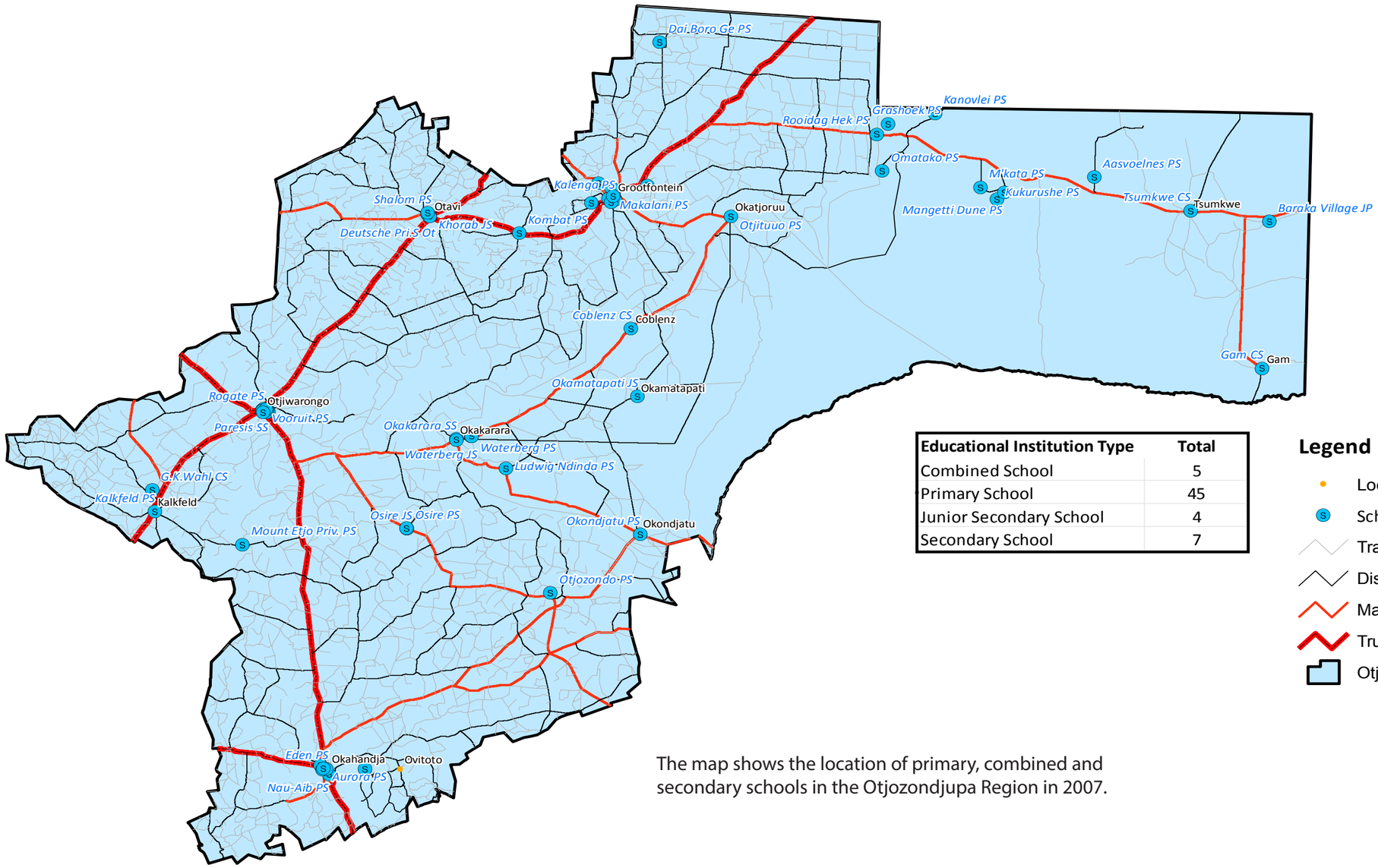
OTJOZONDJUPA

Figure 1.9.1 OTJOZONDJUPA REGION – SCHOOLS IN 2007



Educational Institution Type	Total
Combined School	5
Primary School	45
Junior Secondary School	4
Secondary School	7

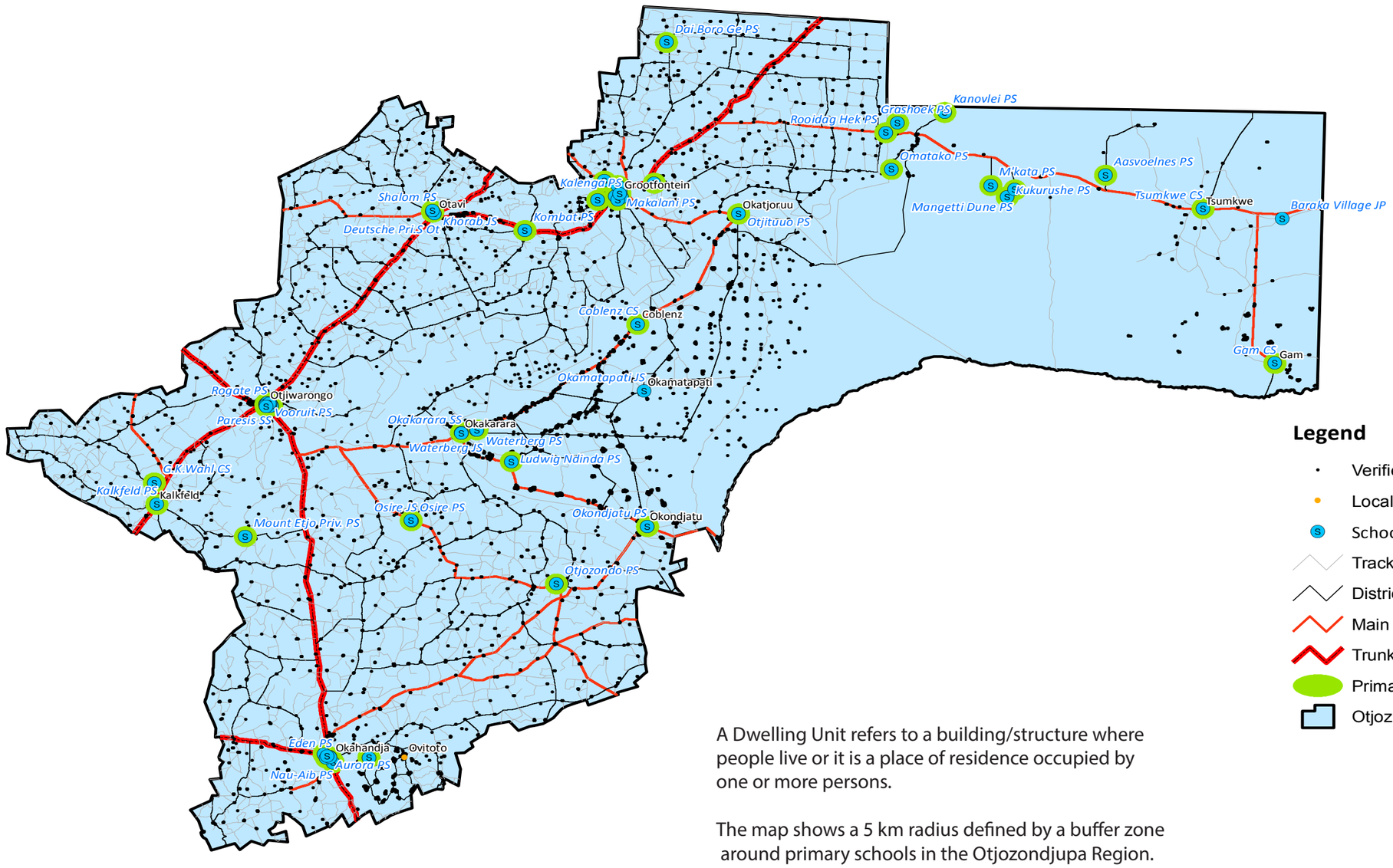
Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Otjozondjupa Region

The map shows the location of primary, combined and secondary schools in the Otjozondjupa Region in 2007.

Source: Schools, Ministry of Education 2007.

Figure 1.9.2 OTJOZONDJUPA REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



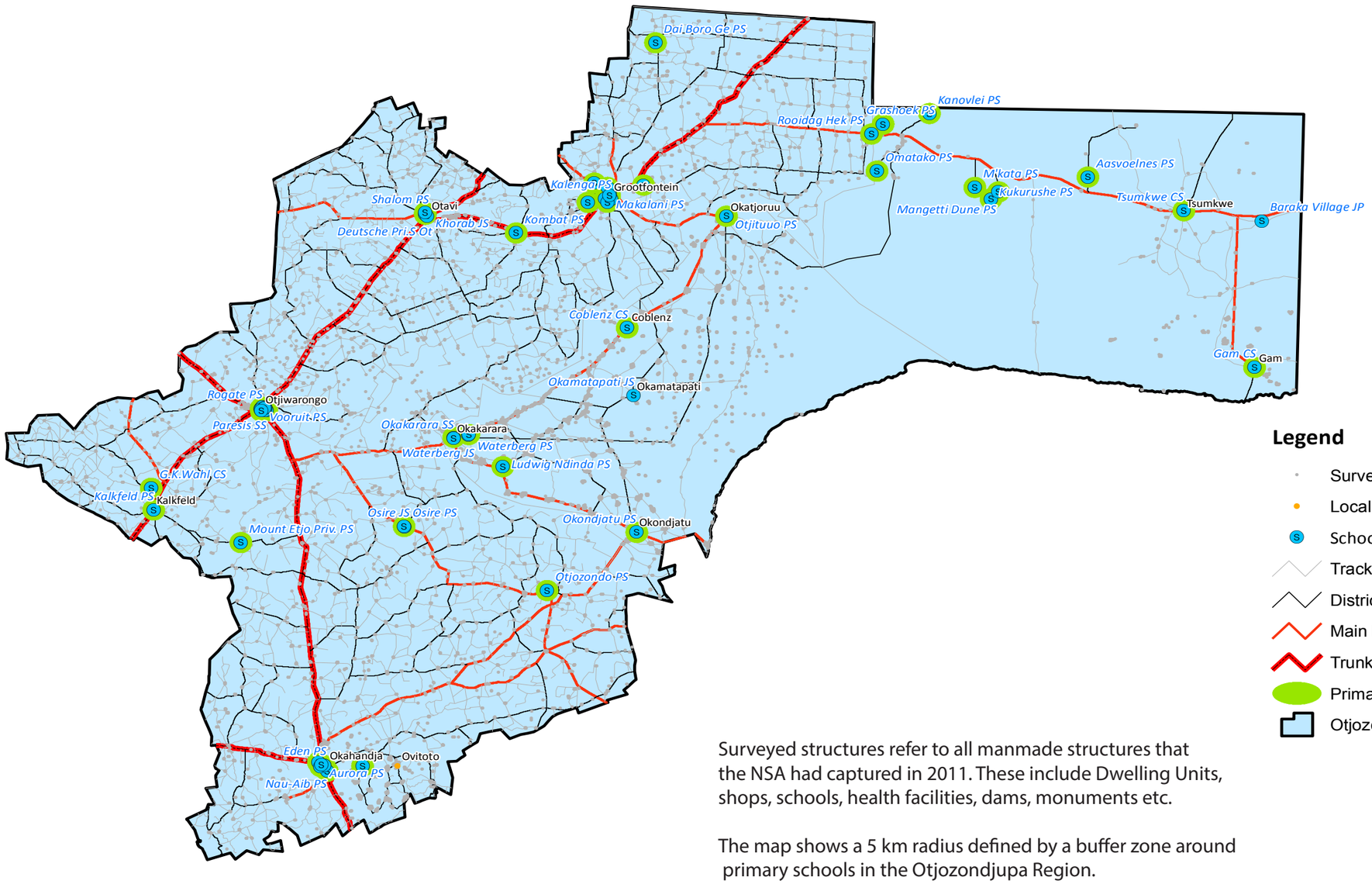
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Otjozondjupa Region.

In 2007, 34.4% of all Verified Dwelling Units in the Otjozondjupa Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.9.3 OTJOZONDJUPA REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



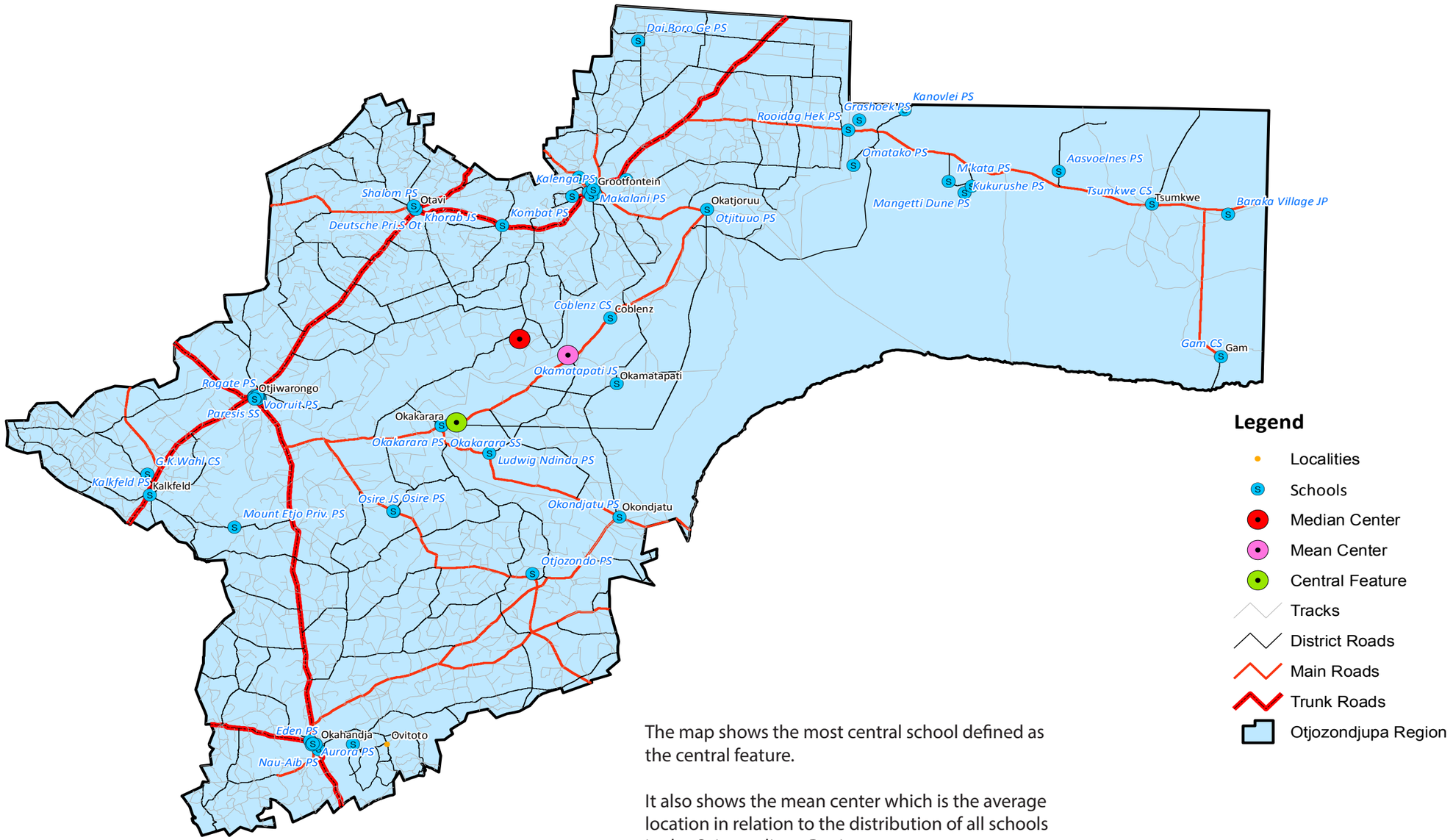
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Otjozondjupa Region.

In 2007, 37.8% of all Surveyed Structures in the Otjozondjupa Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.9.4 OTJOZONDJUPA REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



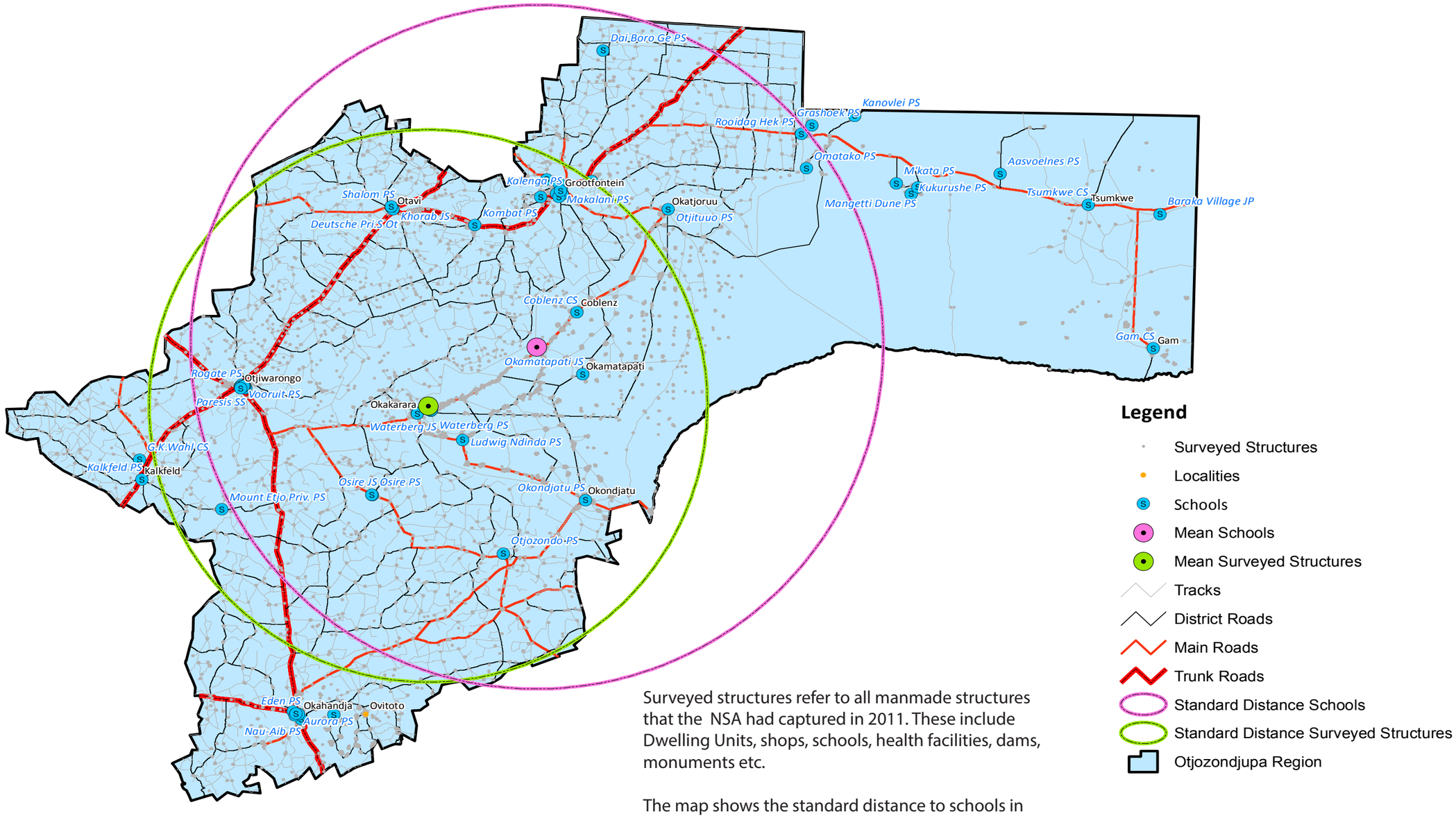
The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Otjozondjupa Region.

Furthermore it shows the median center, which is the location having the shortest distance to all schools in relation to their distribution.

Source: Schools, Ministry of Education 2007.

Figure 1.9.5 OTJOZONDJUPA REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007



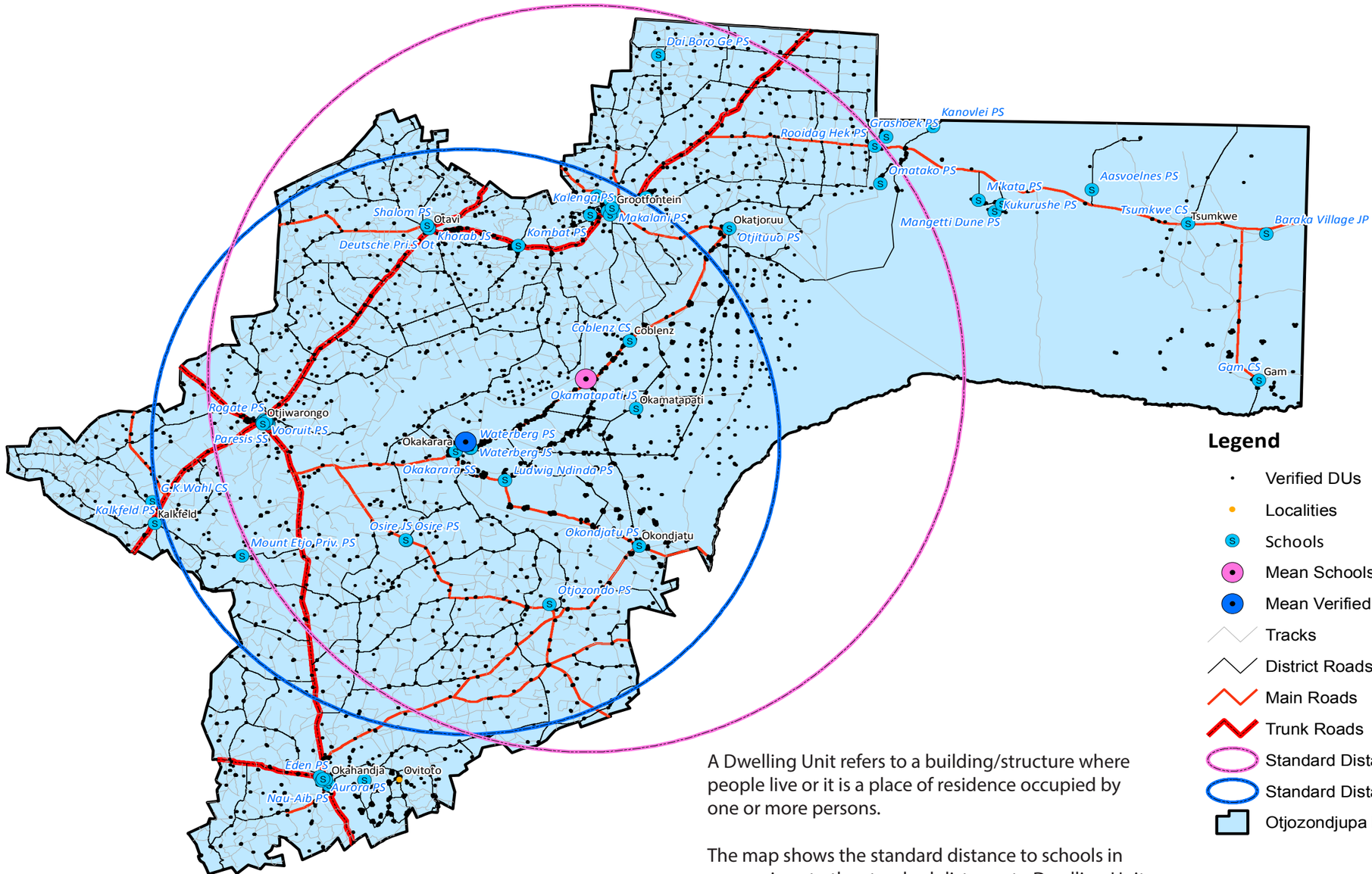
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 65.5% were within 142.4 km from the mean center.
Schools: 61.2% were within 176.3 km from the mean center.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.9.6 OTJOZONDJUPA REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



Legend

- Verified DUs
- Localities
- Schools
- Mean Schools
- Mean Verified Dwelling Units
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Schools
- Standard Distance Verified Dwelling Units
- Otjozondjupa Region

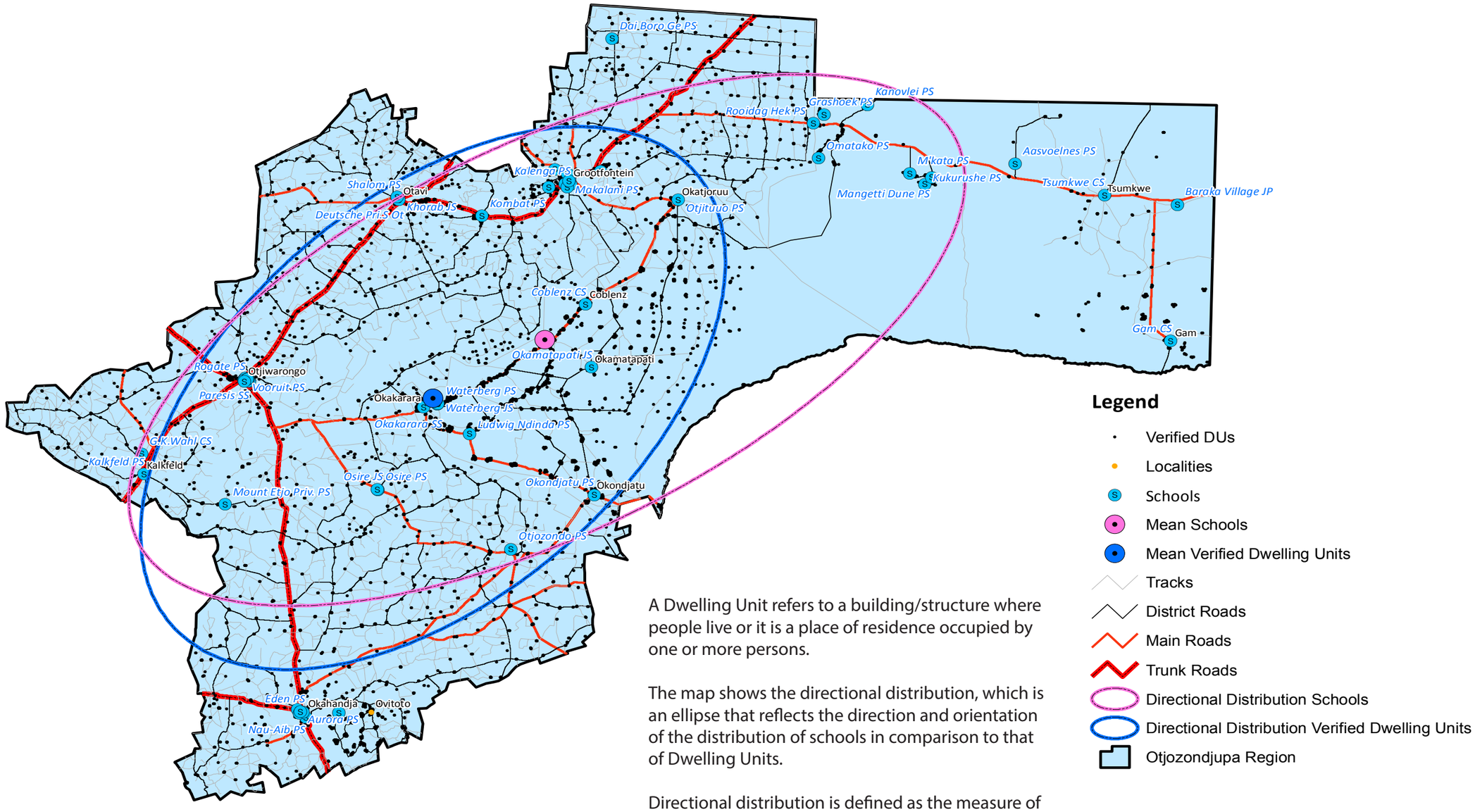
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 66.5% were within 137.4 km from the mean center.
Schools: 61.2% were within 176.3 km from the mean center.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.9.7 OTJOZONDJUPA REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

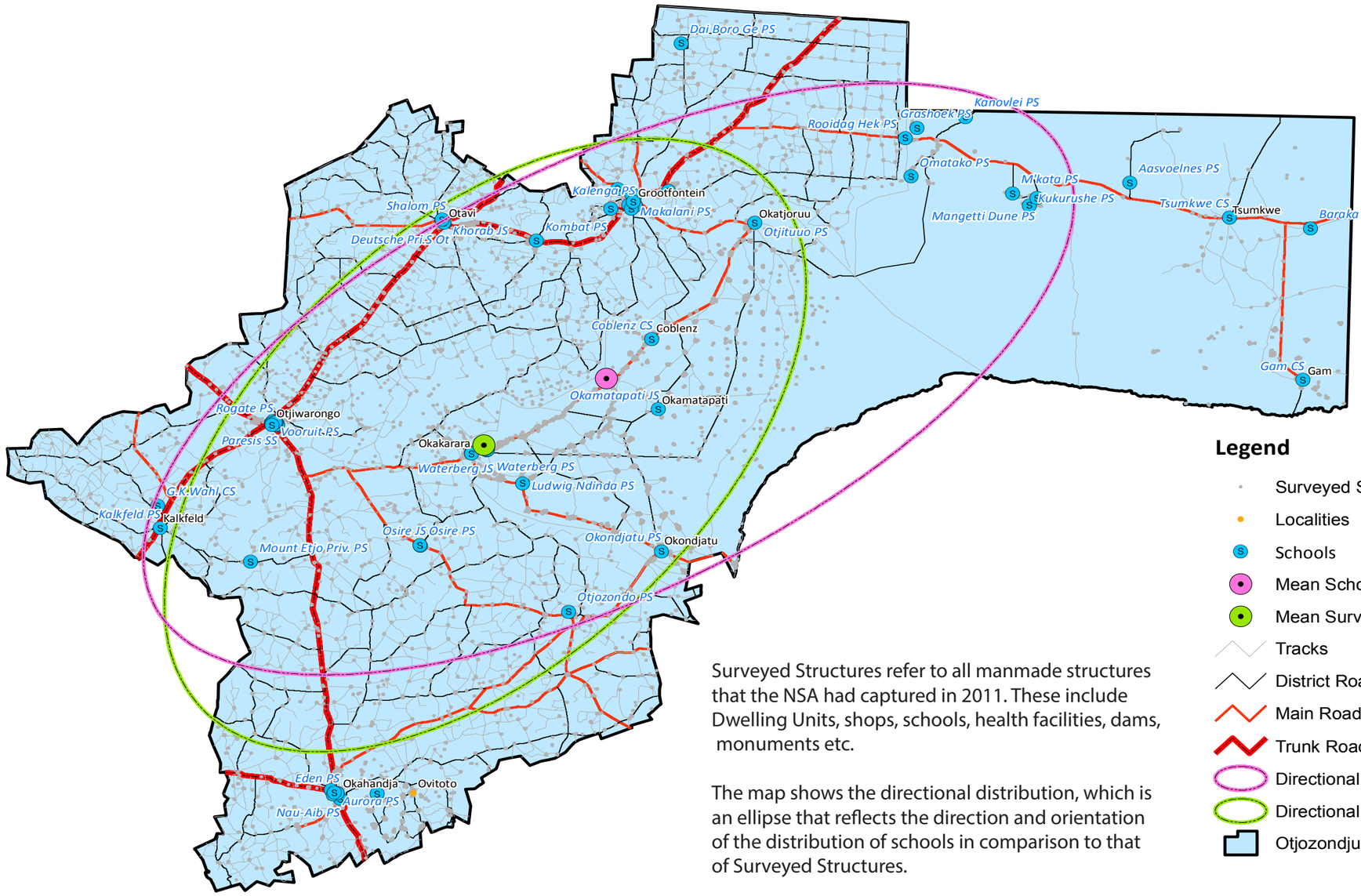
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 45.2° (degrees), North East-South West
Schools: 63.1° (degrees), North East-South West

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.9.8 OTJOZONDJUPA REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

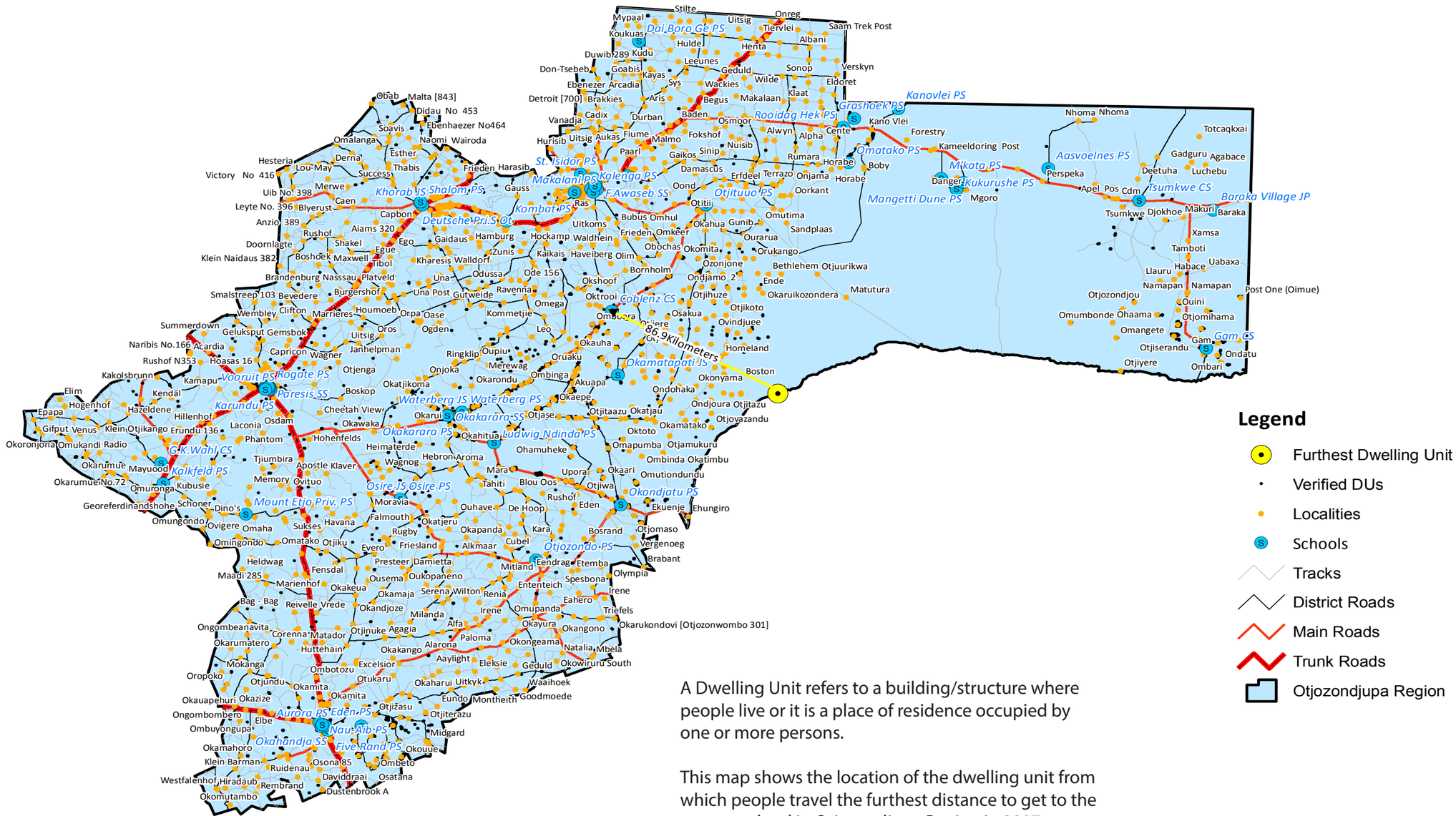
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 46.8° (degrees), North East-South West
Schools: 63.1° (degrees), North East-South West

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.9.9 OTJOZONDJUPA REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest school in Otjozondjupa Region in 2007.

People in and around Otjitazu travelled the furthest distance of approximately 86.9 km to the nearest school in Otjozondjupa Region in 2007, although they might have been served by a neighbouring region.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

EDUCATION

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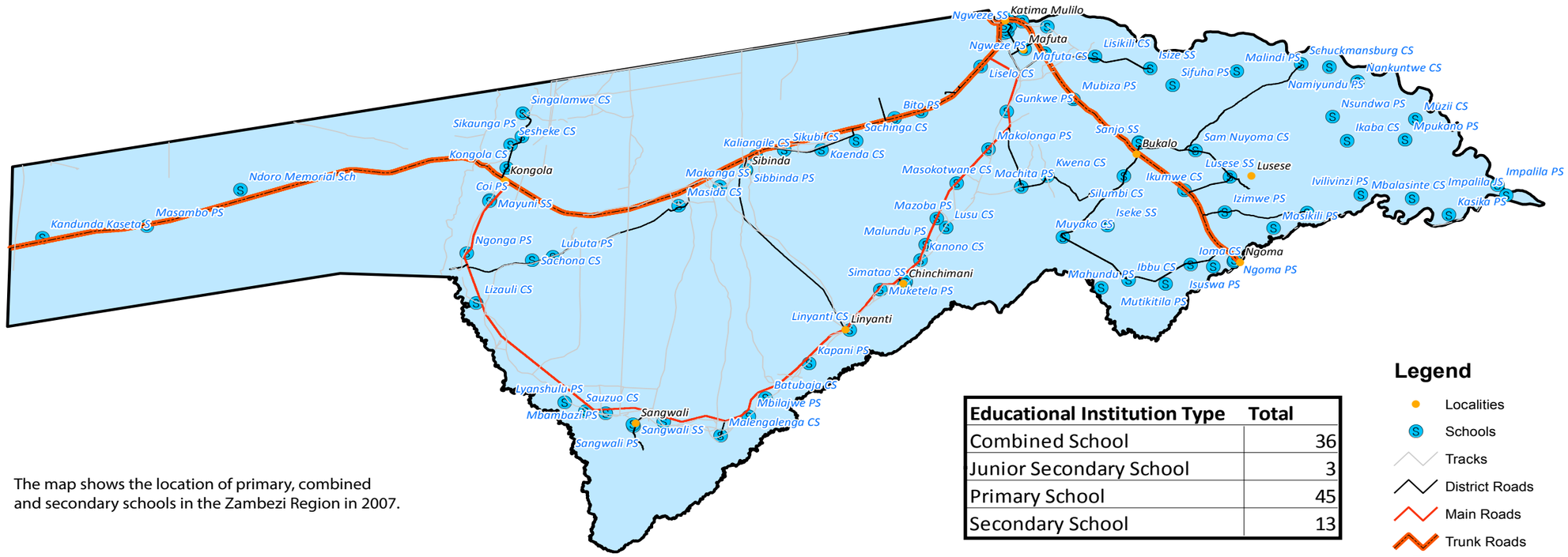
ZAMBEZI

Figure 1.10.1 ZAMBEZI REGION – SCHOOLS IN 2007



The map shows the location of primary, combined and secondary schools in the Zambezi Region in 2007.

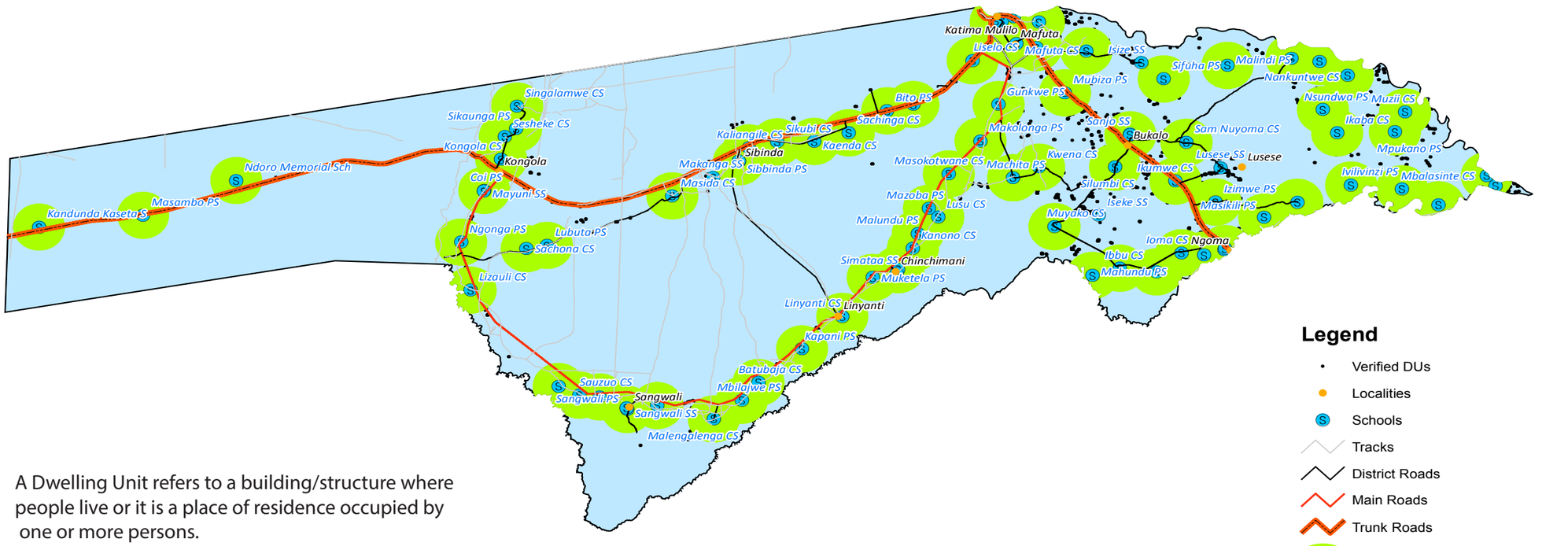
Educational Institution Type	Total
Combined School	36
Junior Secondary School	3
Primary School	45
Secondary School	13

Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Zambezi Region

Source: Schools, Ministry of Education 2007.

Figure 1.10.2 ZAMBEZI REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



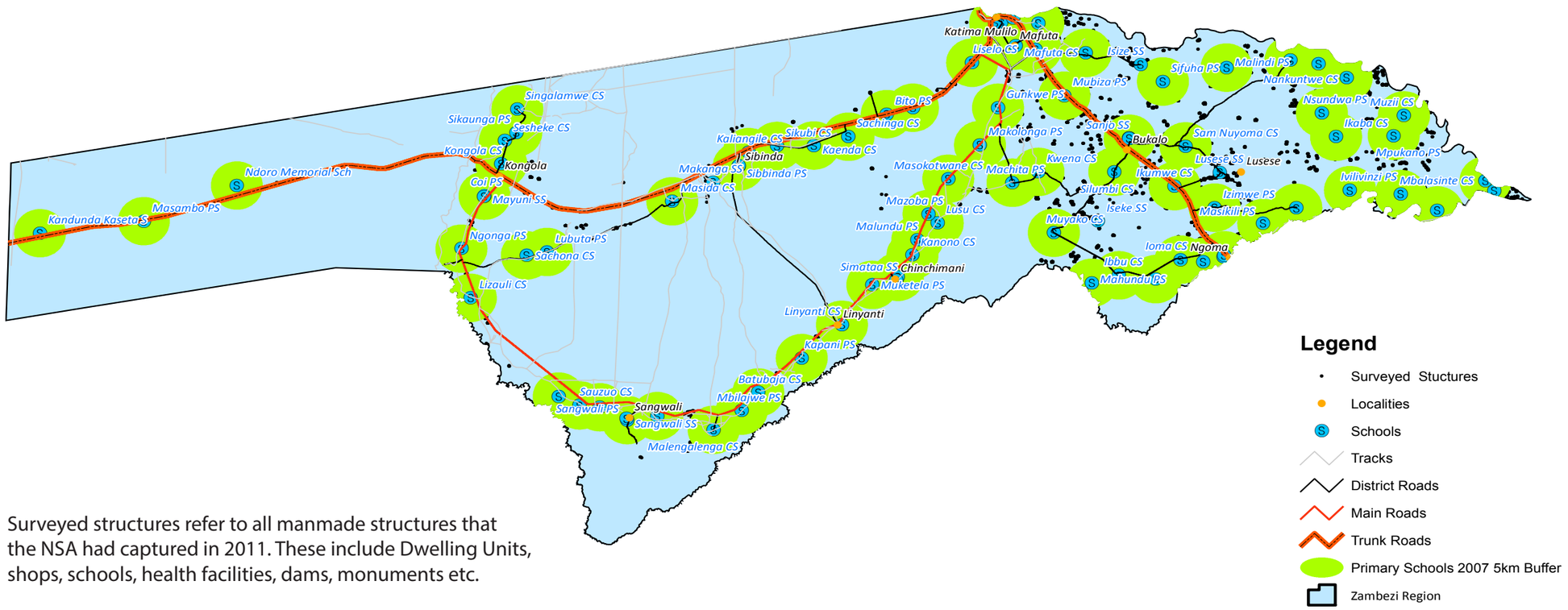
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Zambezi Region.

In 2007, 11.2% of all Verified Dwelling Units in the Zambezi Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.10.3 ZAMBEZI REGION – SURVEYED STRTUCTURES PROXIMITY TO SCHOOLS IN 2007



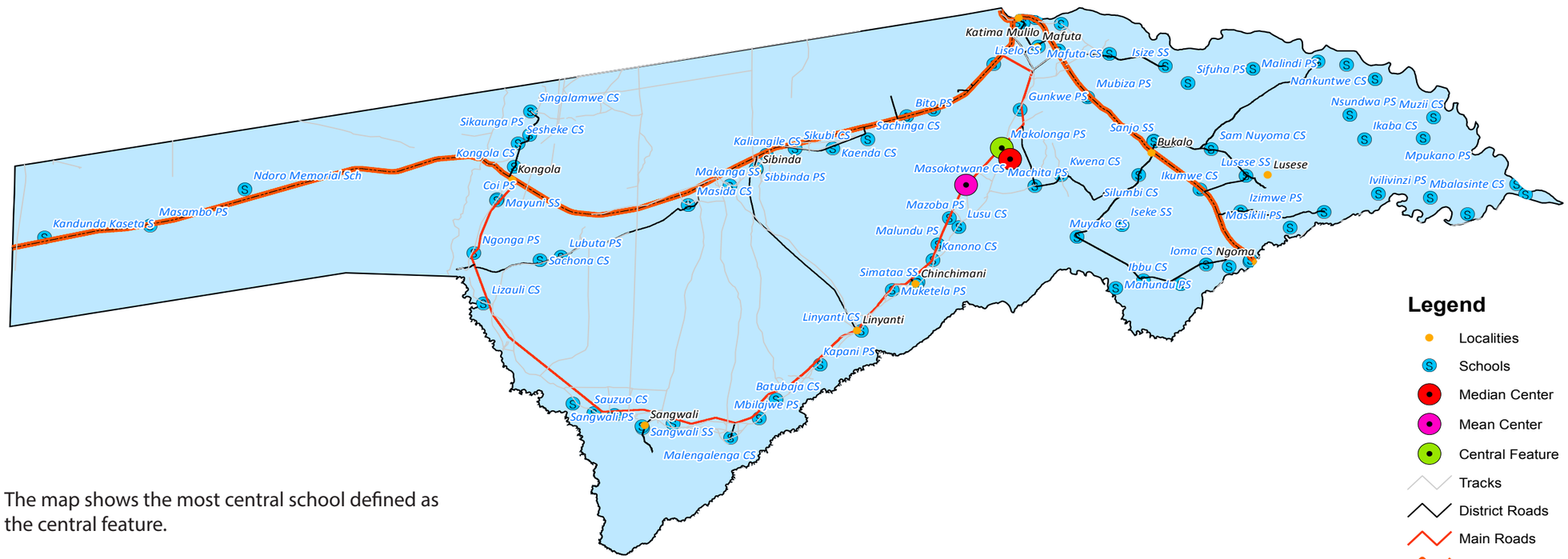
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 5 km radius defined by a buffer zone around primary schools in the Zambezi Region.

In 2007, 15.4% of all Surveyed Structures in the Zambezi Region were outside of a 5 km distance to the nearest primary school.

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.10.4 ZAMBEZI REGION – SCHOOLS CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2007



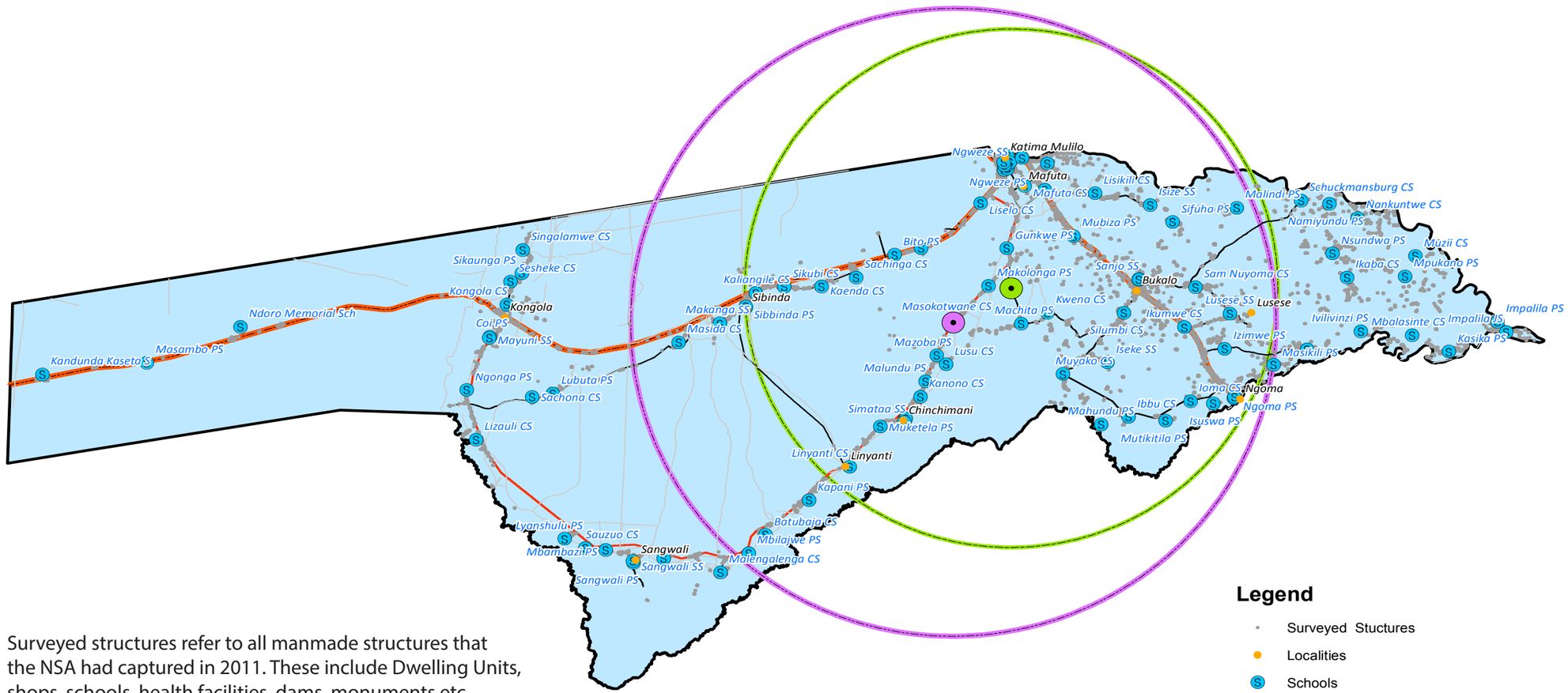
The map shows the most central school defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all schools in the Zambezi Region.

Furthermore it shows the median center, which is the location having the shortest distance to all schools in relation to their distribution.

Source: Schools, Ministry of Education 2007.

Figure 1.10.5 ZAMBEZI REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2007



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to schools in comparison to the standard distance to Surveyed Structures. Standard distance is defined as the distance from the mean within which most features were located.

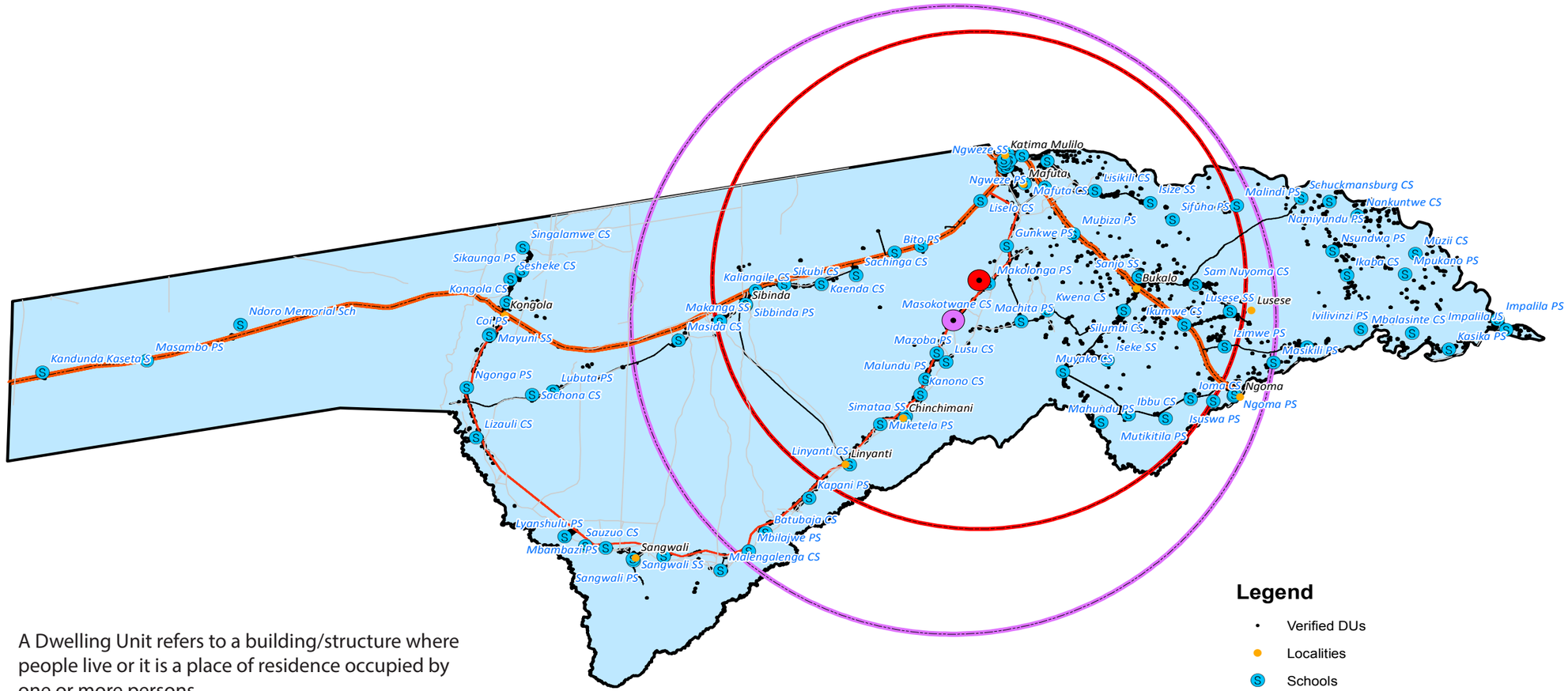
Surveyed Structures: 71.6% were within 53.5 km from the mean center.
Schools: 64.9% were within 64.74 km from the mean center.

Legend

- Surveyed Stuctures
- Localities
- Schools
- Mean Schools
- Mean Surveyed Structures
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Schools
- Standard Distance Surveyed Structures
- Zambezi Region

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.10.6 ZAMBEZI REGION – STANDARD DISTANCE OF SCHOOLS VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2007



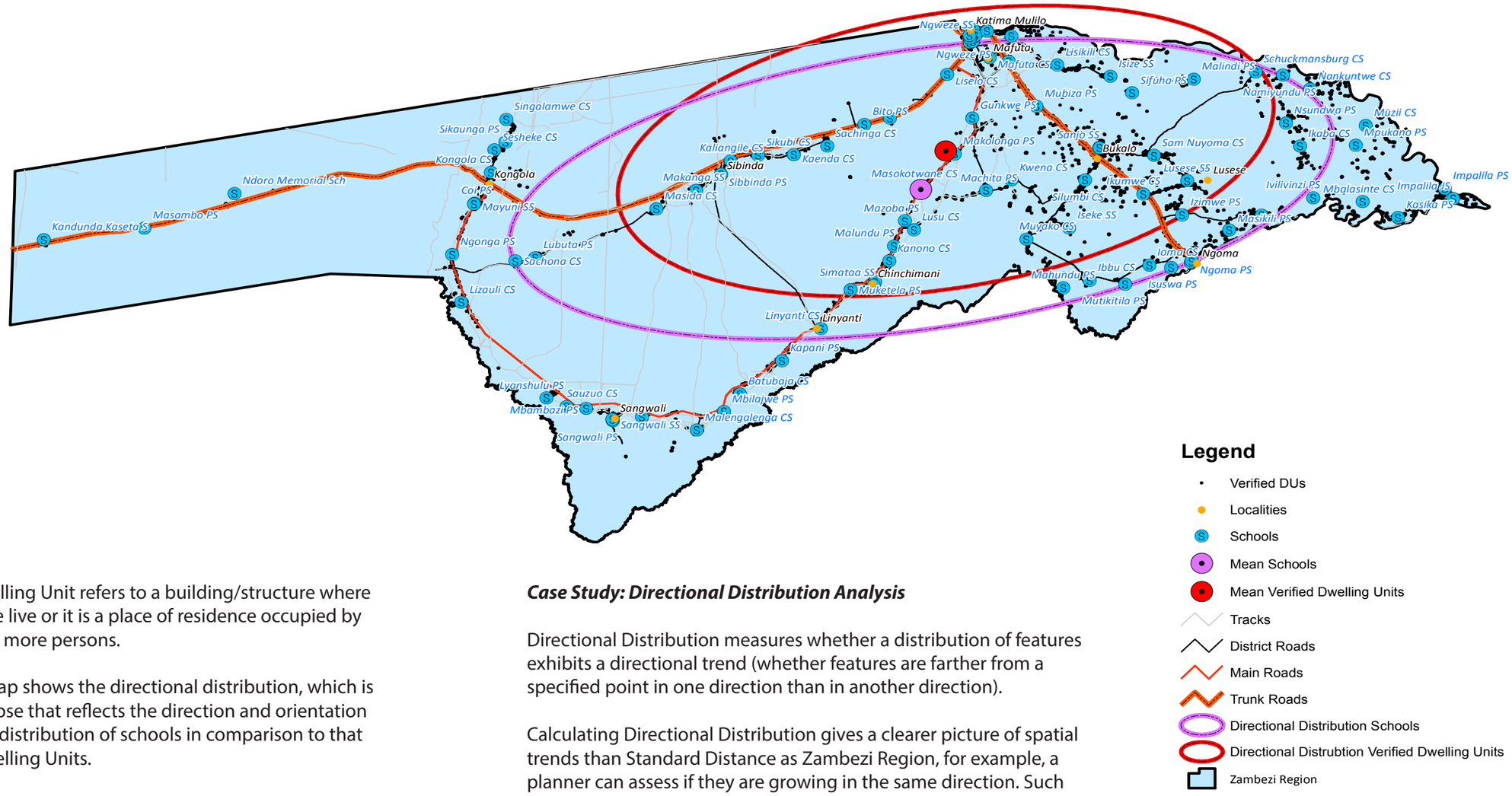
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to schools in comparison to the standard distance to Dwelling Units. Standard distanceis defined as the distance from the mean within which most features were located.

Dwelling Units: 72.2% were within 53.3 km from the mean center.
Schools: 64.9% were within 64.74 km from the mean center.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011

Figure 1.10.7 ZAMBEZI REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the directional distribution, which is anellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientationand direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 79.9° (degrees), West-East
Schools: 79.5° (degrees), West-East

Case Study: Directional Distribution Analysis

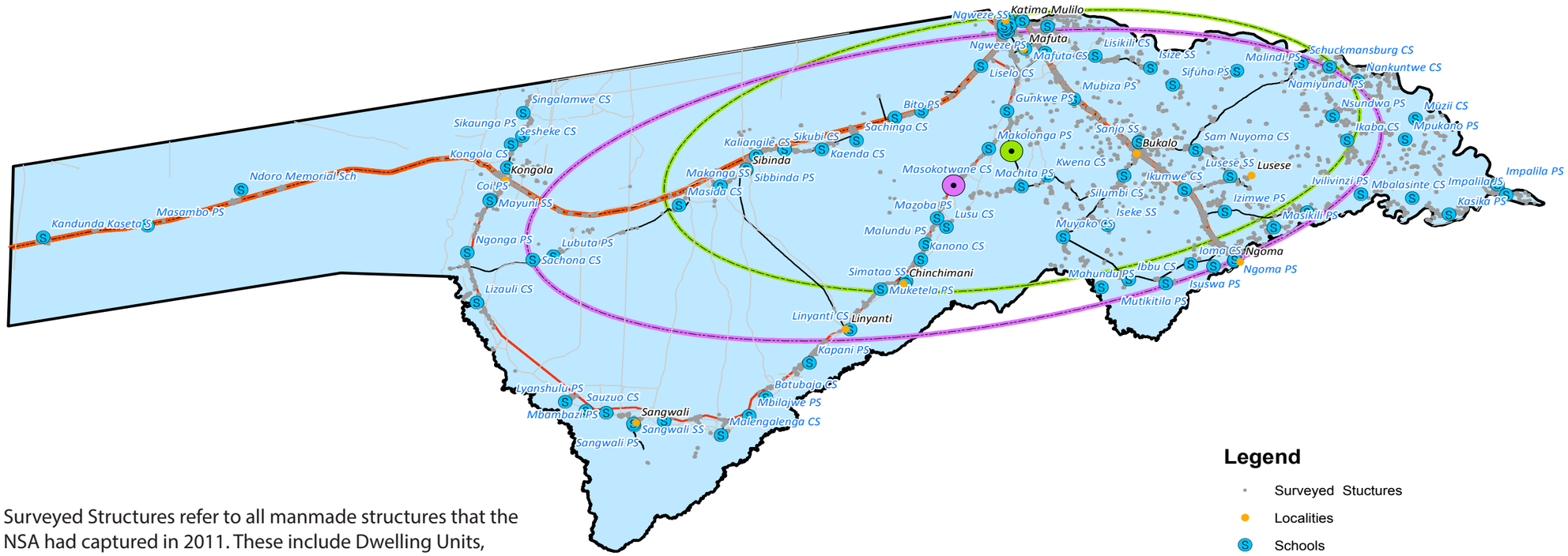
Directional Distribution measures whether a distribution of features exhibits a directional trend (whether features are farther from a specified point in one direction than in another direction).

Calculating Directional Distribution gives a clearer picture of spatial trends than Standard Distance as Zambezi Region, for example, a planner can assess if they are growing in the same direction. Such a comparison might provide clues about where the new schools can be constructed in the region based on the growth direction of the Dwelling Units.

Directional Distribution of schools and Dwelling Units in Zambezi Region shows us a positive trend as they are both growing in similar directions of the region.

Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

Figure 1.10.8 ZAMBEZI REGION – DIRECTIONAL DISTRIBUTION OF SCHOOLS VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2007



Surveyed Structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of schools in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

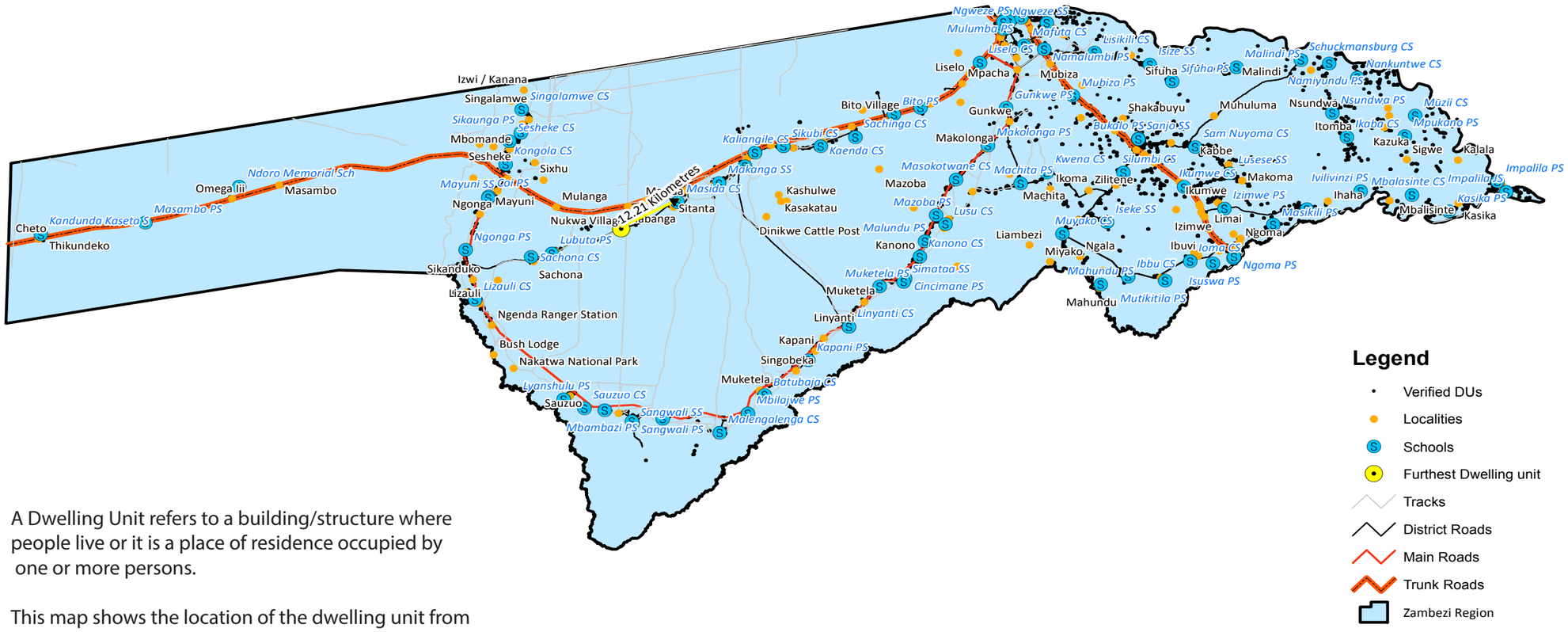
Surveyed Structures: 80.0° (degrees), West-East
Schools: 79.5° (degrees), West-East

Legend

- Surveyed Stuctures
- Localities
- Schools
- Mean Schools
- Mean Surveyed Structures
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Schools
- Directional Distribution Surveyed Structures
- Zambezi Region

Source: Schools, Ministry of Education 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 1.10.9 ZAMBEZI REGION – FURTHEST DWELLING UNIT FROM NEAREST SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest school in Zambezi Region in 2007.

People in and around Mabanga travelled the furthest distance of approximately 12.21 km to the nearest school in Zambezi Region in 2007

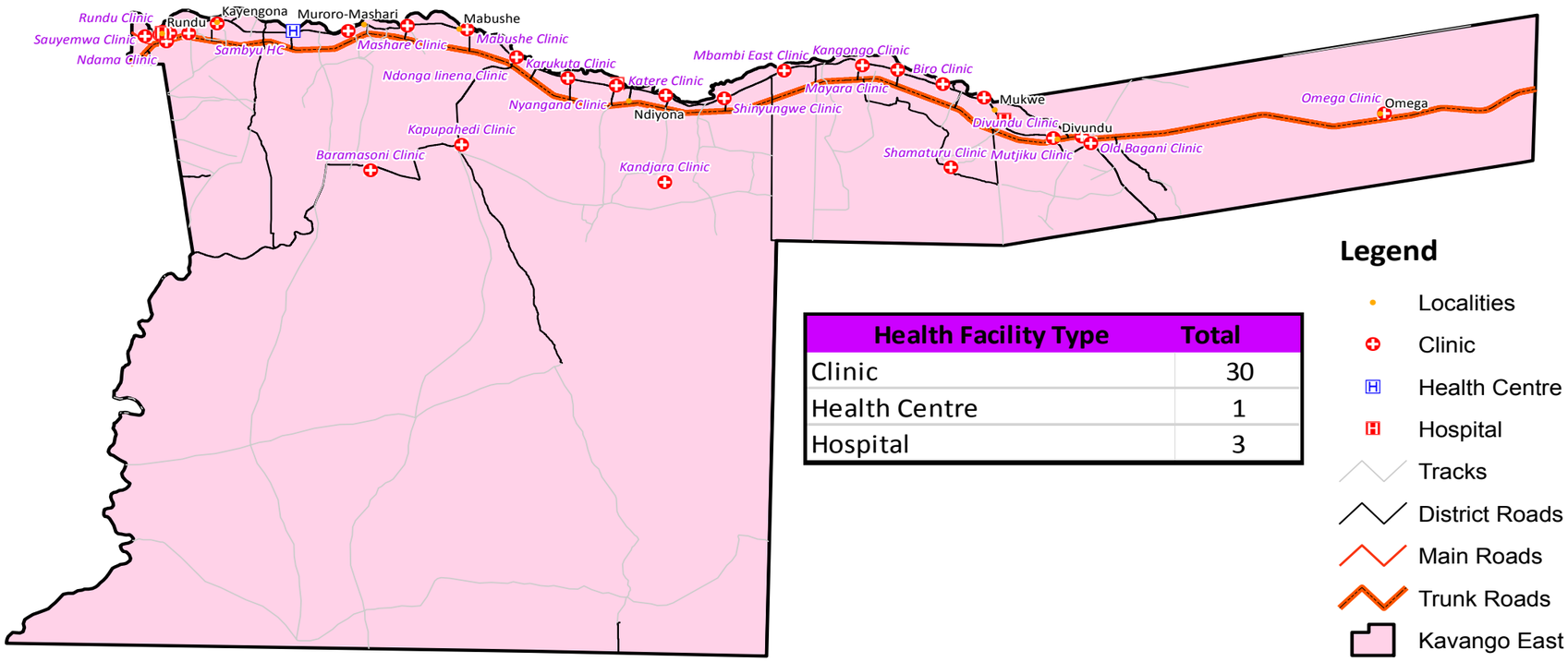
Source: Schools, Ministry of Education 2007. Dwelling Units, Namibia Statistics Agency 2011.

CHAPTER 2

HEALTH

HEALTH
-
KAVANGO EAST

Figure 2.1.1 KAVANGO EAST REGION - HEALTH FACILITIES IN 2011



Health Facility Type	Total
Clinic	30
Health Centre	1
Hospital	3

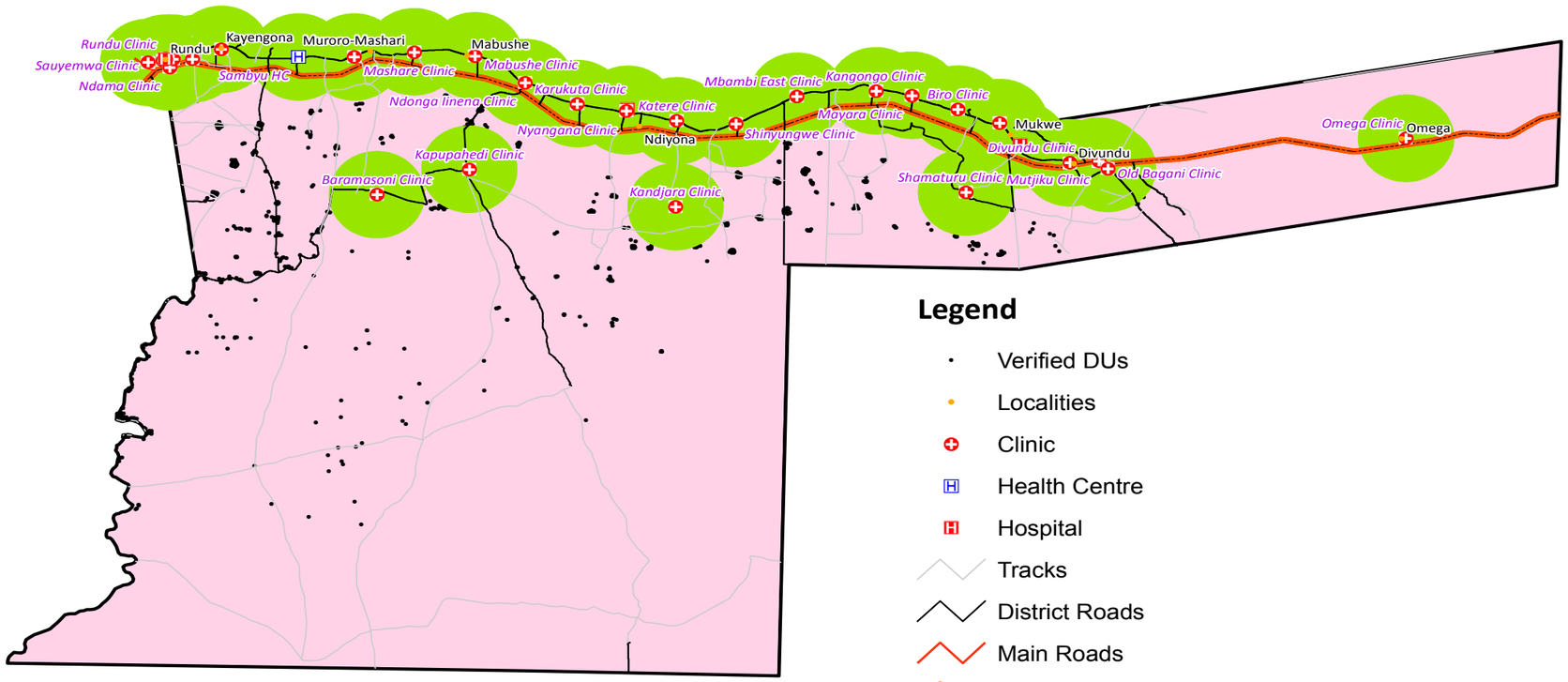
Legend

- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kavango East Region

The map shows the location of health facilities and rehabilitation centres in the Kavango East Region in 2011.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.1.2 KAVANGO EAST REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



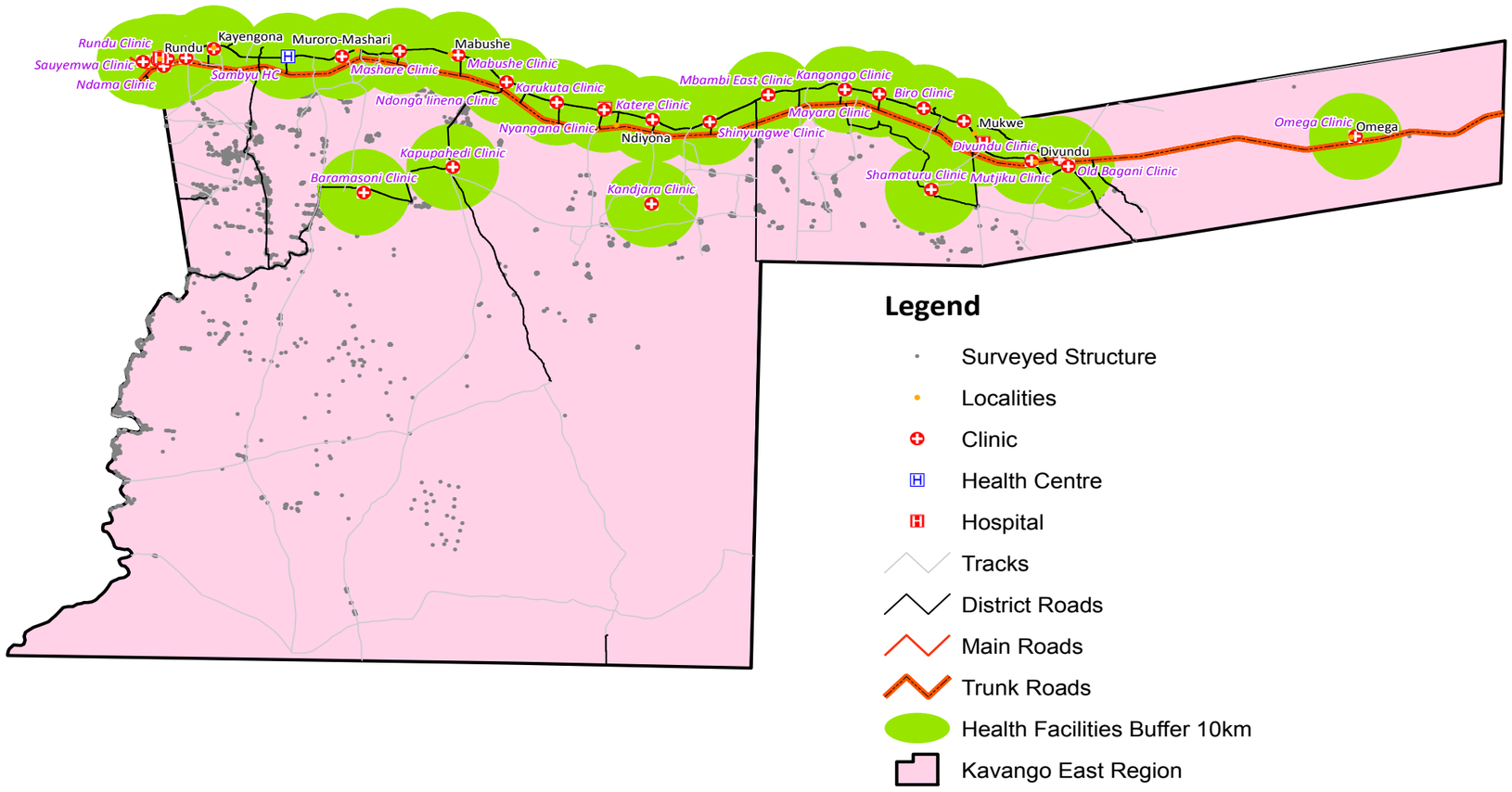
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Kavango East Region.

In 2011, 6.1% of all Verified Dwelling Units in the Kavango East Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.1.3 KAVANGO EAST REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



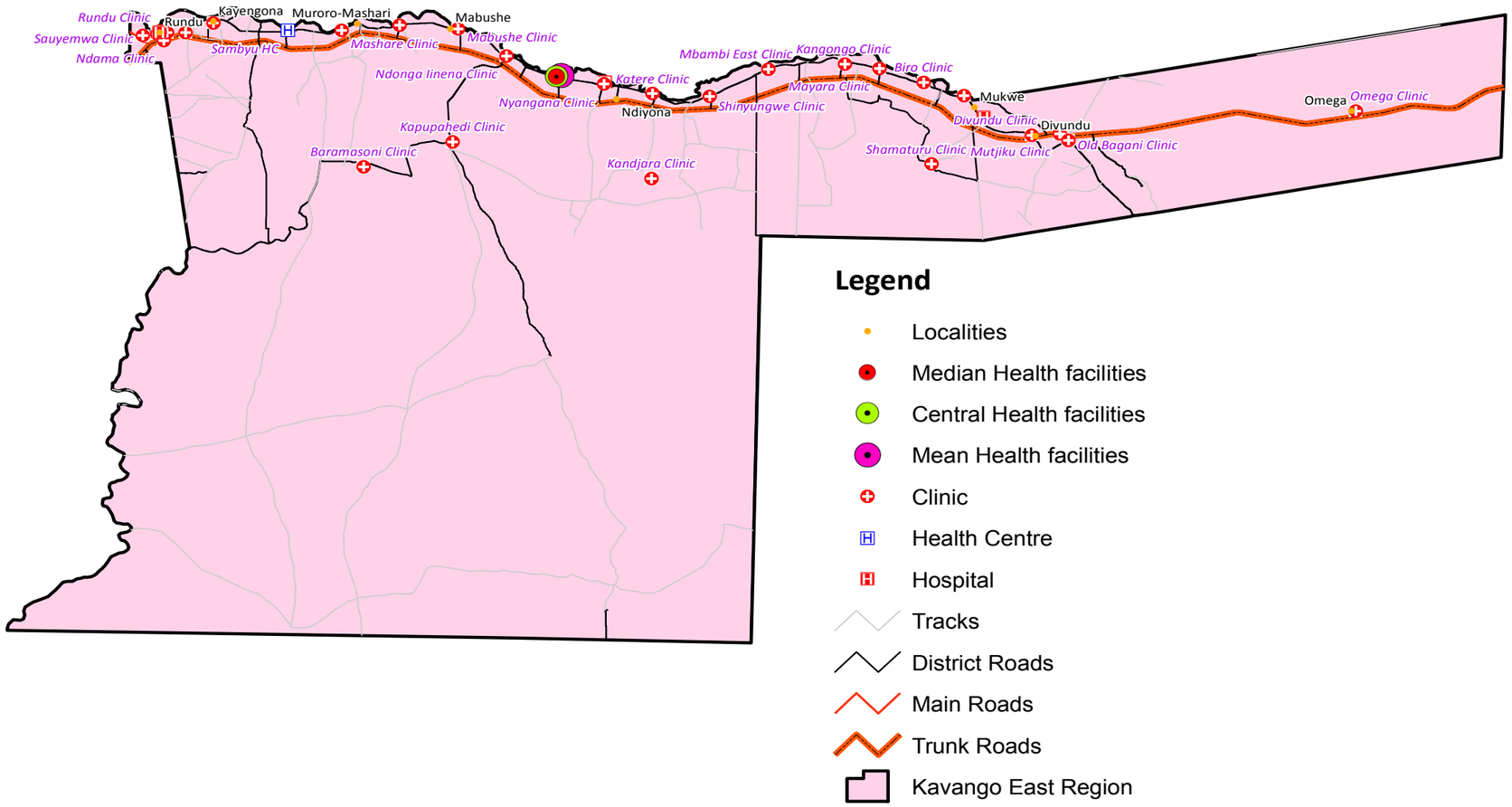
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Kavango East Region.

In 2011, 10.0% of all surveyed structures in the Kavango East Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.1.4 KAVANGO EAST REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



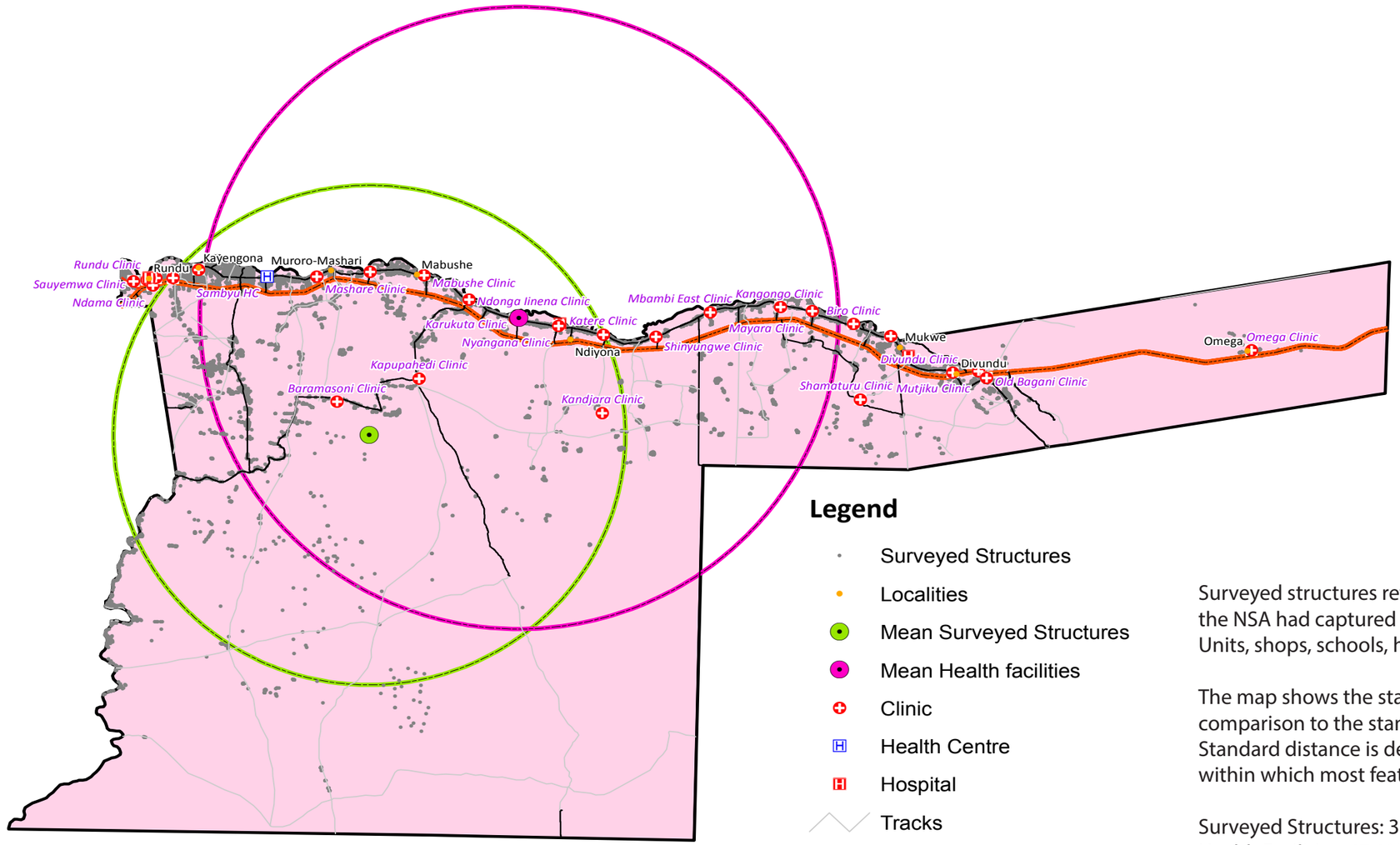
The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Kavango East Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.1.5 KAVANGO EAST REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



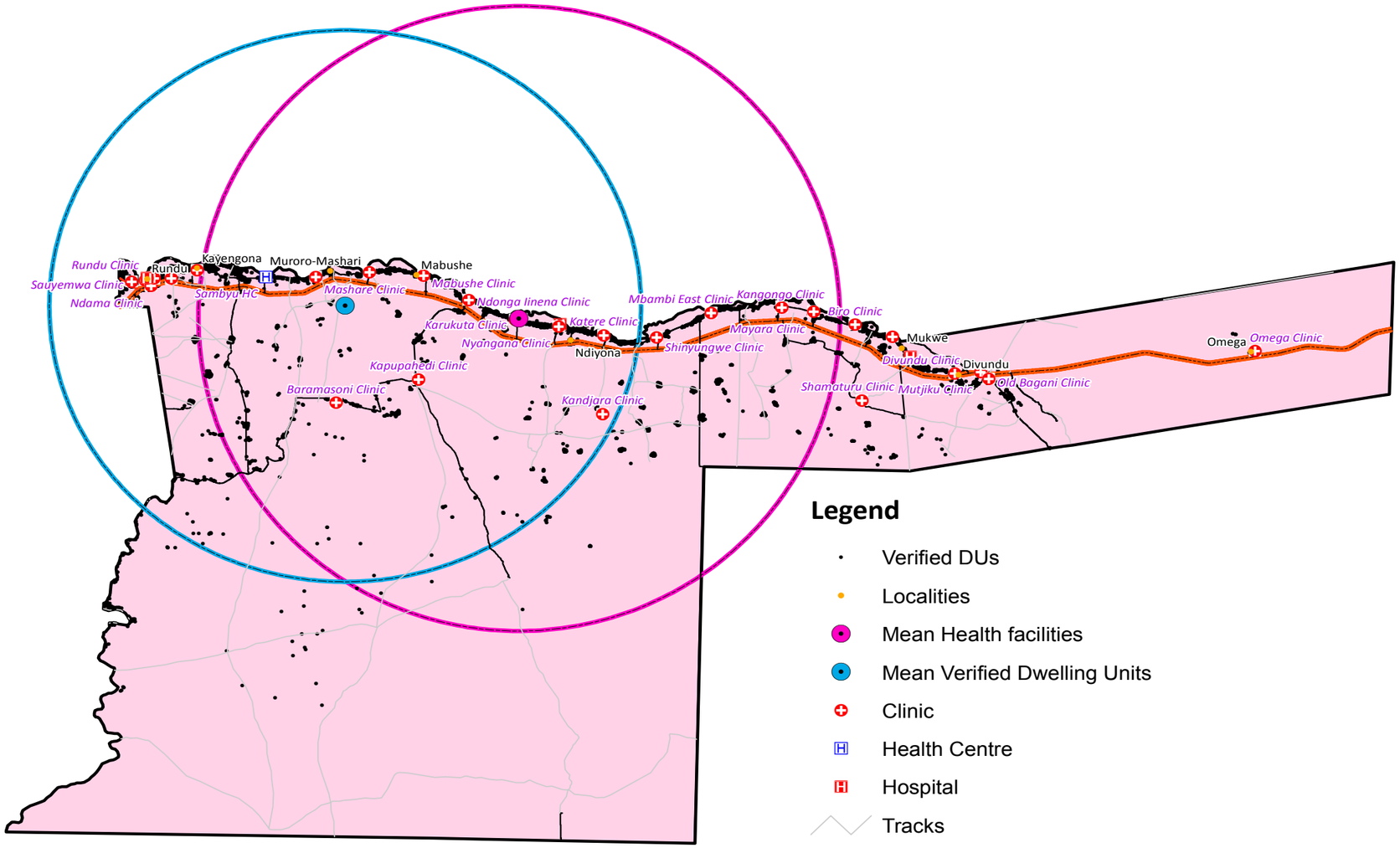
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 31.2% were within 62.9 km from the mean center.
Health Facilities: 47.1% were within 78.4 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.1.6 KAVANGO EAST REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



Legend

- Verified DUs
- Localities
- Mean Health facilities
- Mean Verified Dwelling Units
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Verified Dwelling Unit
- Standard Distance Health facilities
- Kavango East Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to health facility in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 80.1 % were within 68.9 km from the mean centre.
Health Facilities: 47.1% were within 78.4 km from the mean center.

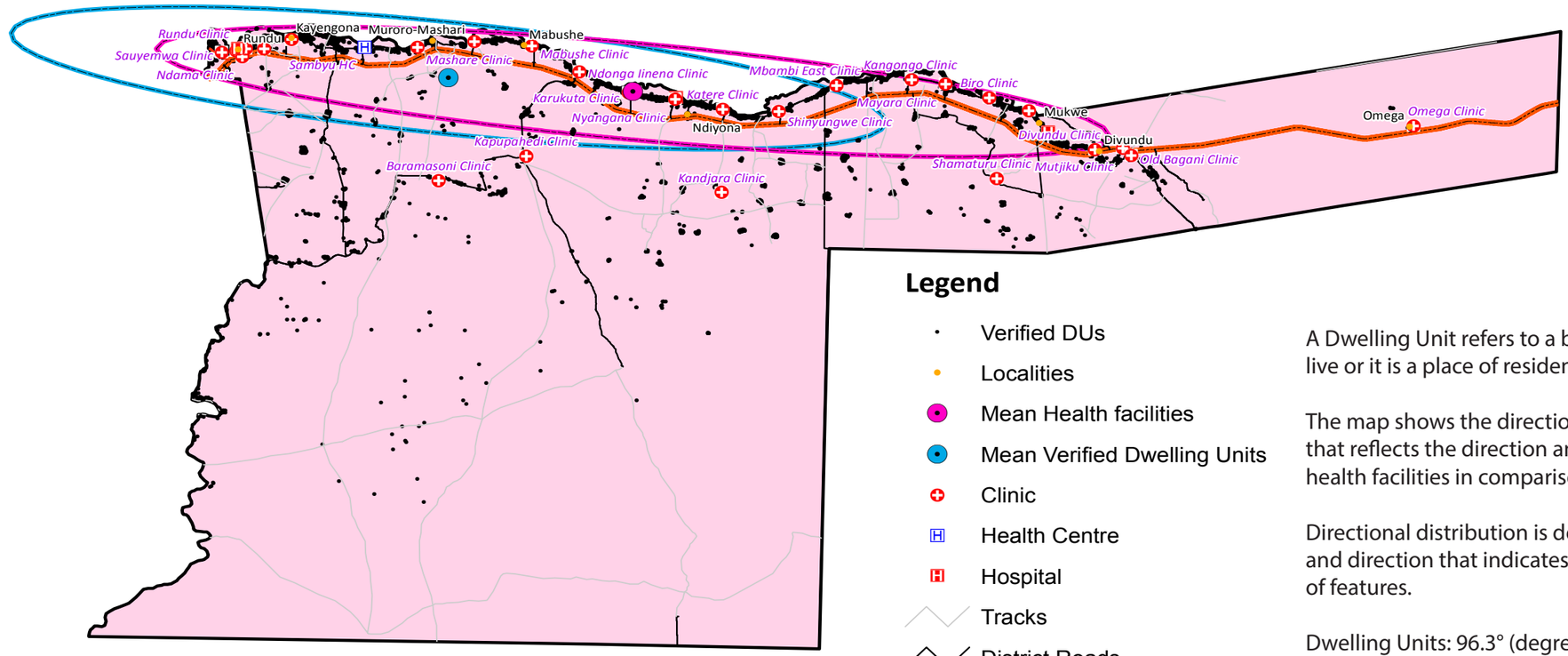
Case Study: Standard Distance Analysis

Standard distance measures the degree to which features are concentrated or dispersed around the geometric mean center. It also measures the extent to which the distances between the mean center and the feature vary from the average distance.

The tool can be used to compare time periods for example, a crime analyst could compare daytime and night-time burglaries to see if burglaries are more dispersed or more compact during the day than at night. In this case we are comparing the concentration or dispersion of dwelling units from the mean center to those of the health facilities from the mean center. Therefore the map shows that in Kavango East region health facilities are more dispersed from the mean centre than dwelling units.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.1.7 KAVANGO EAST REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



Legend

- Verified DUs
- Localities
- Mean Health facilities
- Mean Verified Dwelling Units
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Health Facilities
- Directional Distribution Verified Dwelling Units
- Kavango East Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

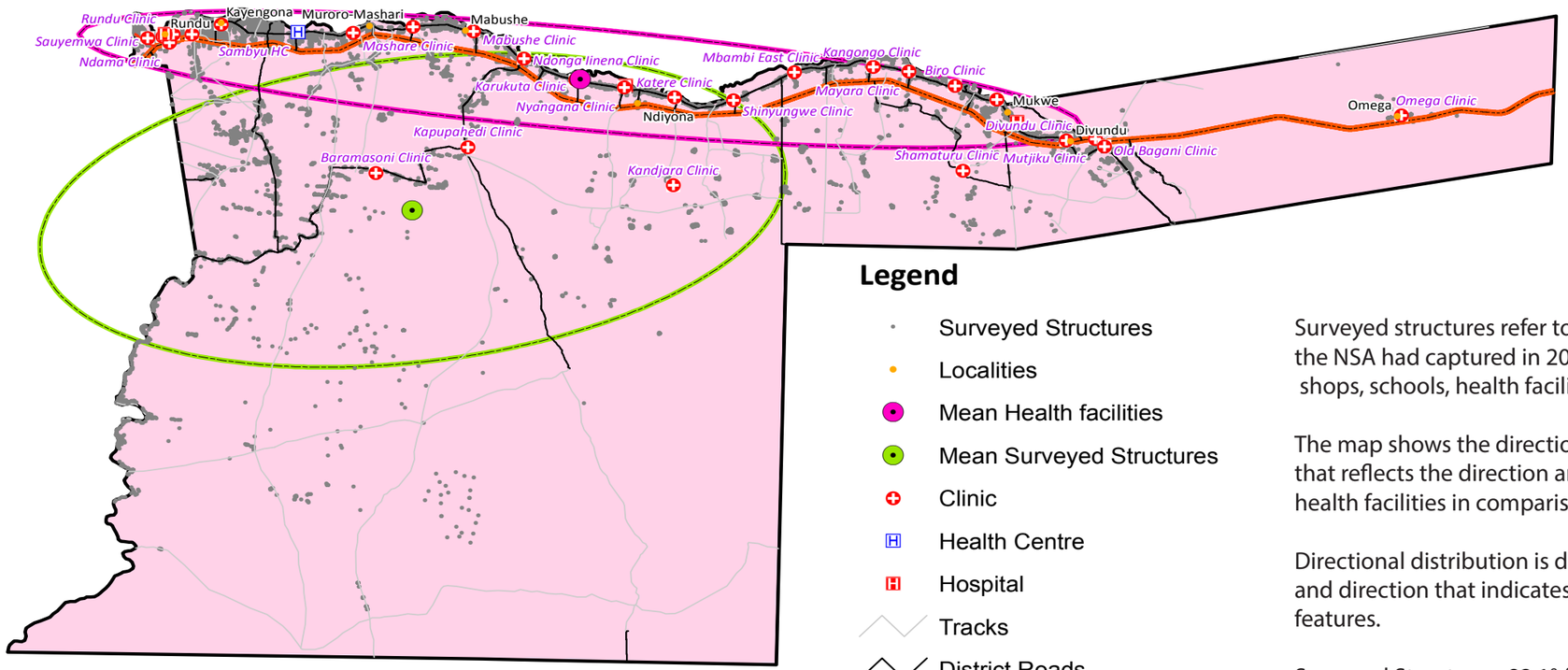
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 96.3° (degrees), West-East
Health Facilities: 94.3° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.1.8 KAVANGO EAST REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Legend

- Surveyed Structures
- Localities
- Mean Health facilities
- Mean Surveyed Structures
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Health Facilities
- Directional Distribution Surveyed Structures
- Kavango East Region

Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

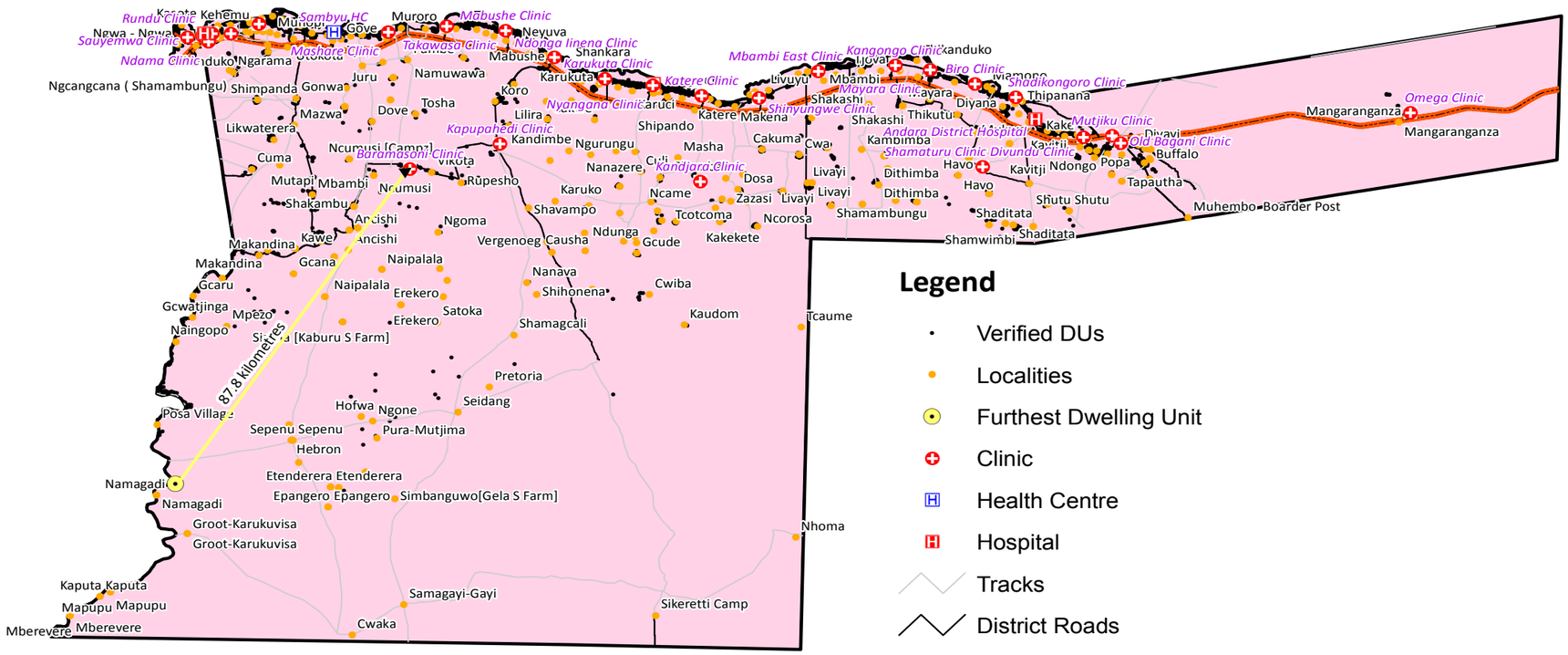
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Survey Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 82.1° (degrees), South West- North East
Health Facilities: 94.3° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.1.9 KAVANGO EAST REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

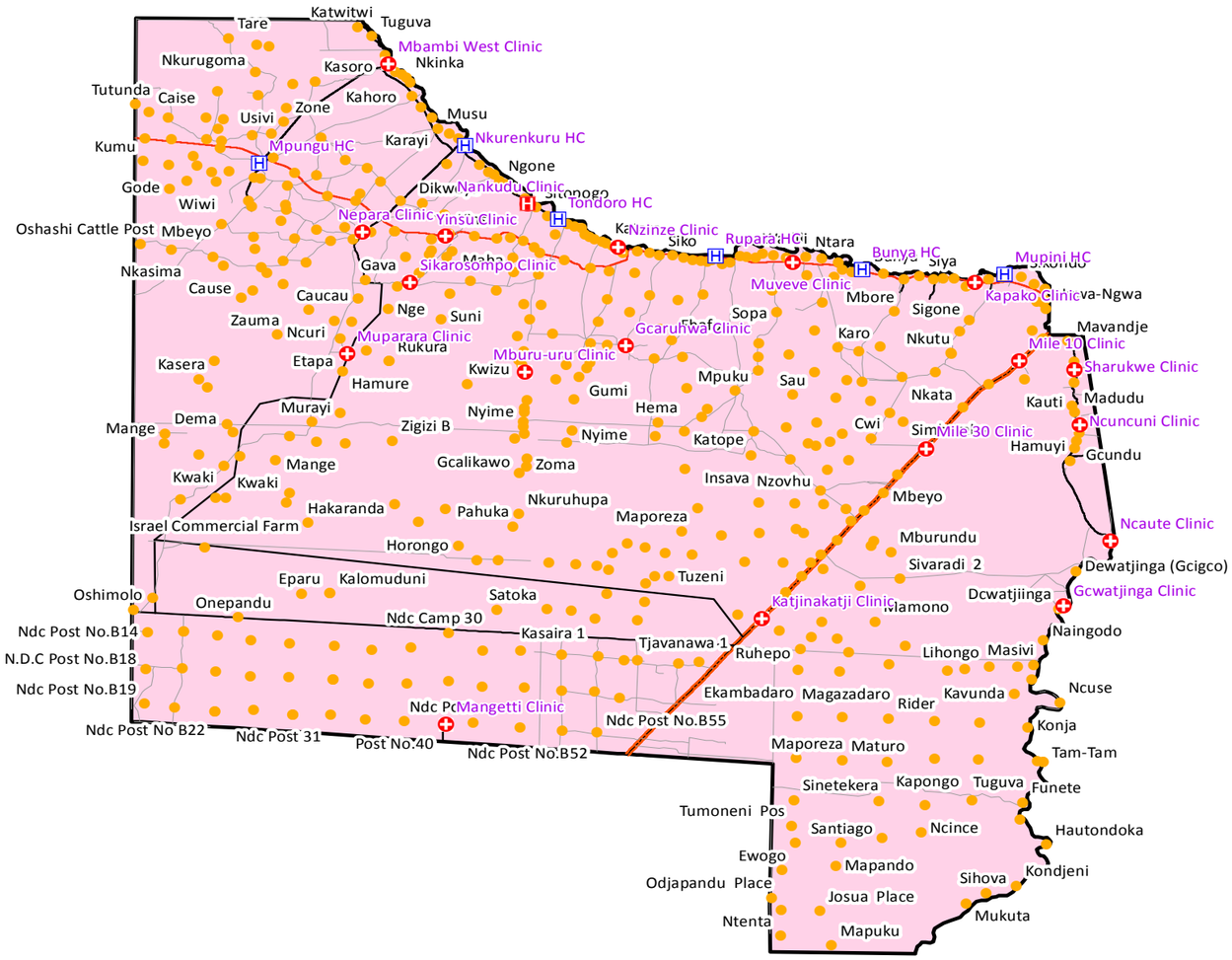
This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Kavango East Region in 2011.

People in and around Namagadi travelled the furthest distance of approximately 87.8 km to the nearest health facility in Kavango East Region in 2011, although they might have been served by a neighbouring region.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH
-
KAVANGO WEST

Figure 2.2.1 KAVANGO WEST REGION - HEALTH FACILITIES IN 2011



Legend

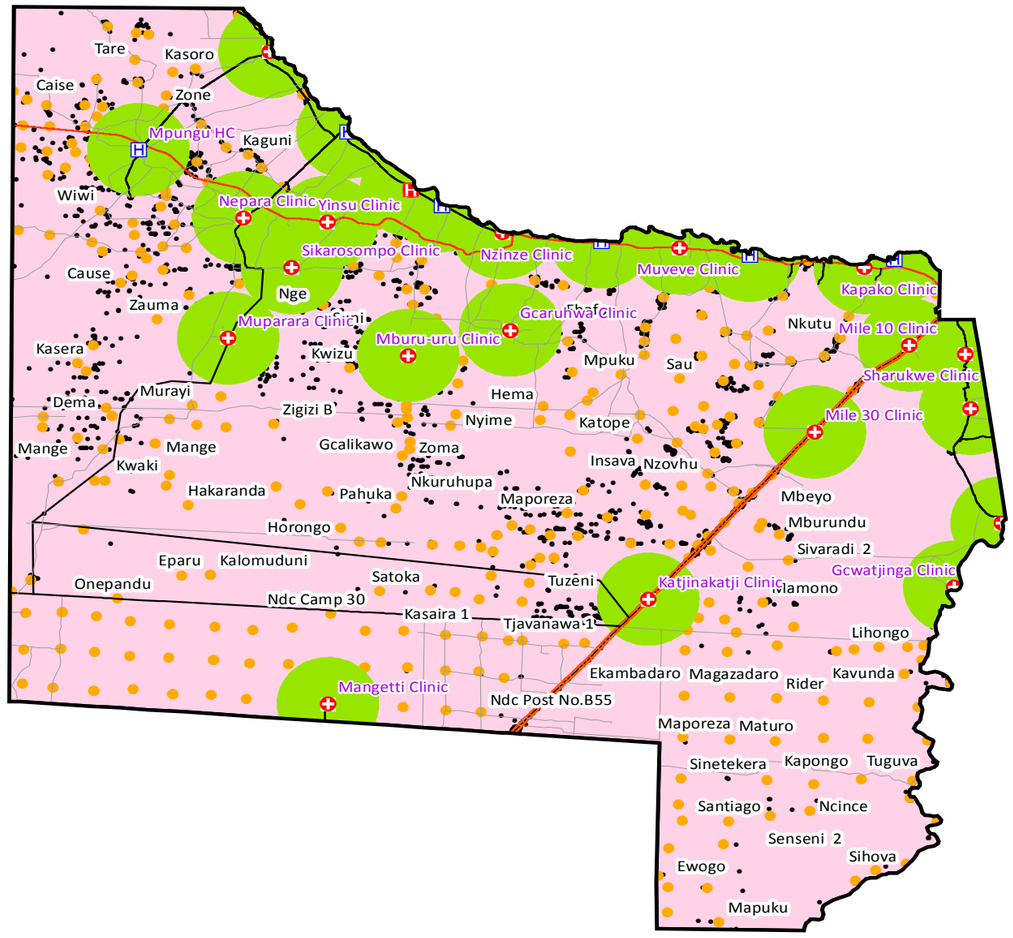
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kavango West Region

Health Facility Type	Total
Clinic	19
Health Center	6
Hospital	1

The map shows the location of health facilities and rehabilitation centres in the Kavango West Region in 2011

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.2.2 KAVANGO WEST REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



Legend

- Verified Dwelling Units
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Health Facilities Buffer 10 Km
- Kavango West Region

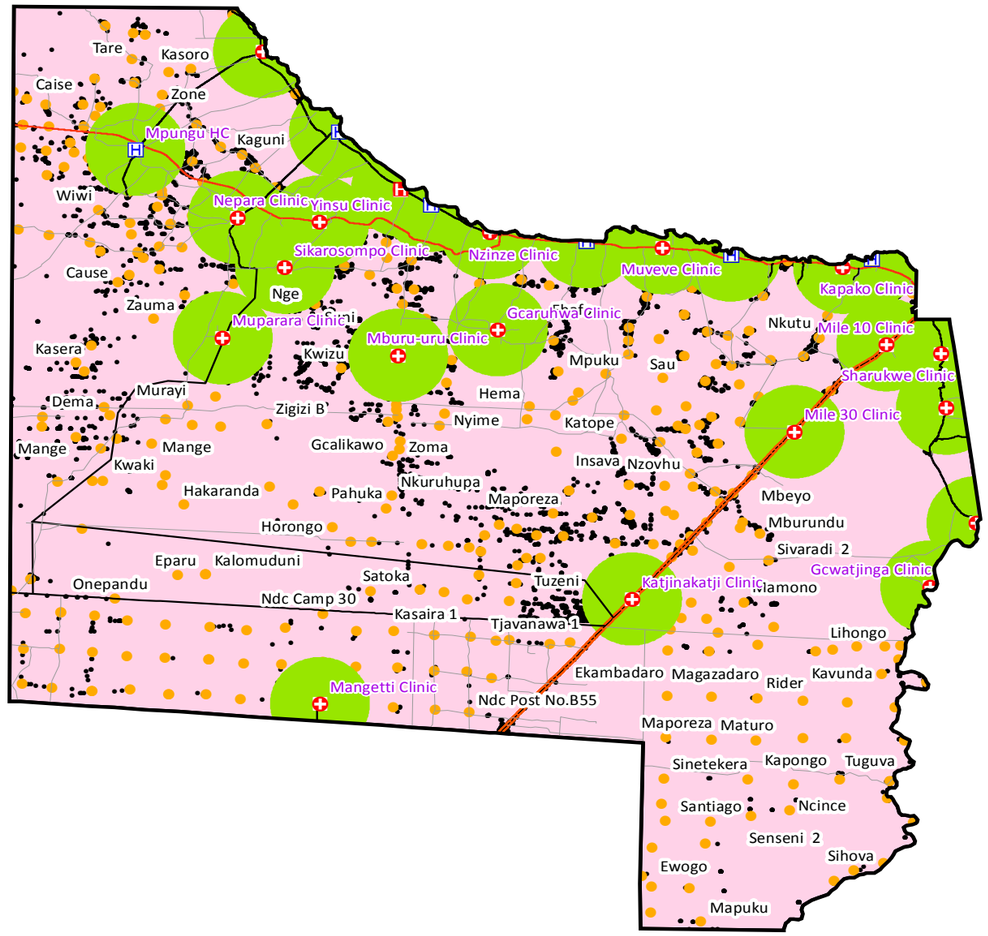
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Kavango West Region.

In 2011, 27.6% of all Verified Dwelling Units in the Kavango West Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.2.3 KAVANGO WEST REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Health Facilities Buffer 10 Km
- Kavango West Region

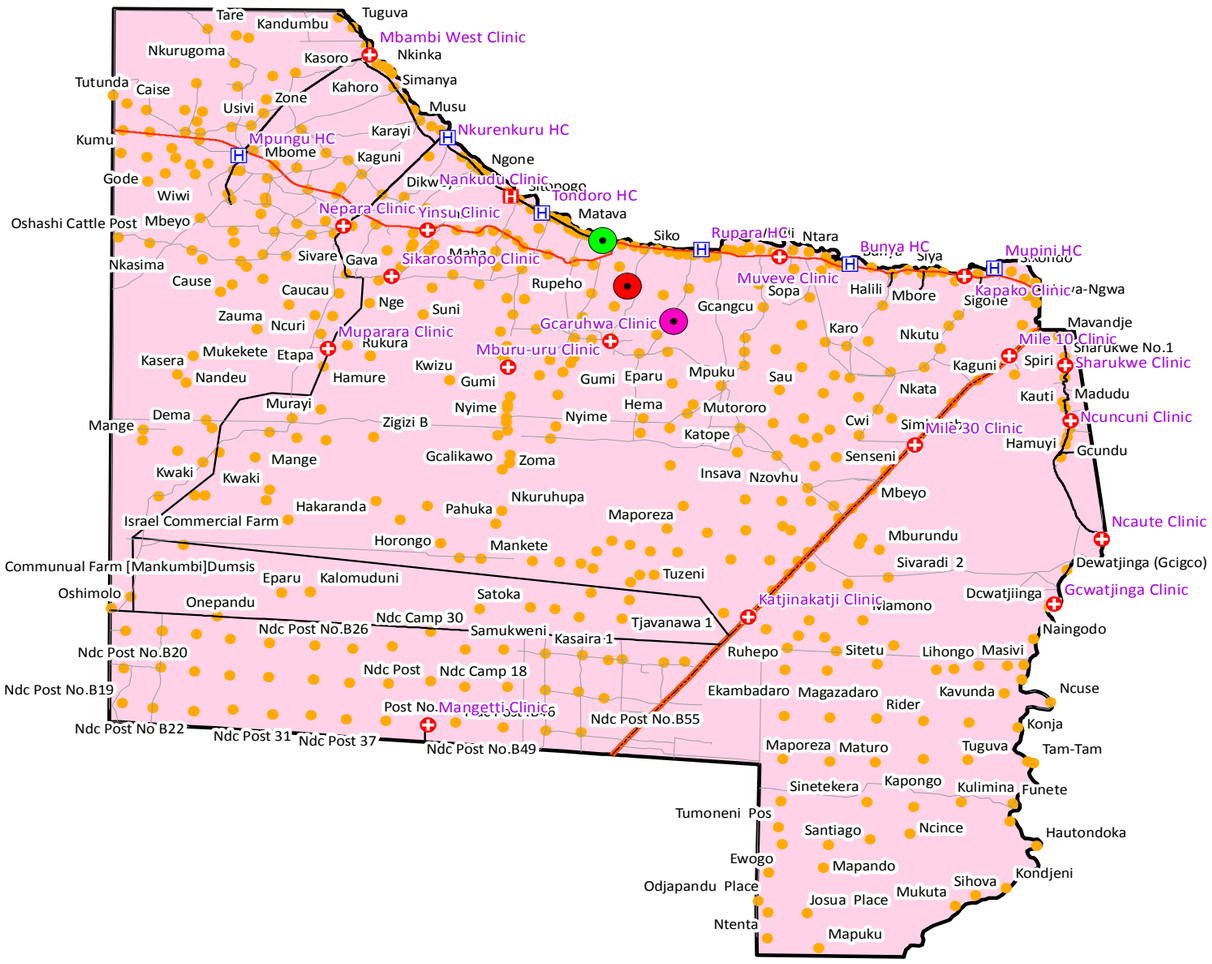
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Kavango West Region.

In 2011, 33.0% of all surveyed structures in the Kavango West Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.2.4 KAVANGO WEST REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



Legend

- Localities
- Central Health Facilities
- Median Health Facilities
- Mean Health Facilities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kavango West Region

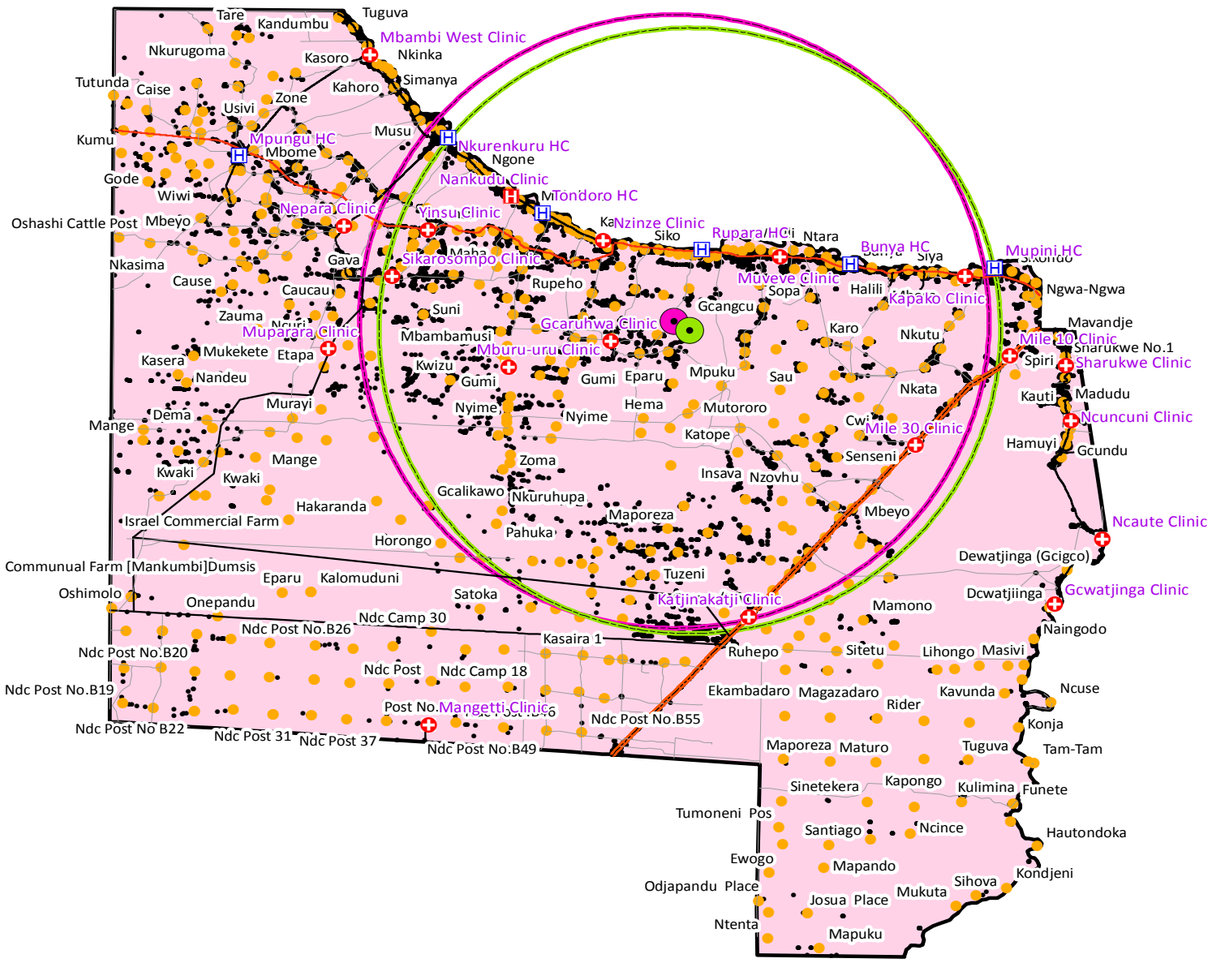
The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Kavango West Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.2.5 KAVANGO WEST REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Surveyed Structures
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Surveyed Structures
- Standard Distance Health Facilities
- Kavango West Region

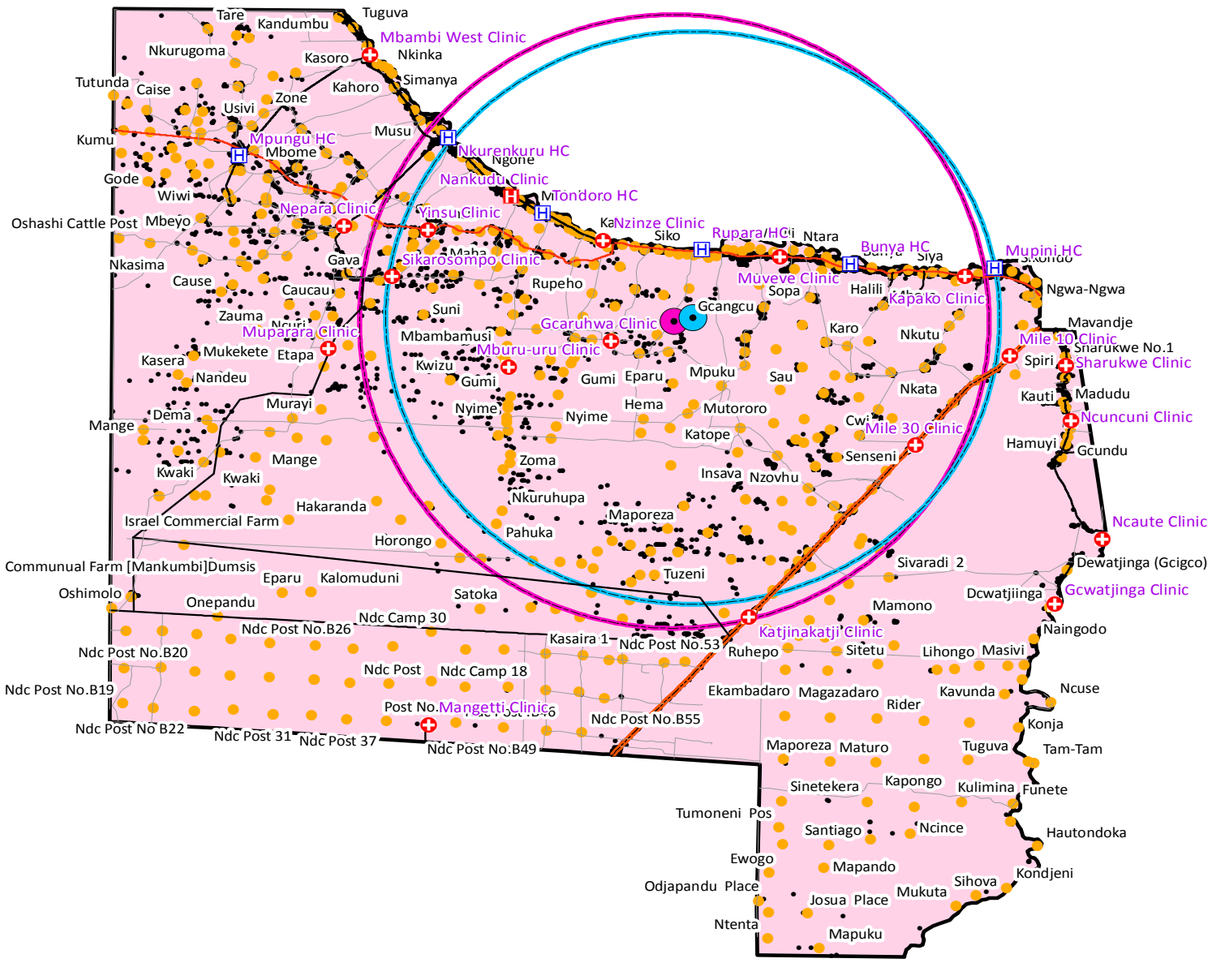
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 59.7% were within 63.7 km from the mean center.
Health Facilities: 57.7% were within 64.5 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.2.6 KAVANGO WEST REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



Legend

- Verified Dwelling Units
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Verified Dwelling Units
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Verified Dwelling Units
- Standard Distance Health Facilities
- Kavango West Region

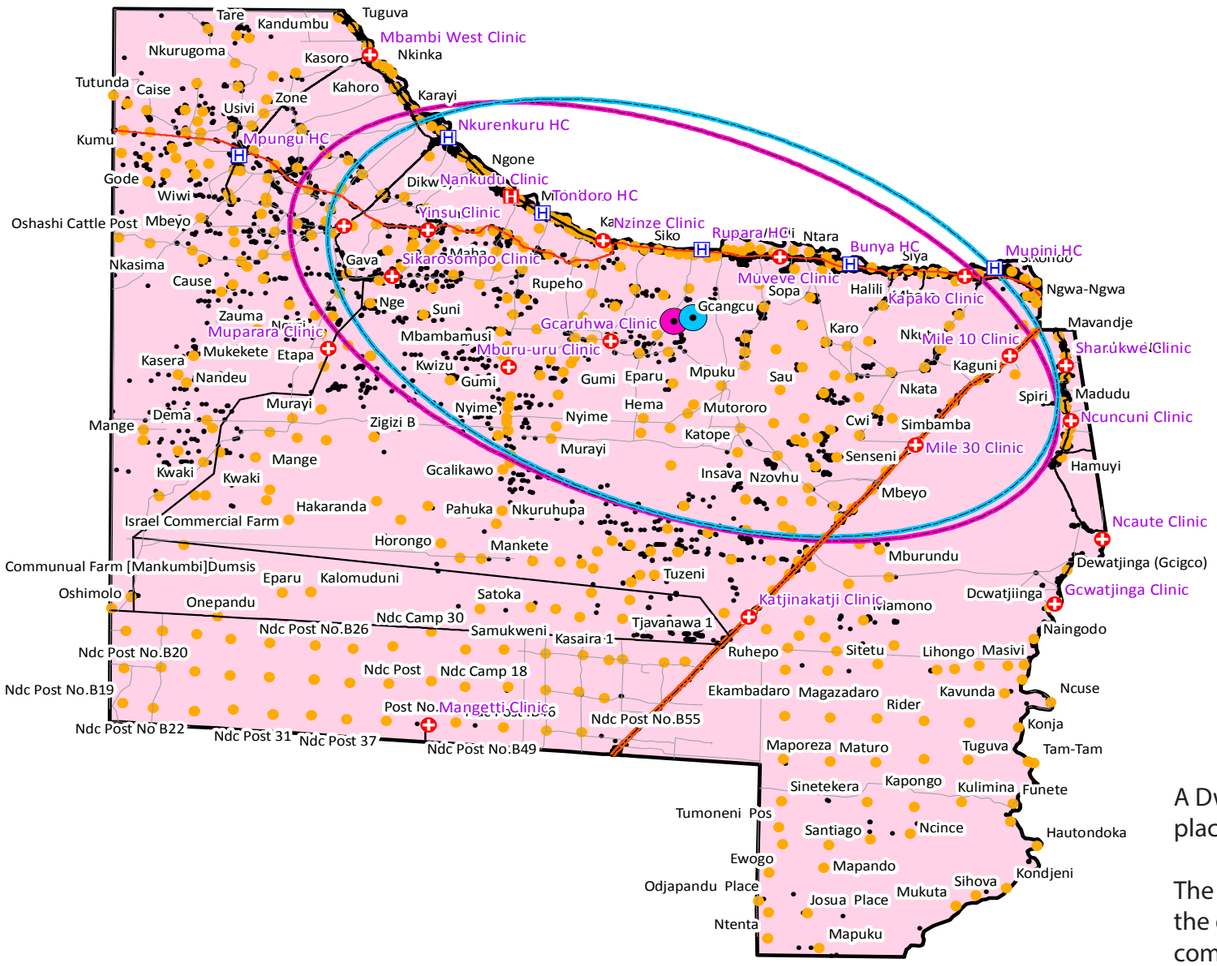
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to health facility in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 58.9 % were within 59.9 km from the mean centre.
Health Facilities: 57.7% were within 64.5 km from the mean center.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.2.7 KAVANGO WEST REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



Legend

- Verified Dwelling Units
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Verified Dwelling Units
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Verified Dwelling Units
- Directional Distribution Health Facilities
- Kavango West Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

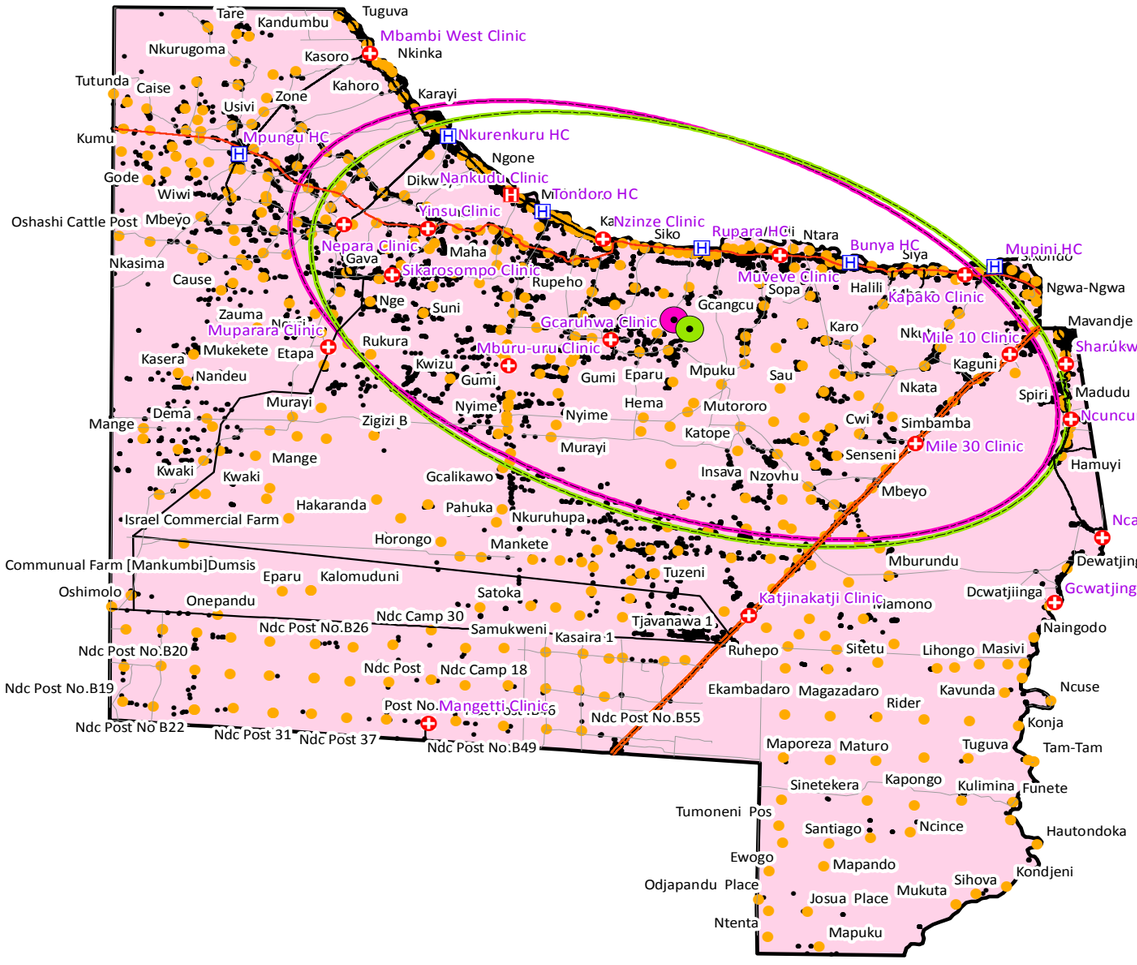
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 109.5° (degrees), West-East
Health Facilities: 108.3° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.2.8 KAVANGO WEST REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Surveyed Structures
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Surveyed Structure
- Directional Distribution Health Facilities
- Kavango West Region

Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

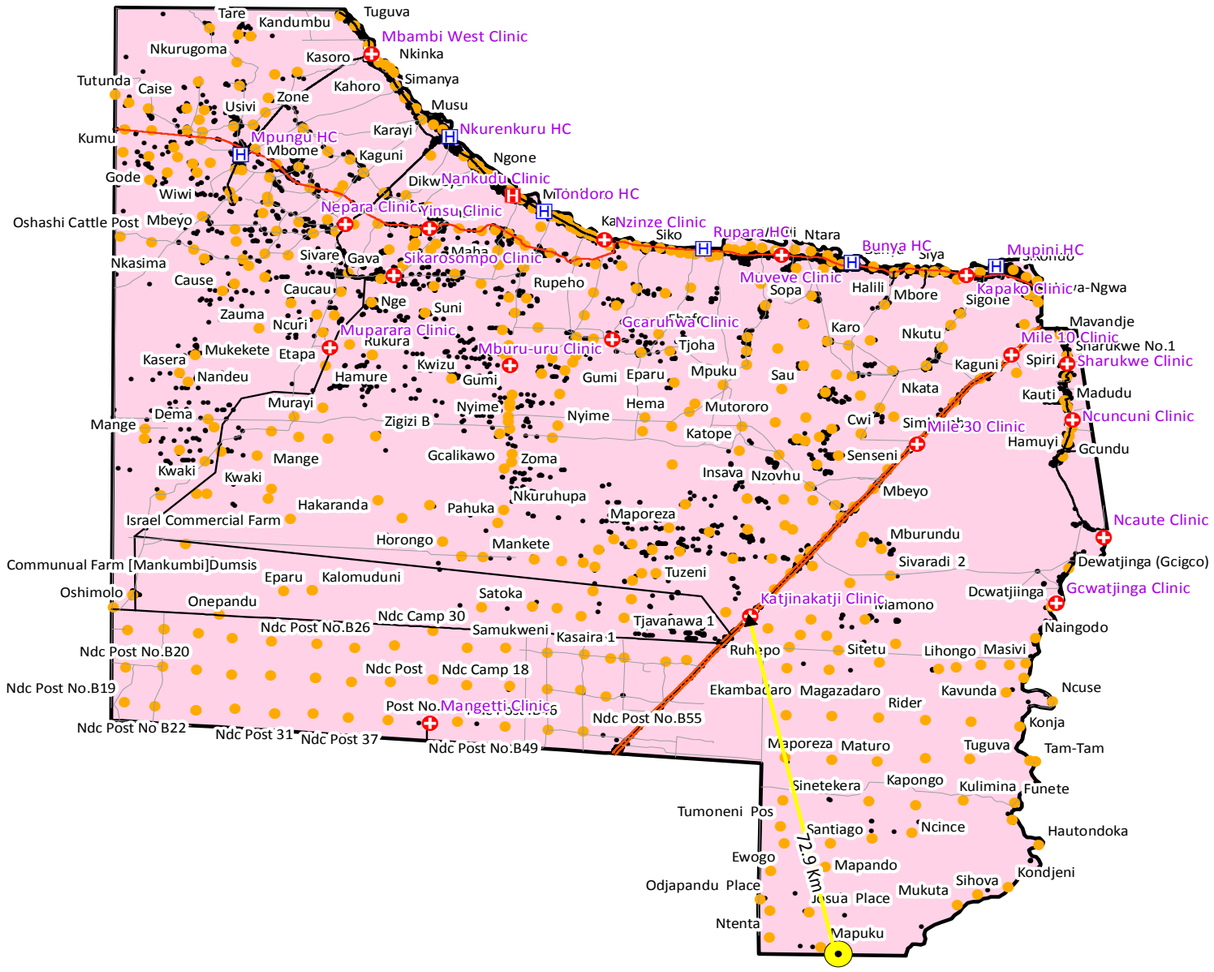
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 106.7° (degrees), West-East
Health Facilities: 108.3° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.2.9 KAVANGO WEST REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



Legend

- Verified Dwelling Units
- Localities
- Clinic
- Health Centre
- Hospital
- Furthest Verified Dwelling Unit
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kavango West Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

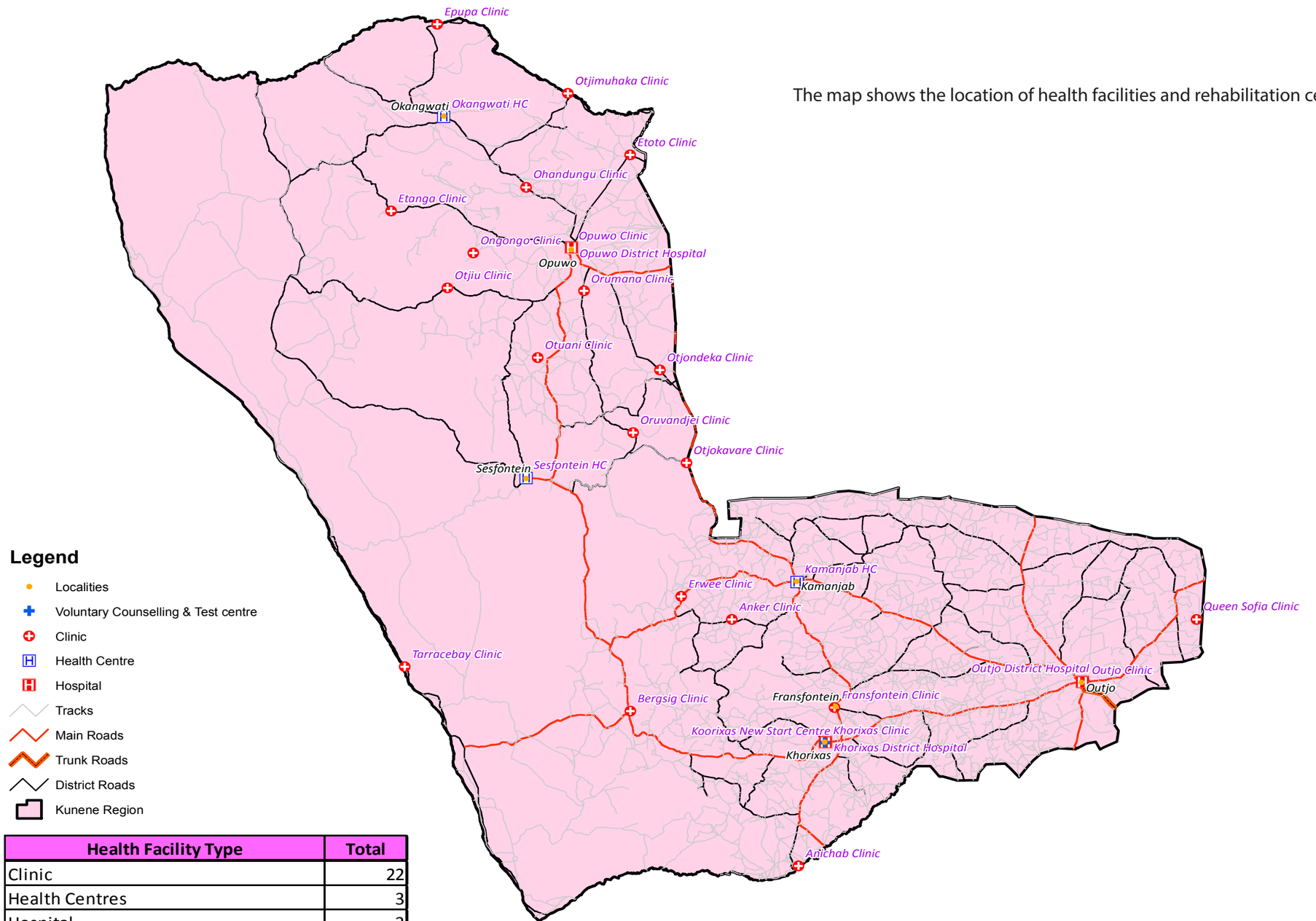
This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Kavango West Region in 2011.

People in and around Mapuku travelled the furthest distance of approximately 72.9 km to the nearest health facility in Kavango West Region in 2011, although they might have been served by a neighbouring region.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH - KUNENE

Figure 2.3.1 KUNENE REGION - HEALTH FACILITIES IN 2011



The map shows the location of health facilities and rehabilitation centres in the Kunene Region in 2011.

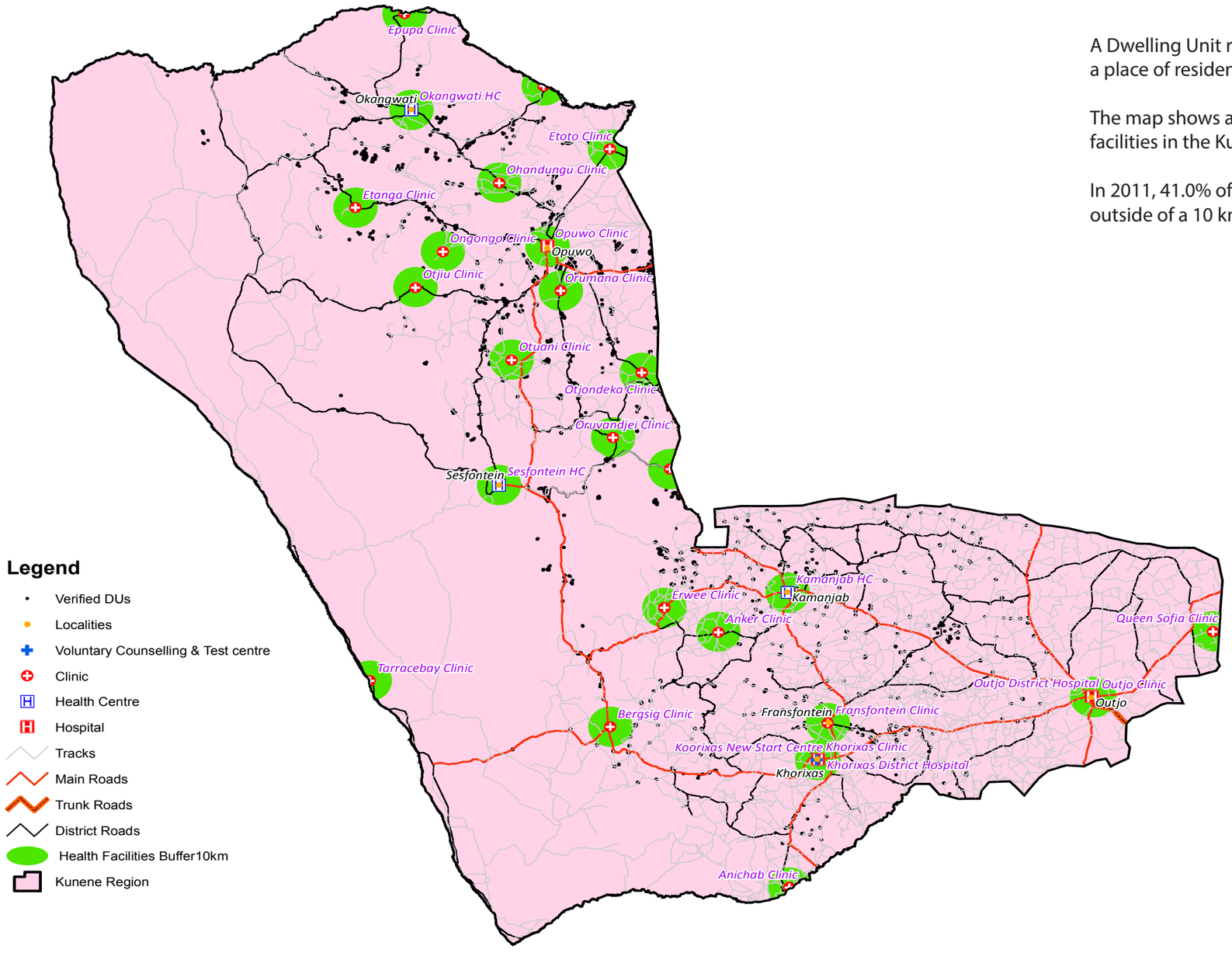
Legend

- Localities
- Voluntary Counselling & Test centre
- Clinic
- Health Centre
- Hospital
- Tracks
- Main Roads
- Trunk Roads
- District Roads
- Kunene Region

Health Facility Type	Total
Clinic	22
Health Centres	3
Hospital	3
Voluntary Conselling & Test Centre	1

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.3.2 KUNENE REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



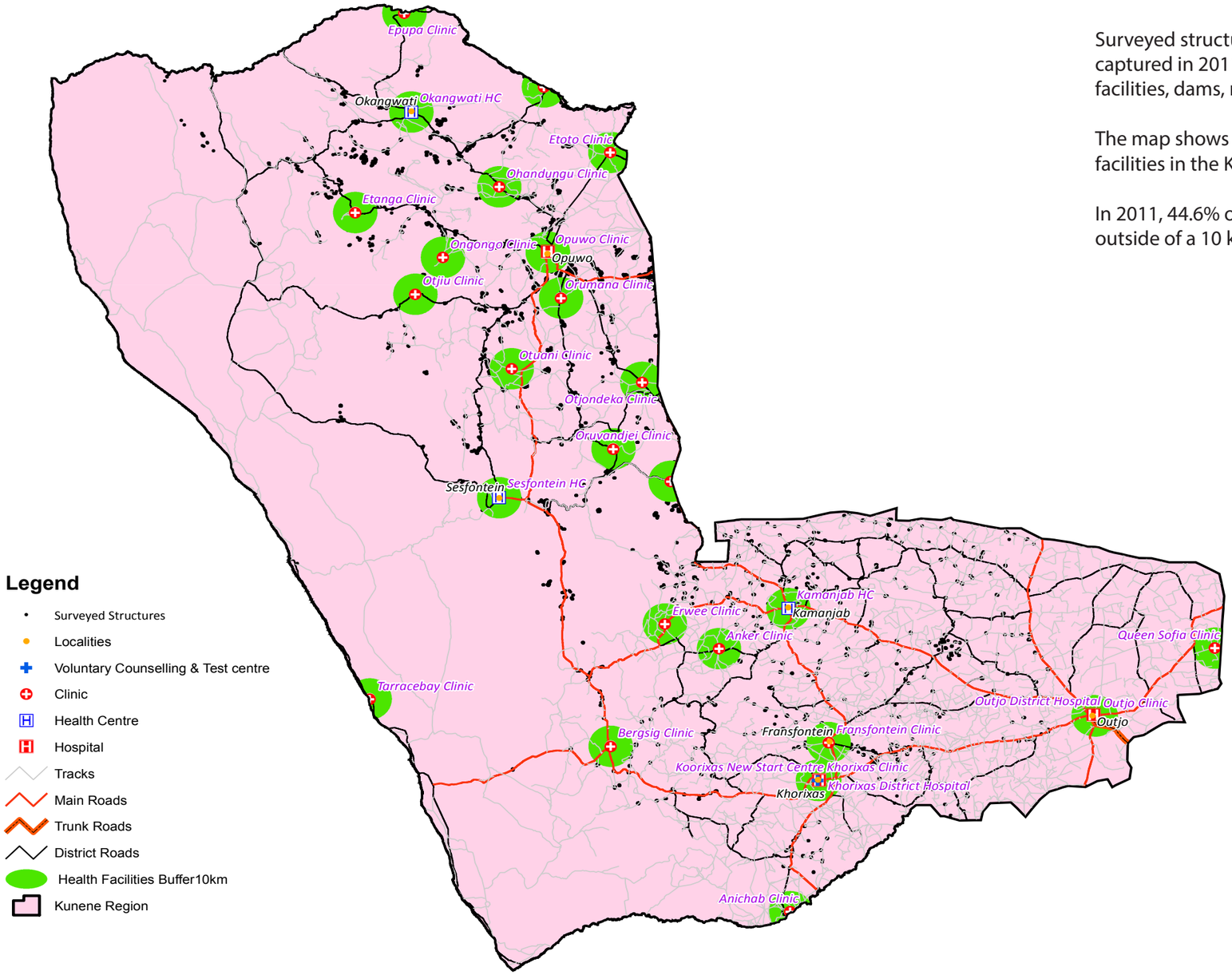
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Kunene Region.

In 2011, 41.0% of all Verified Dwelling Units in the Kunene Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.3.3 KUNENE REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



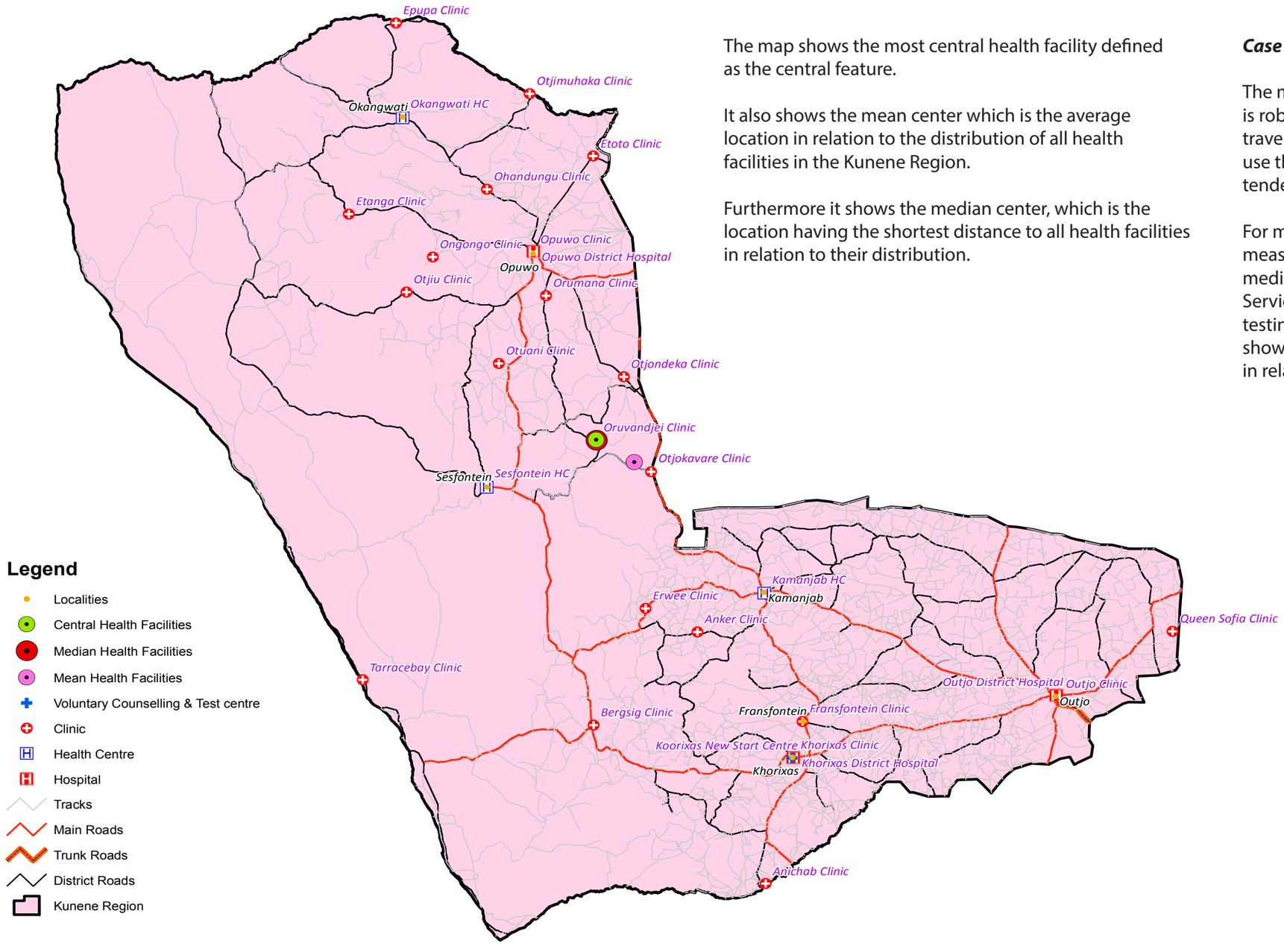
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Kunene Region.

In 2011, 44.6% of all surveyed structures in the Kunene Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.3.4 KUNENE REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Kunene Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

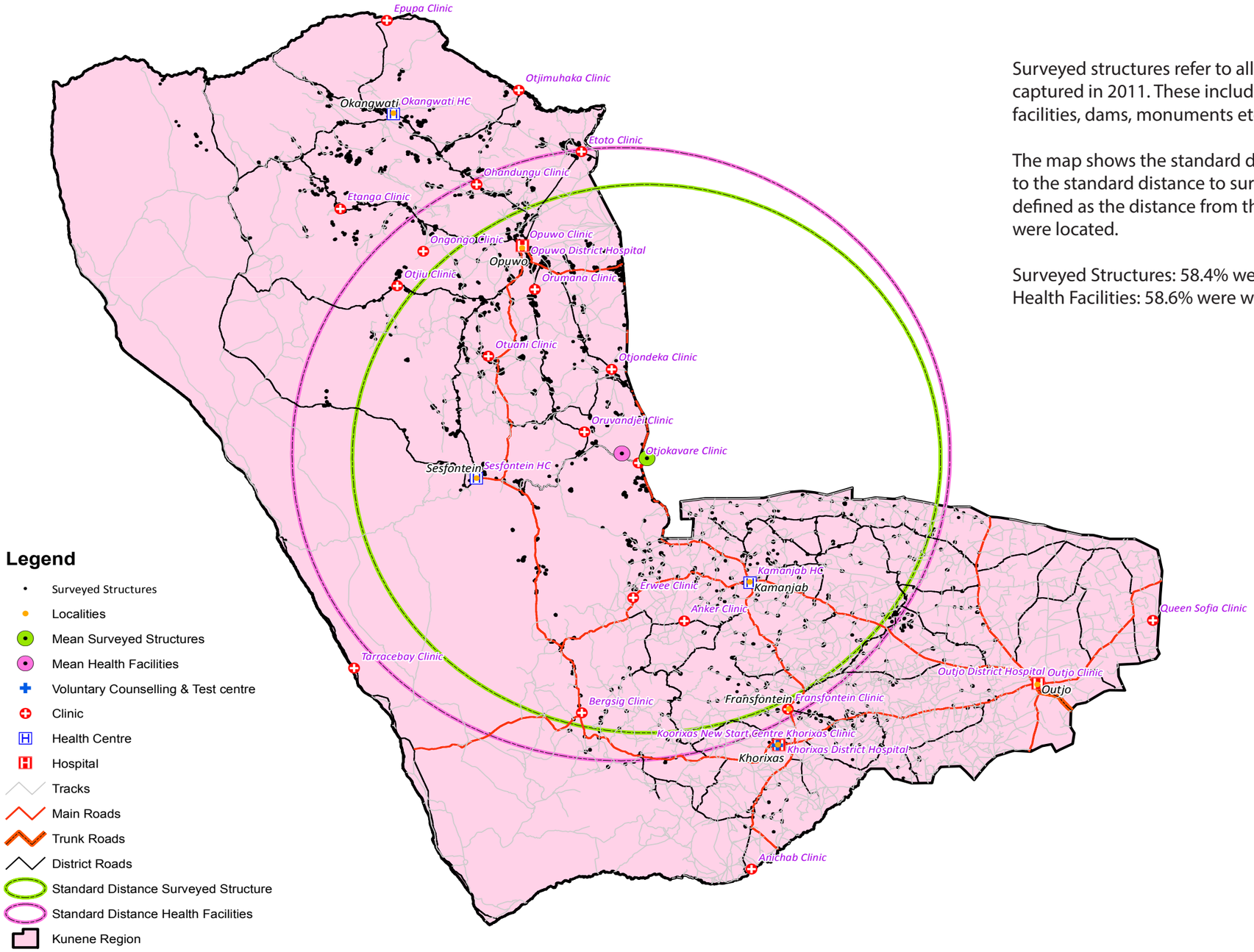
Case Study: Median Analysis

The median center tool is a measure of central tendency that is robust to outliers. It identifies the location that minimizes travel from it to all other features in the dataset. You would use the median center tool when you want a measure of central tendency that is robust to spatial outliers.

For many applications, the median center is a more representative measure of central tendency than the Mean center is. The median calculation can be used if the Ministry of Health and Social Services is looking for a location that is central to build a voluntary testing and counselling centre for the region. In this case the median shows the location with the shortest distance to all health facilities in relation their distribution in Kunene region.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.3.5 KUNENE REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



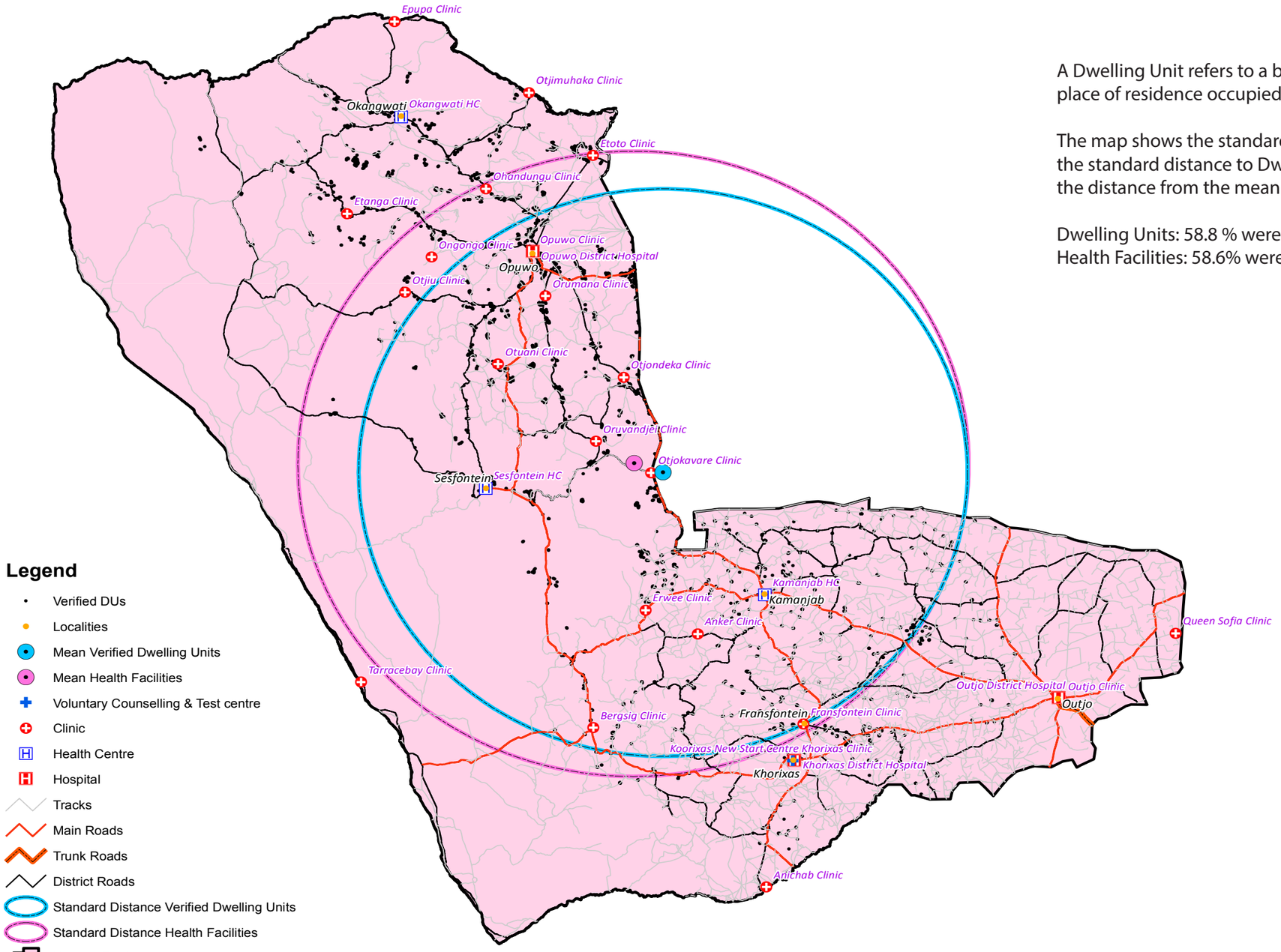
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 58.4% were within 140.0 km from the mean center.
Health Facilities: 58.6% were within 157.0 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.3.6 KUNENE REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



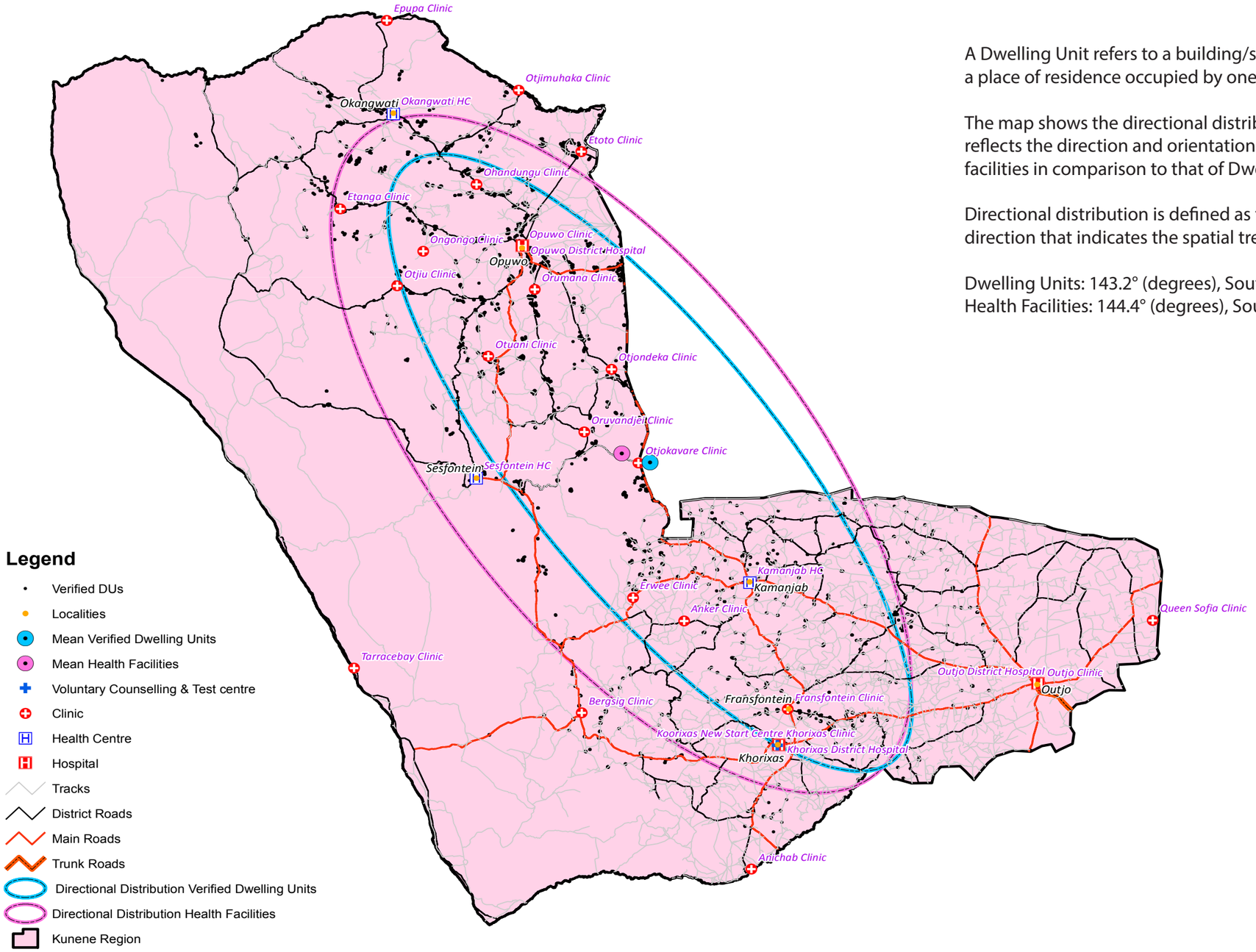
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to health facility in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 58.8 % were within 142.5 km from the mean centre.
Health Facilities: 58.6% were within 157.0 km from the mean center.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.3.7 KUNENE REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

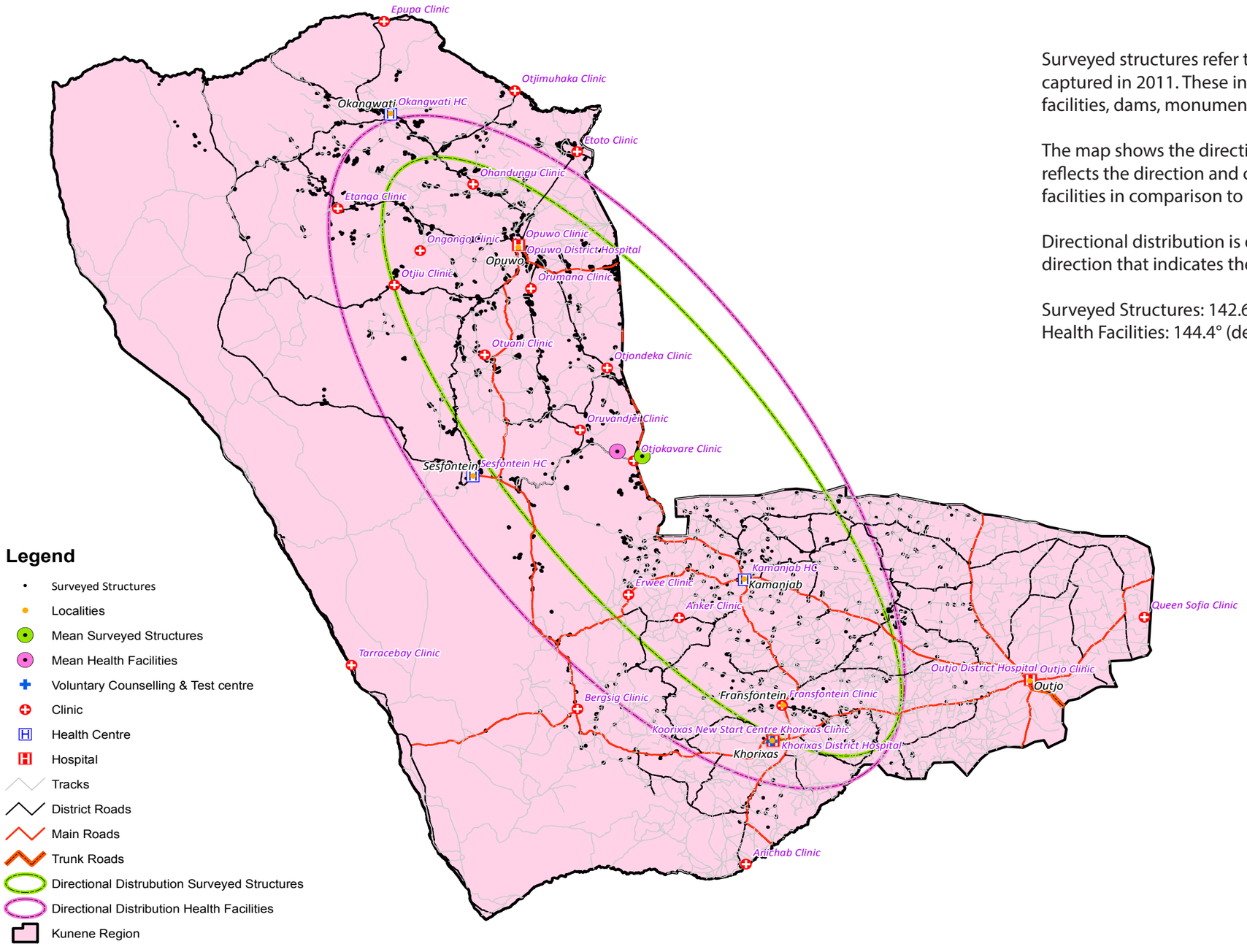
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Unit .

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 143.2° (degrees), South East-North West
Health Facilities: 144.4° (degrees), South East-North West

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.3.8 KUNENE REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

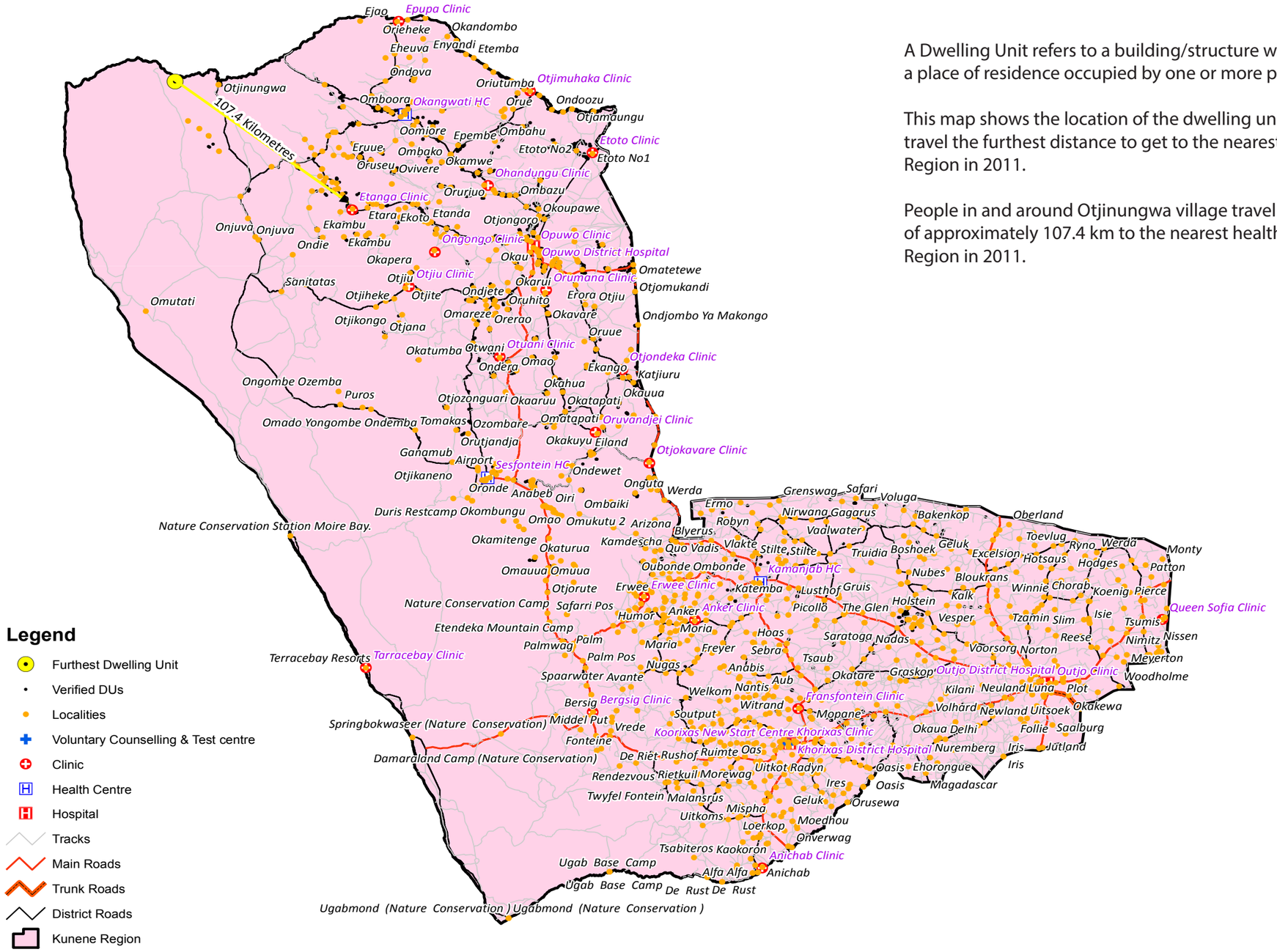
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Surveyed structures .

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 142.6° (degrees), South East-North West
Health Facilities: 144.4° (degrees), South East-North West

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.3.9 KUNENE REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

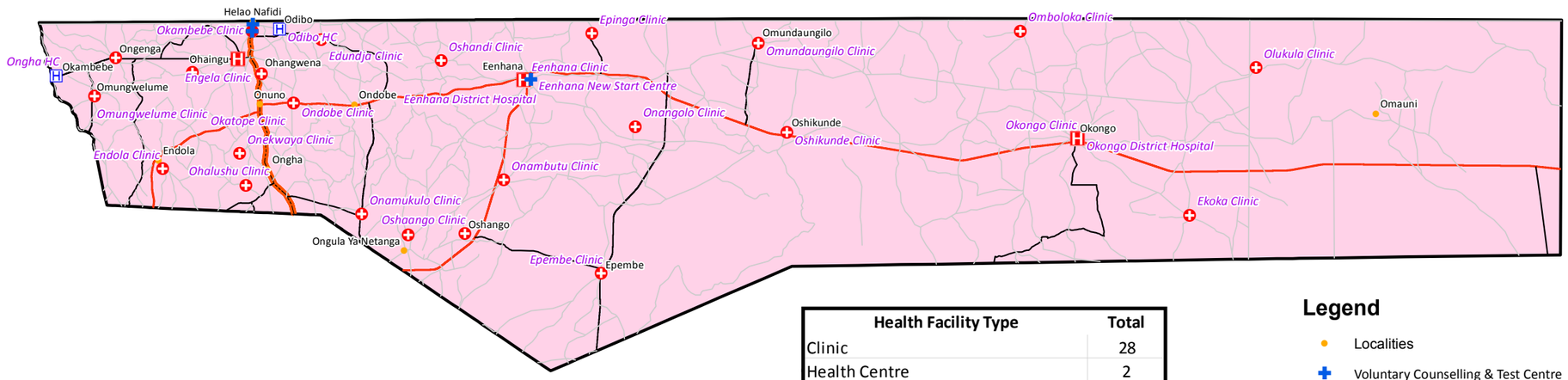
This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Kunene Region in 2011.

People in and around Otjinungwa village travelled the furthest distance of approximately 107.4 km to the nearest health facility in Kunene Region in 2011.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH
-
OHANGWENA

Figure 2.4.1 OHANGWENA REGION - HEALTH FACILITIES IN 2011



Health Facility Type	Total
Clinic	28
Health Centre	2
Hospital	3
Voluntary Counselling & Test Centre	3

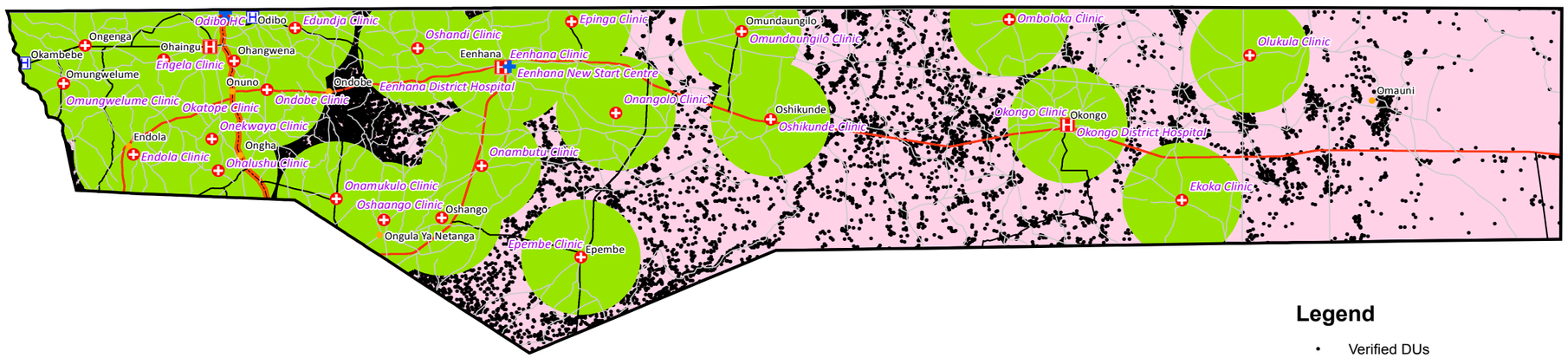
Legend

- Localities
- Voluntary Counselling & Test Centre
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Ohangwena Region

The map shows the location of health facilities and rehabilitation centres in the Ohangwena Region in 2011.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.4.2 OHANGWENA REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



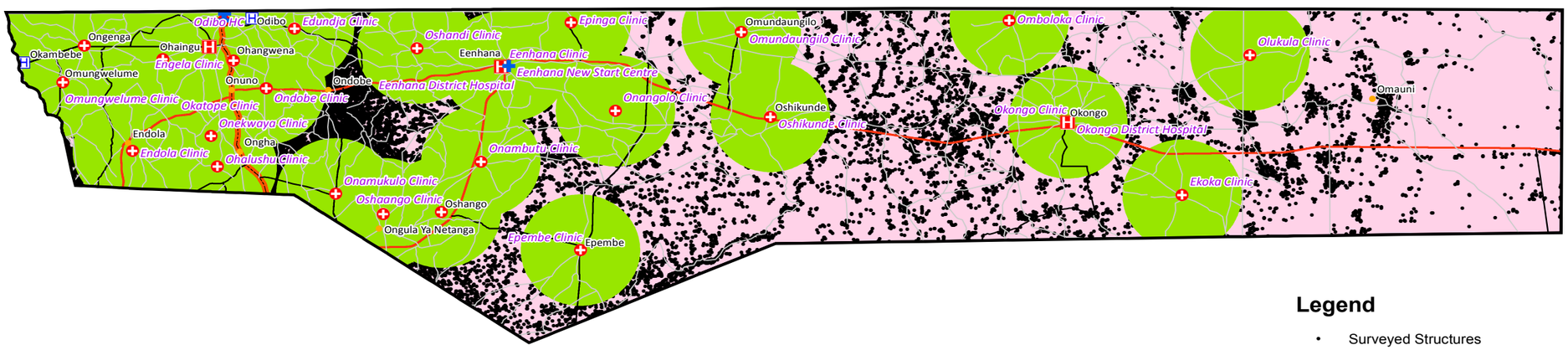
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Ohangwena Region.

In 2011, 19.5% of all Verified Dwelling Units in the Ohangwena Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.4.3 OHANGWENA REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



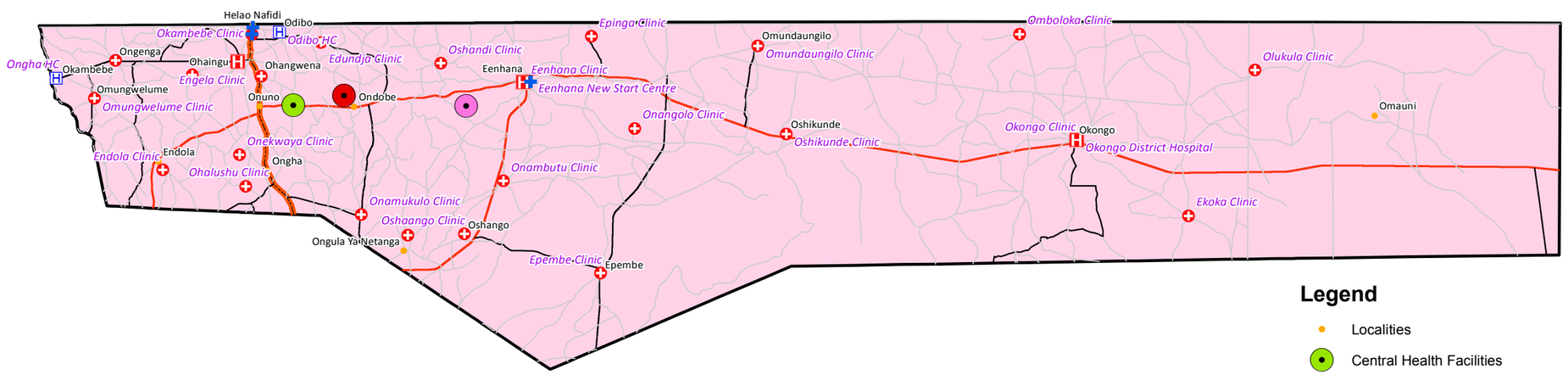
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Ohangwena Region.

In 2011, 19.6% of all surveyed structures in the Ohangwena Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.4.4 OHANGWENA REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Ohangwena Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

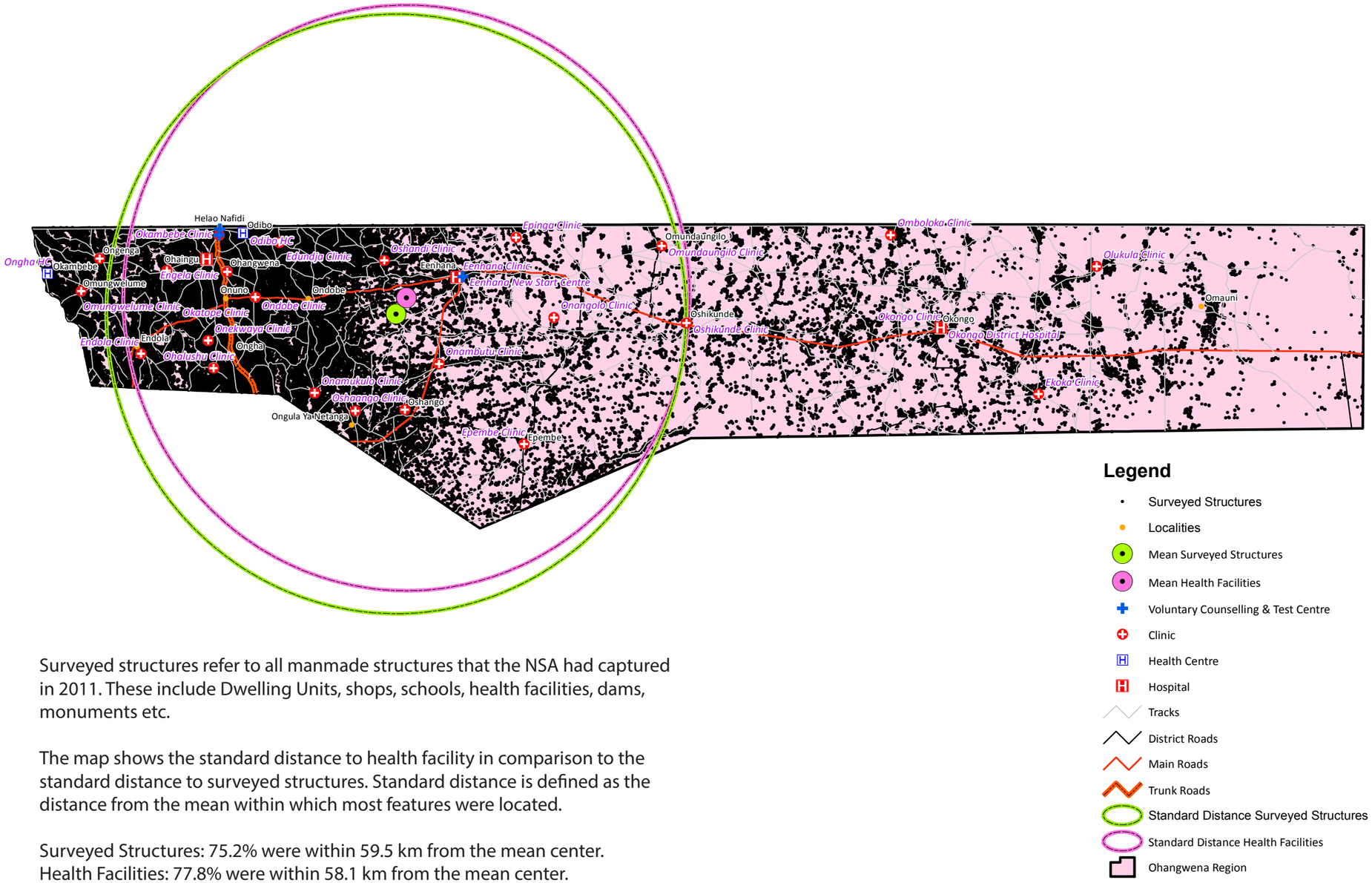
Case Study: Central Feature Analysis

The Central Feature analysis identifies the most centrally located feature in a point, line, or polygon input feature class. Distances from each feature centroid to every other feature centroid in the dataset are calculated and summed.

For instance if the Ministry of Health and Social Services would like to hold a one-time workshop on malaria mitigation strategies, and they would like to pick a location central to all health facilities which reported malaria incidents in the region. In this case the central feature indicates the most central health facility in the Ohangwena Region.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.4.5 OHANGWENA REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



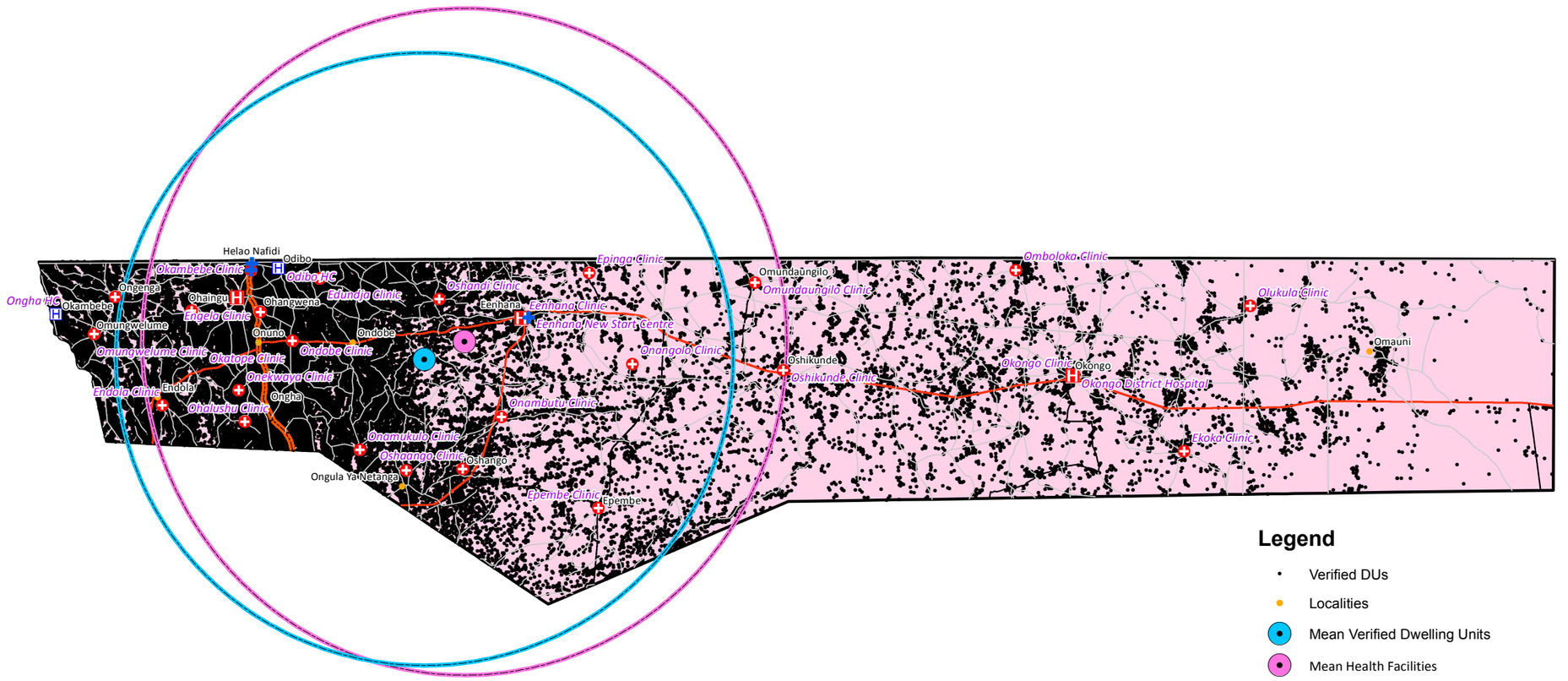
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 75.2% were within 59.5 km from the mean center.
Health Facilities: 77.8% were within 58.1 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.4.6 OHANGWENA REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



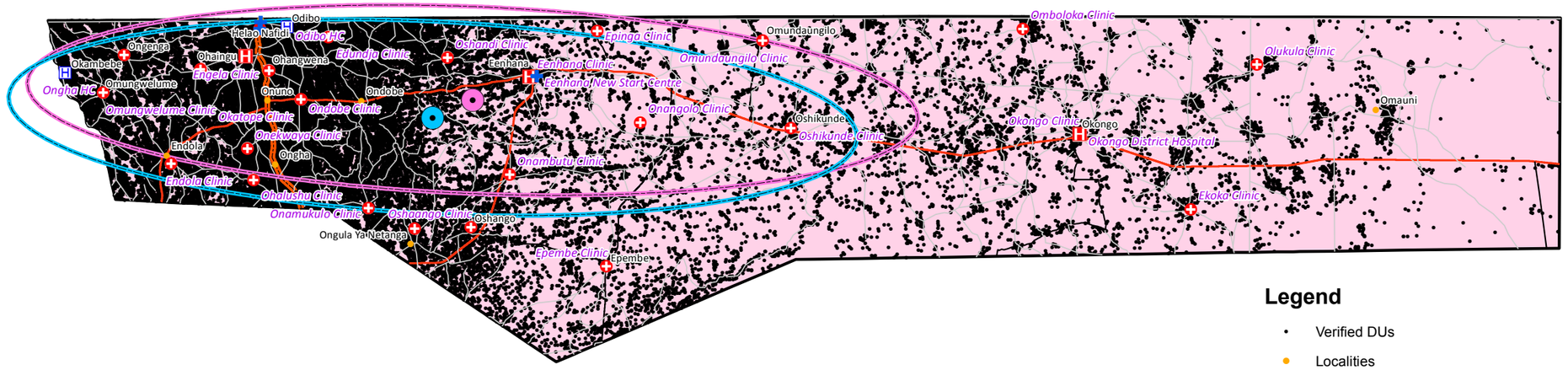
A dwelling unit refers to a building/structure where people liveor it is a place of residence occupied by one or more households.

The map shows the standard distance to health facility in comparison to the standard distance to dwelling units. Standard distance is defined as the distance from the mean within which most features are located.

Dwelling Units: 77.1 % are within 53.1 km from the mean centre.
Health Facilities: 77.8% are within 58.1 km radius from the mean center.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.4.7 OHANGWENA REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

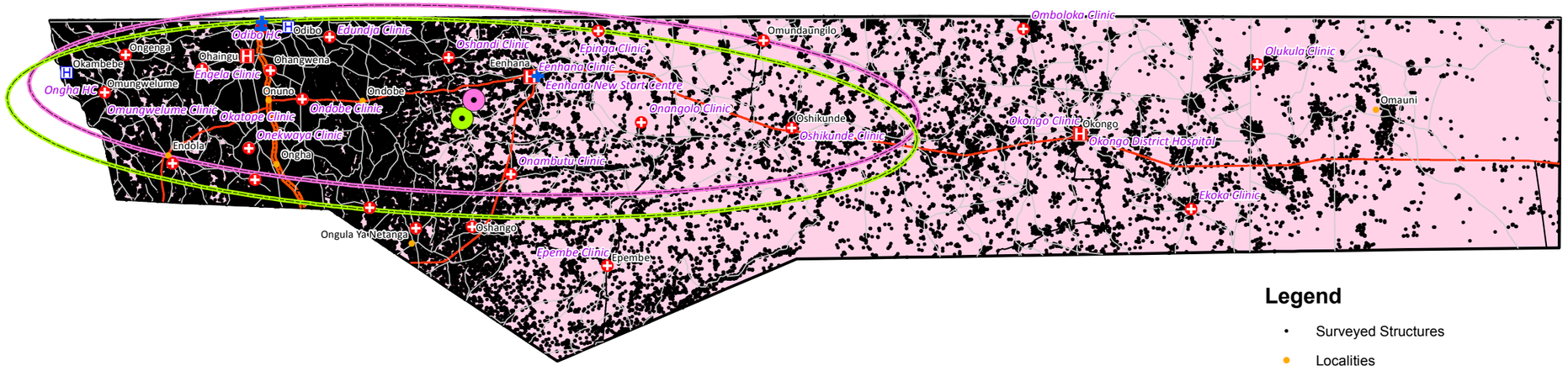
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health f acilities in comparison to that of Dwelling Unit .

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 92.8° (degrees), West-East
Health Facilities: 92.5° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.4.8 OHANGWENA REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

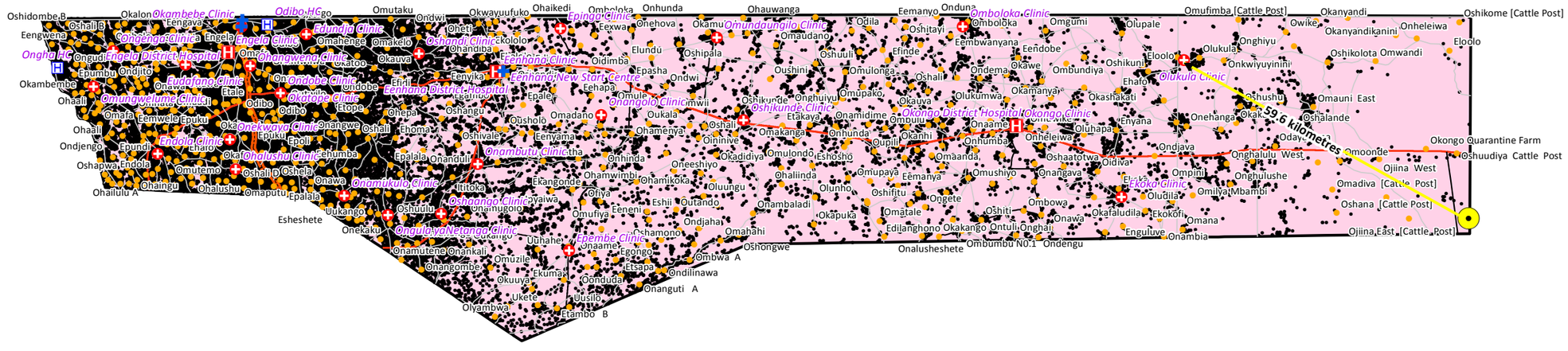
The map shows the directional distribution, which is an ellipse that r eflects the direction and orientation of the distribution of health facilities in comparison to that of Surveyed structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 92.8° (degrees), West-East
Health Facilities: 92.5° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.4.9 OHANGWENA REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

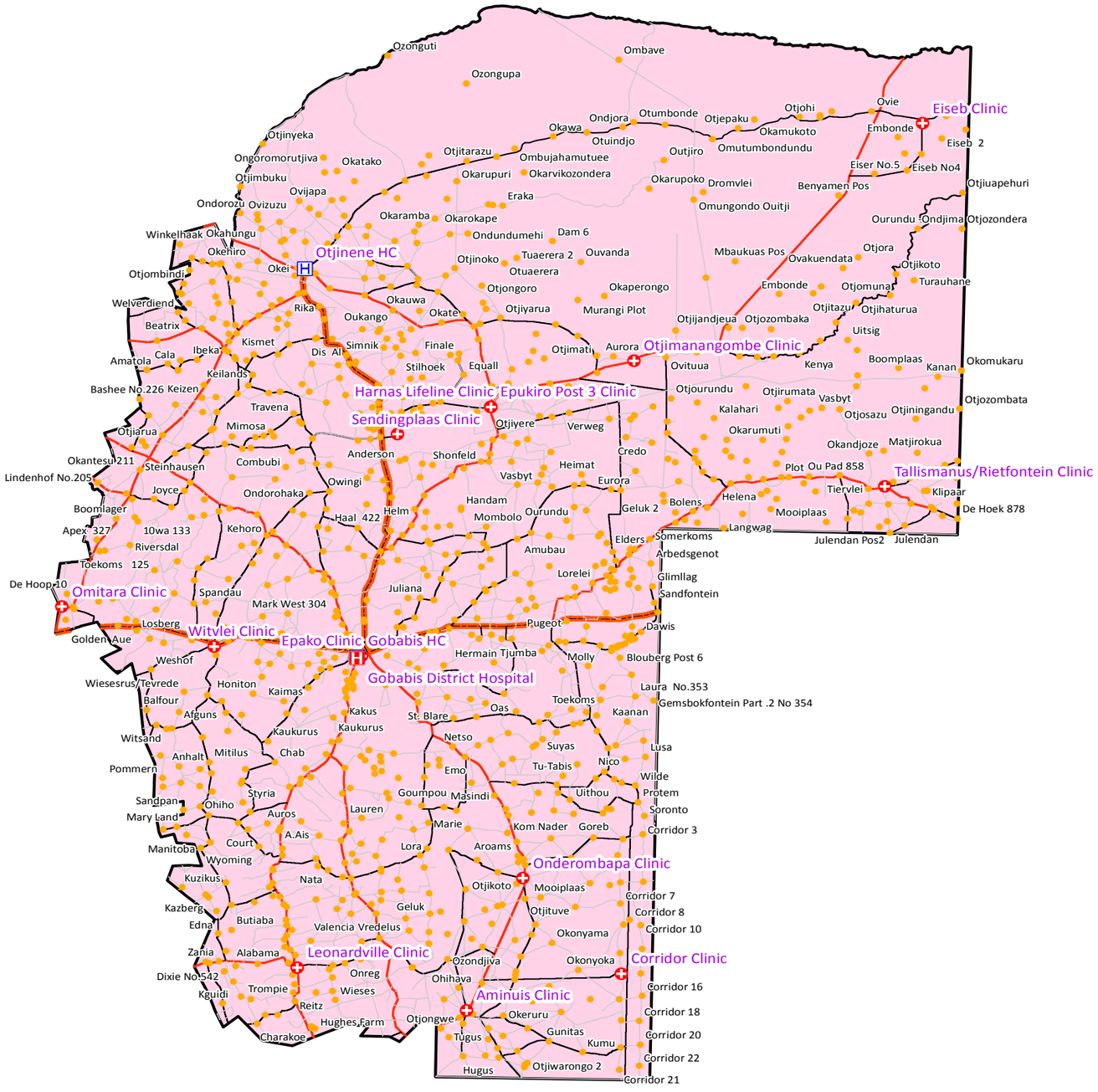
This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Ohangwena Region in 2011.

People in and around Onjiina East (Cattle post) travelled the furthest distance of approximately 59.6 km to the nearest health facility in Ohangwena Region in 2011, although they might have been served by a neighbouring region.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH
- OMAHEKE

Figure 2.5.1 OMAHEKE REGION - HEALTH FACILITIES IN 2011



Legend

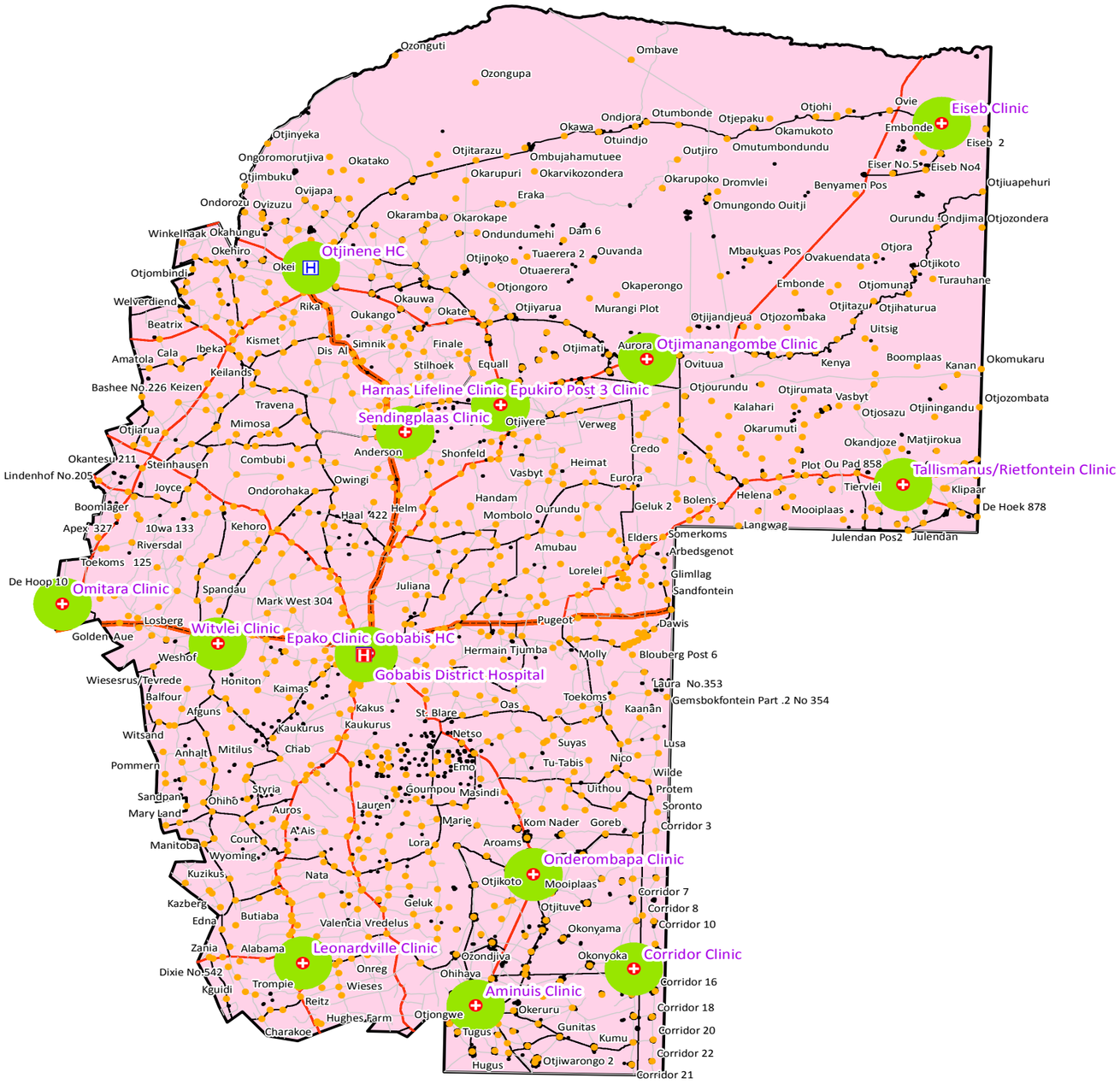
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Omaheke Region

Health Facility Type	Total
Clinic	15
Health Centre	2
Hospital	1

The map shows the location of health facilities in the Omaheke Region in 2011.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.5.2 OMAHEKE REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



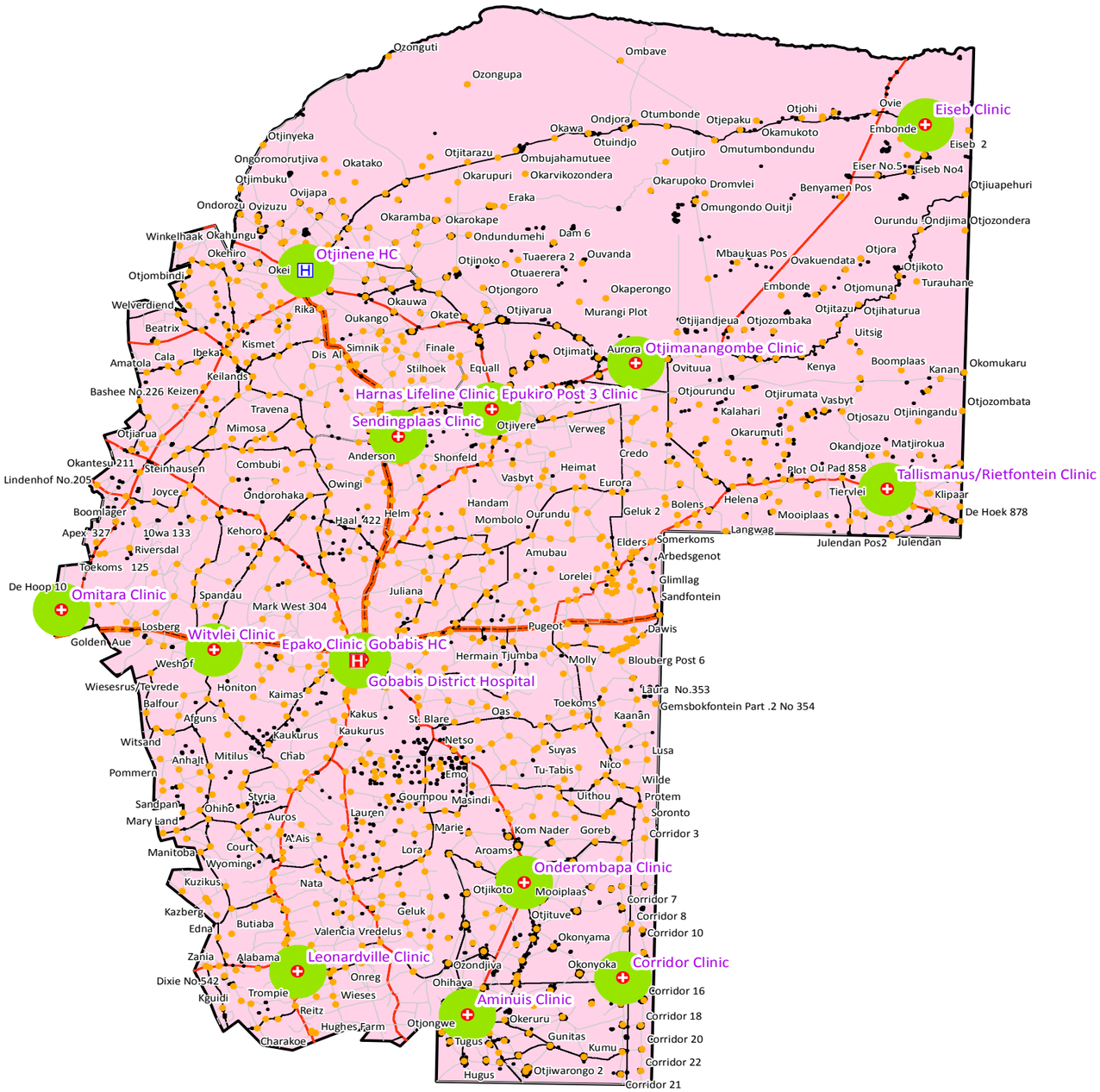
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Omaheke Region.

In 2011, 48.2% of all Verified Dwelling Units in the Omaheke Region were outside of a 10 km distance to the nearest health facility

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.5.3 OMAHEKE REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Health Facilities Buffer 10km
- Omaheke Region

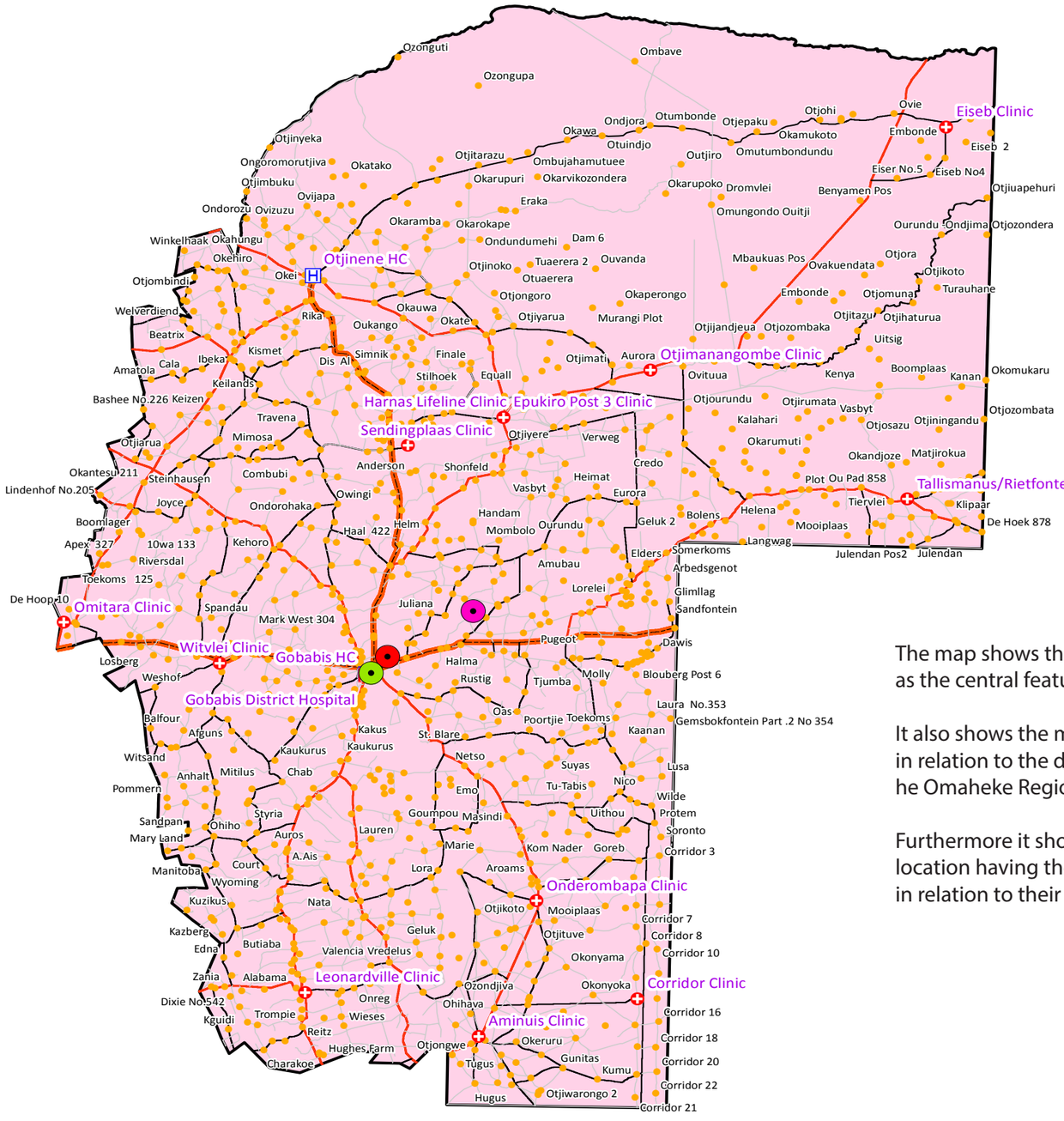
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Omaheke Region.

In 2011, 53.4% of all surveyed structures in the Omaheke Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.5.4 OMAHEKE REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



Legend

- Localities
- Central Health Facilities
- Median Health Facilities
- Mean Health Facilities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Omaheke Region

The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in he Omaheke Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

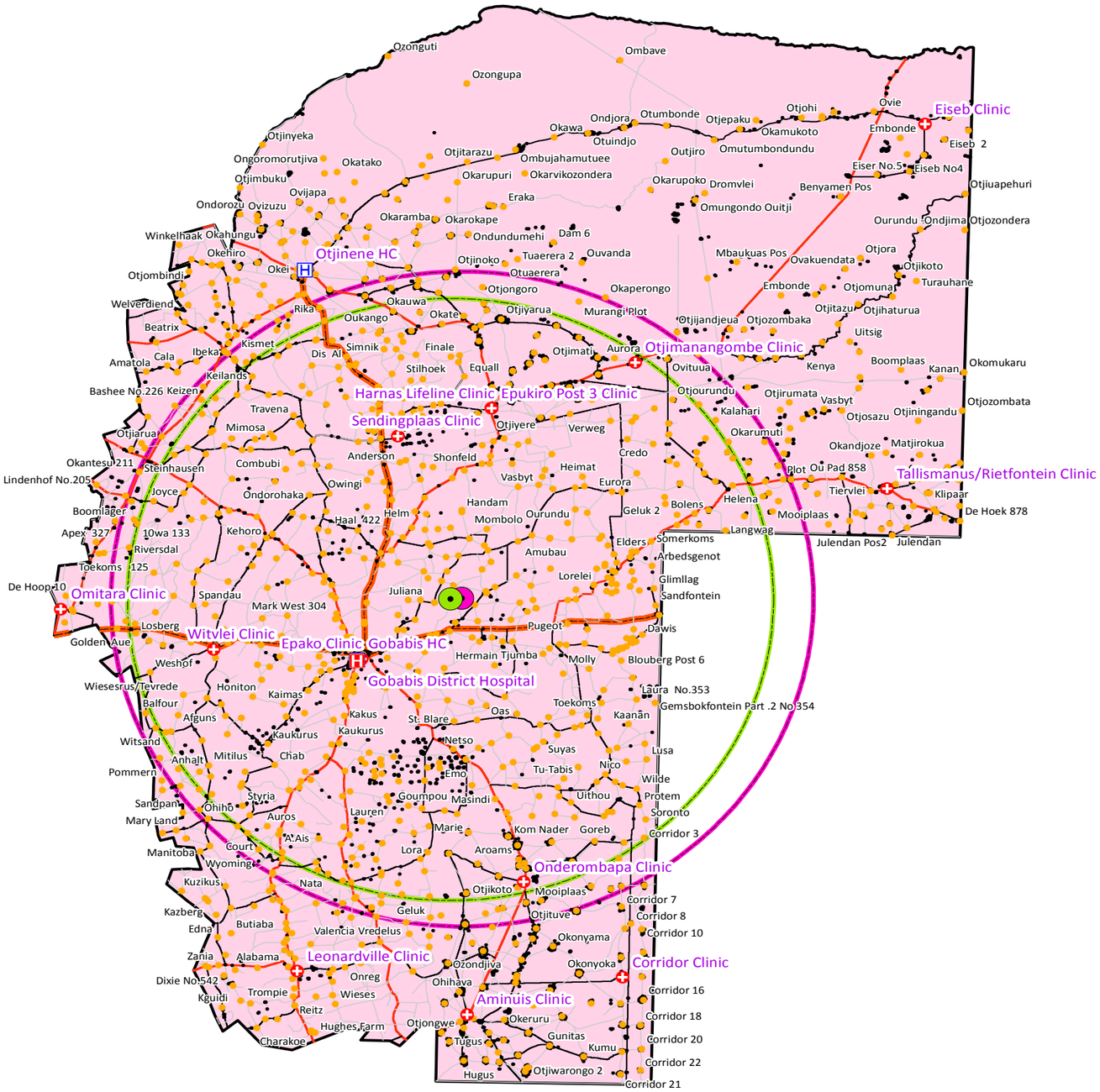
Case Study: Mean Analysis

The mean center is the average x- and y-coordinate of all the features in the study area. It is one of the useful analysis for tracking changes in the distribution or for comparing the distributions of different types of features.

For example if the Ministry of Health and Social Services in Omaheke region wants to scout possible locations for a vaccination point, the can calculate the mean centre of incidents of Polio outbreak or if the regional health planner wants to determine ideal locations for senior services, he/she can evaluate the mean center weighted by individuals over the age of 65 to determine ideal locations. In this case the mean shows the average location in relation to distribution of health facilities in Omaheke region.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.5.5 OMAHEKE REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Surveyed Structures
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Standard Distance Surveyed Structures
- Standard Distance Health Facilities
- Omaheke Region

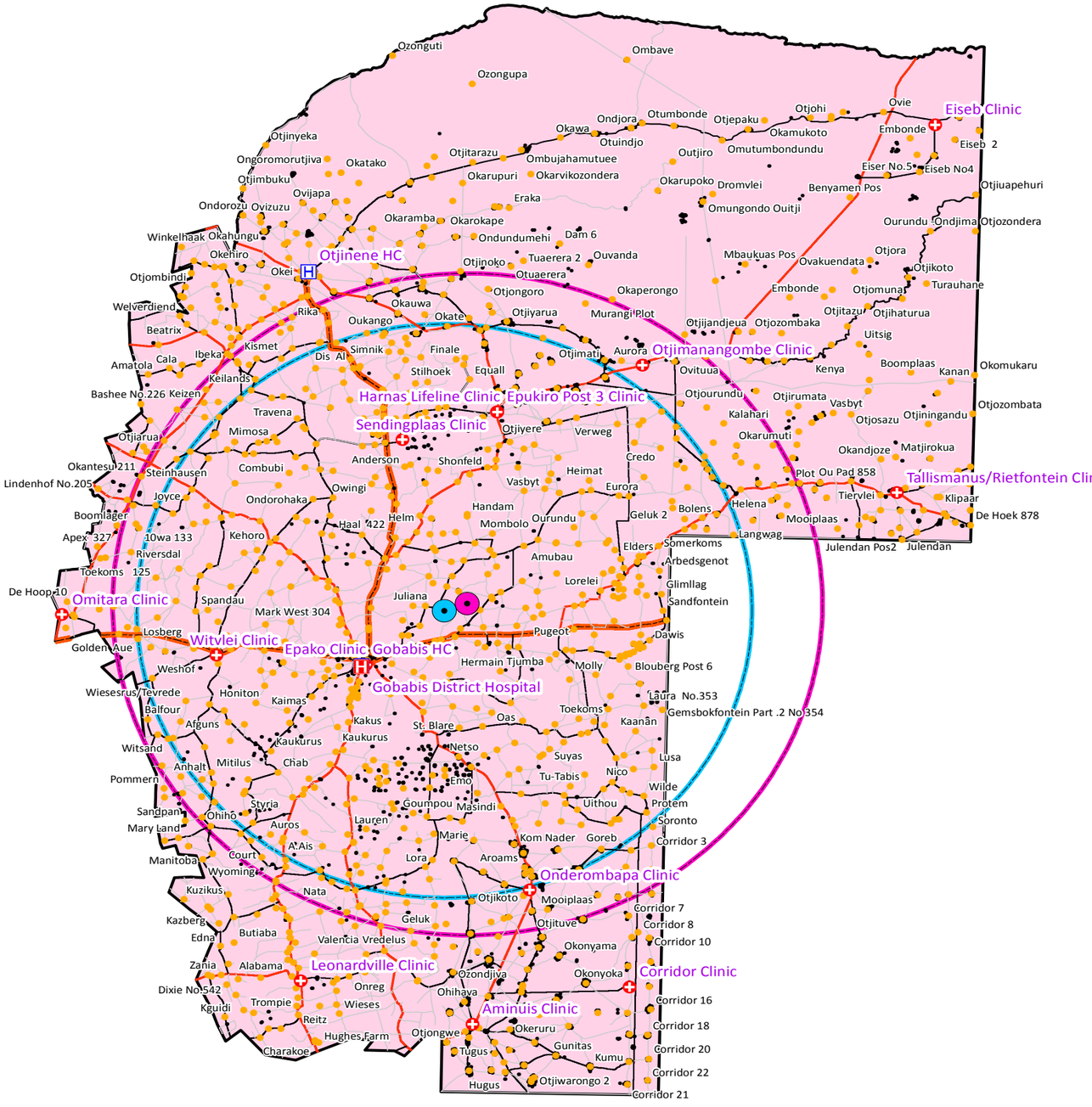
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 56.8% were within 112.4 km from the mean center.
Health Facilities: 56.3%were within 122.3 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.5.6 OMAHEKE REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



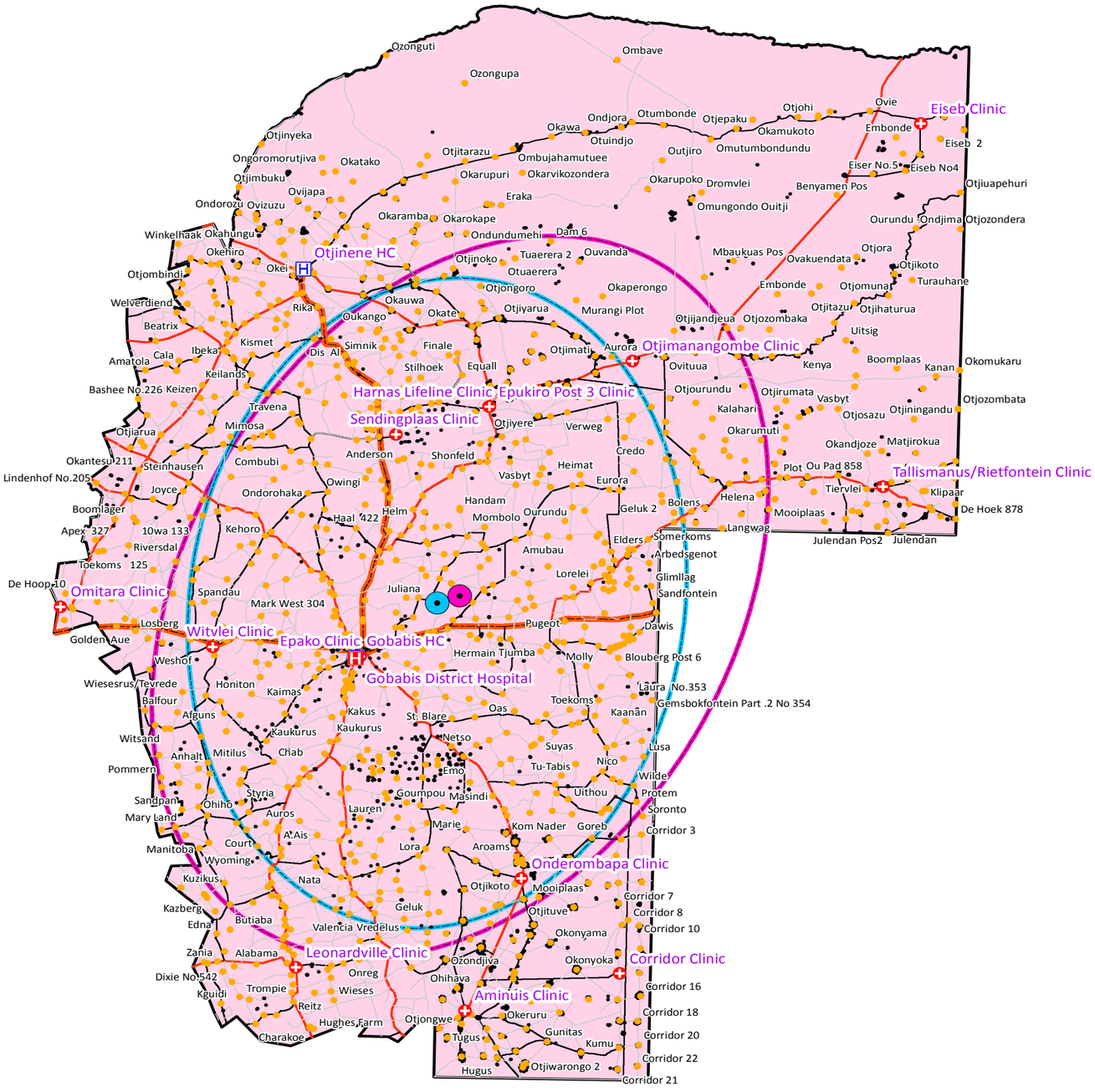
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to health facility in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 57.8 %were within 105.9 km from the mean centre.
Health Facilities: 56.3% were within 122.3 km from the mean center.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.5.7 OMAHEKE REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



Legend

- Verified Dwelling Units
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Verified Dwelling Units
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Verified Dwelling Units
- Directional Distribution Health Facilities
- Omaheke Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

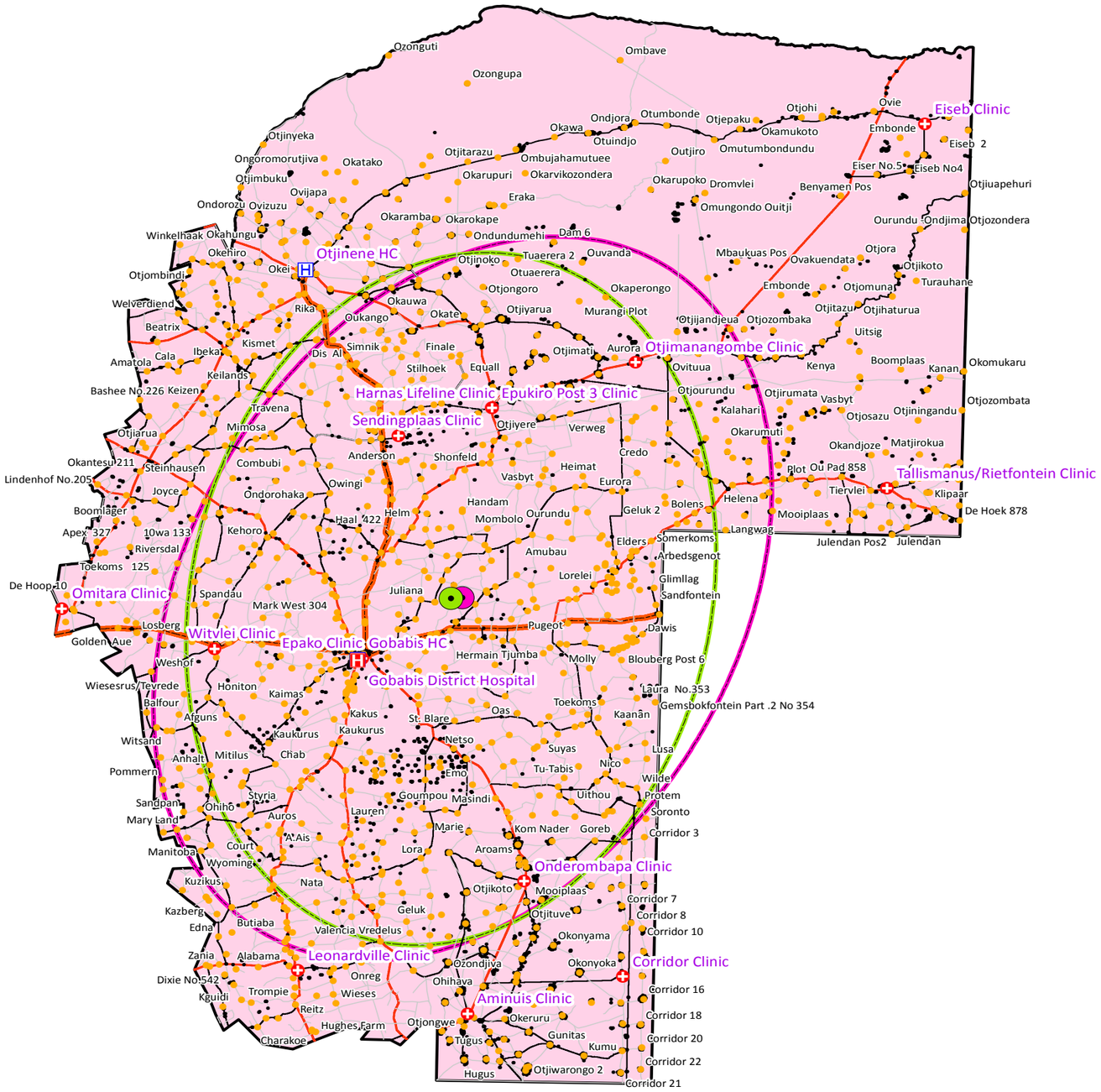
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 7.1° (degrees), North-South
Health Facilities: 26.5° (degrees), North East- South west

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.5.8 OMAHEKE REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Surveyed Structures
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Surveyed Structures
- Directional Distribution Health Facilities
- Omaheke Region

Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Surveyed Structures.

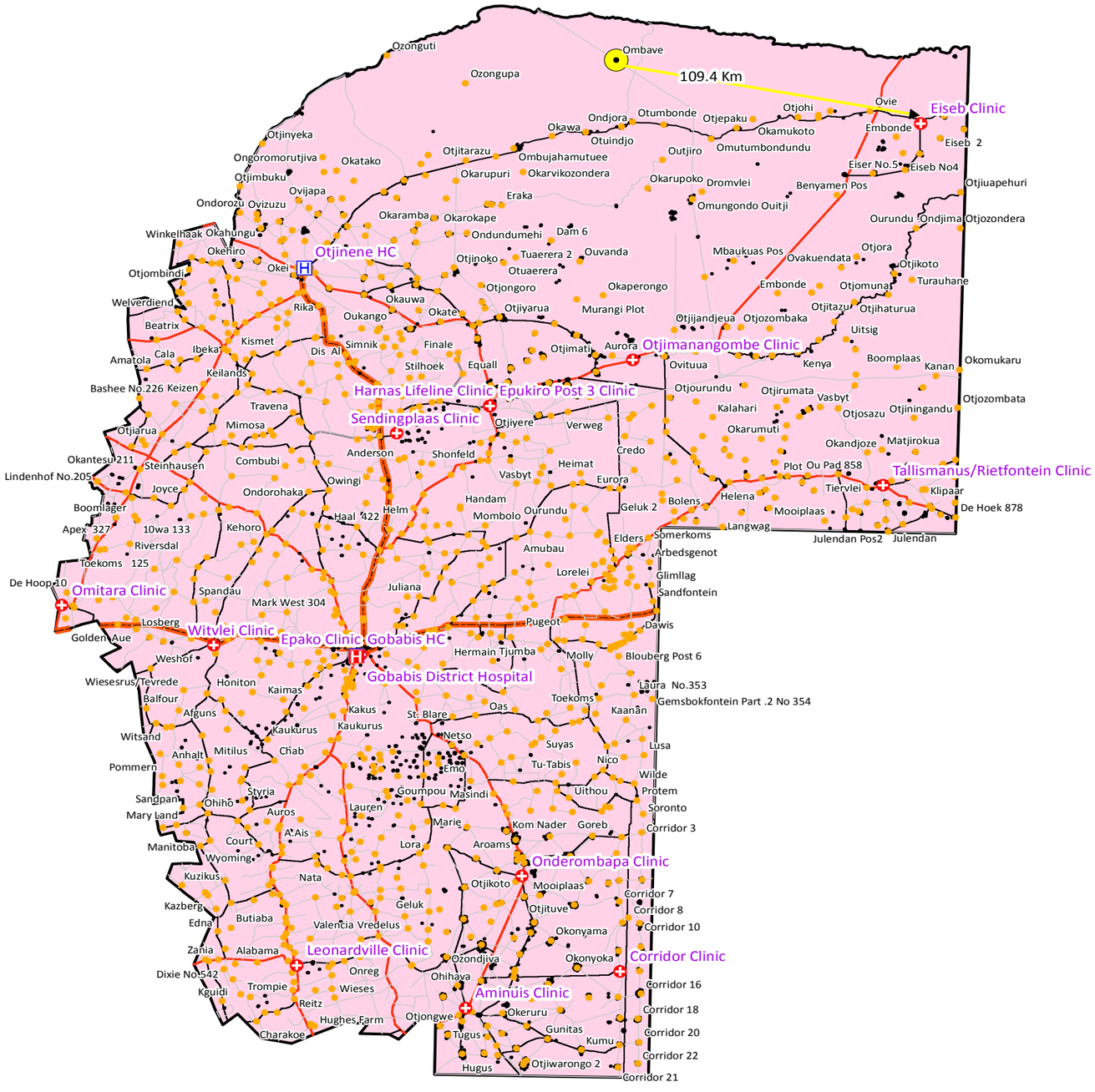
Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 10.4° (degrees), North-South
Health Facilities: 26.5° (degrees), North East- South west

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

t

Figure 2.5.9 OMAHEKE REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

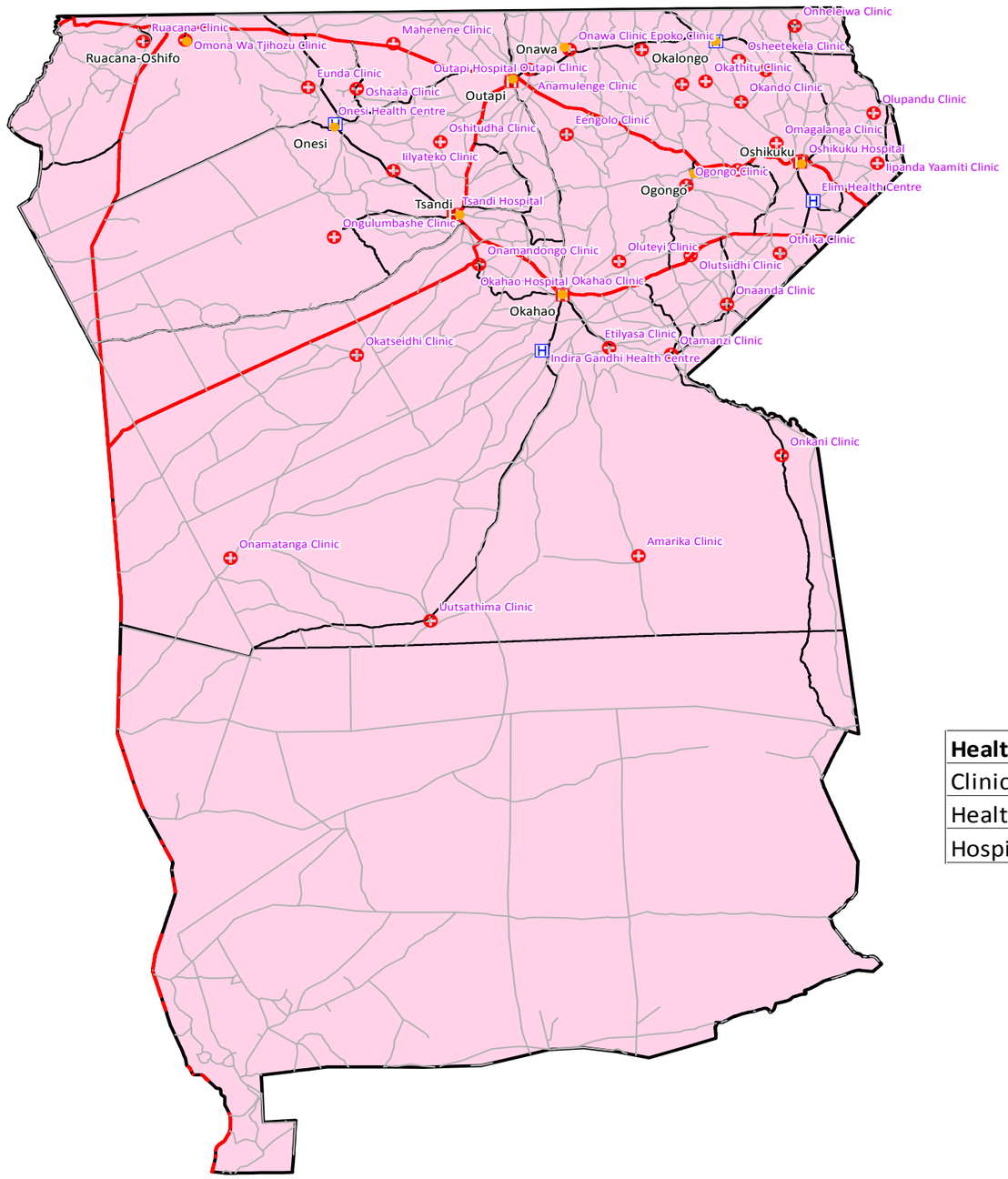
This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Omaheke Region in 2011.

People in and around Ombave travelled the furthest distance of approximately 109.4 to the nearest health facility in Omaheke Region in 2011, although they might have been served by a neighbouring region.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH
-
OMUSATI

Figure 2.6.1 OMUSATI REGION - HEALTH FACILITIES IN 2011



The map shows the location of health facilities and rehabilitation centres in the Omusati Region in 2011.

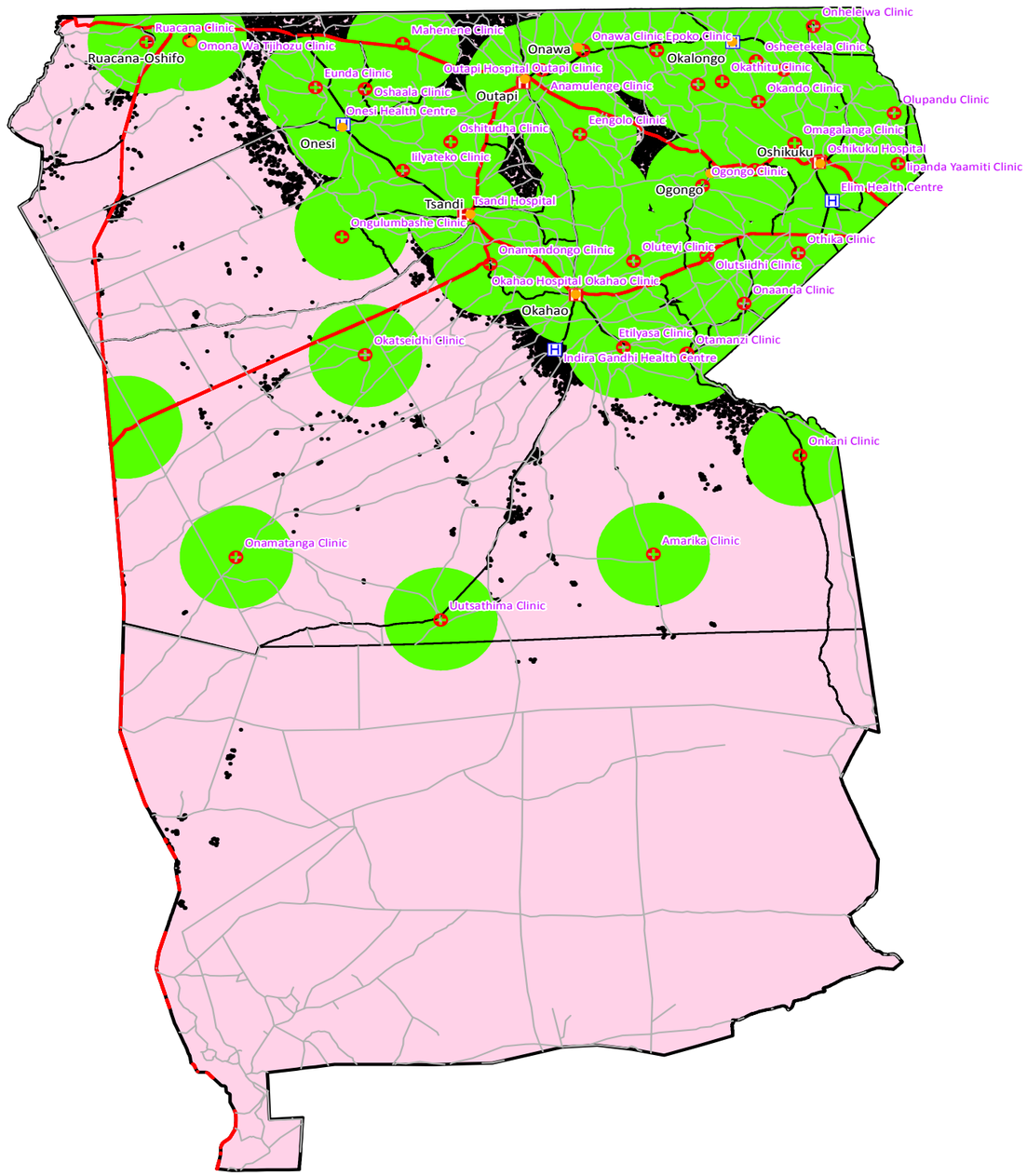
Health Facility Type	Total
Clinics	42
Health Centres	8
Hospitals	4

Legend

- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Omusati

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.6.2 OMUSATI REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Omusati Region.

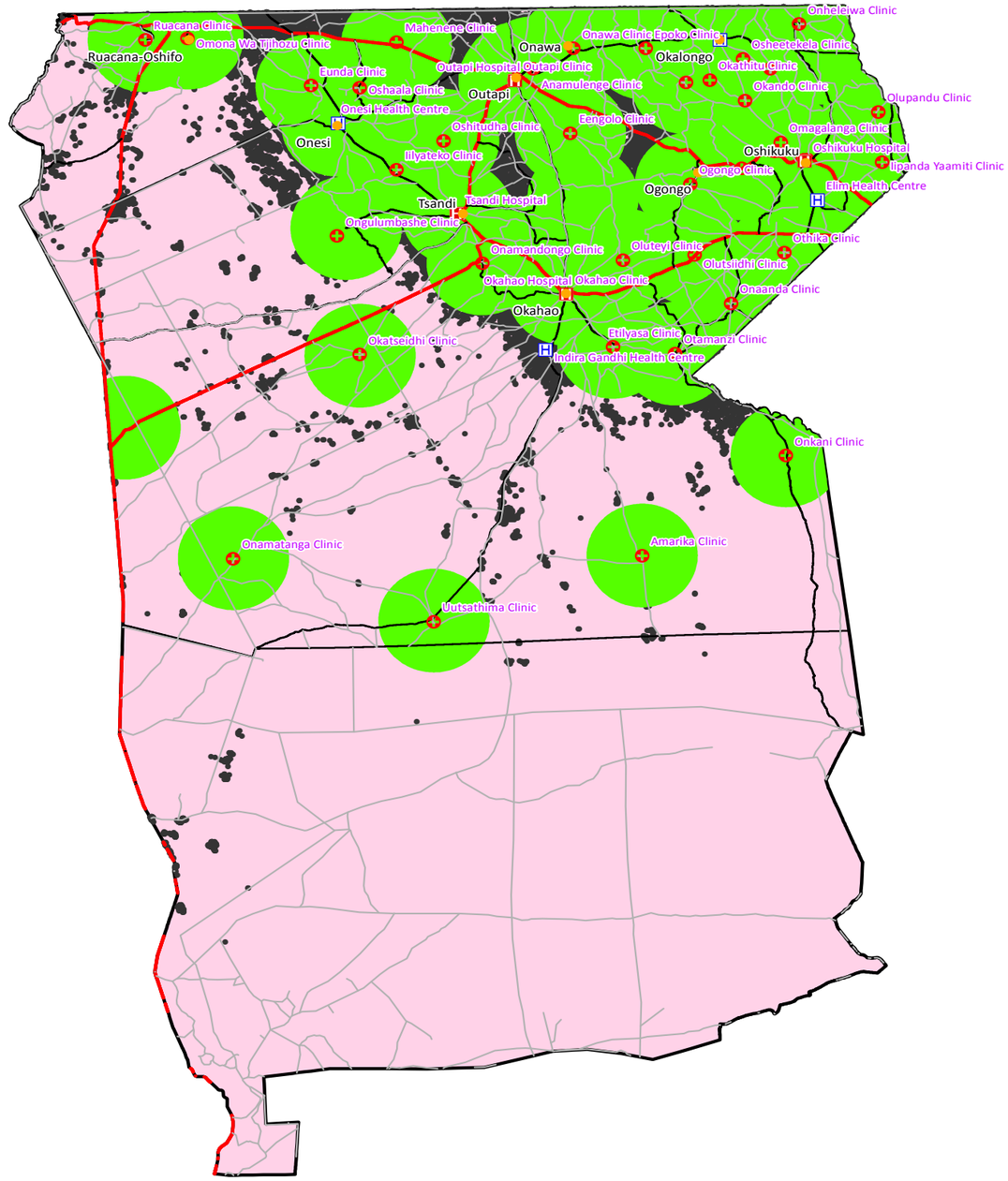
In 2011, 11% of all Verified Dwelling Units in the Omusati Region were outside of a 10 km distance to the nearest health facility.

Legend

- Verified DUs
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Health Facilities Buffer 10km
- Omusati

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.6.3 OMUSATI REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Omusati Region.

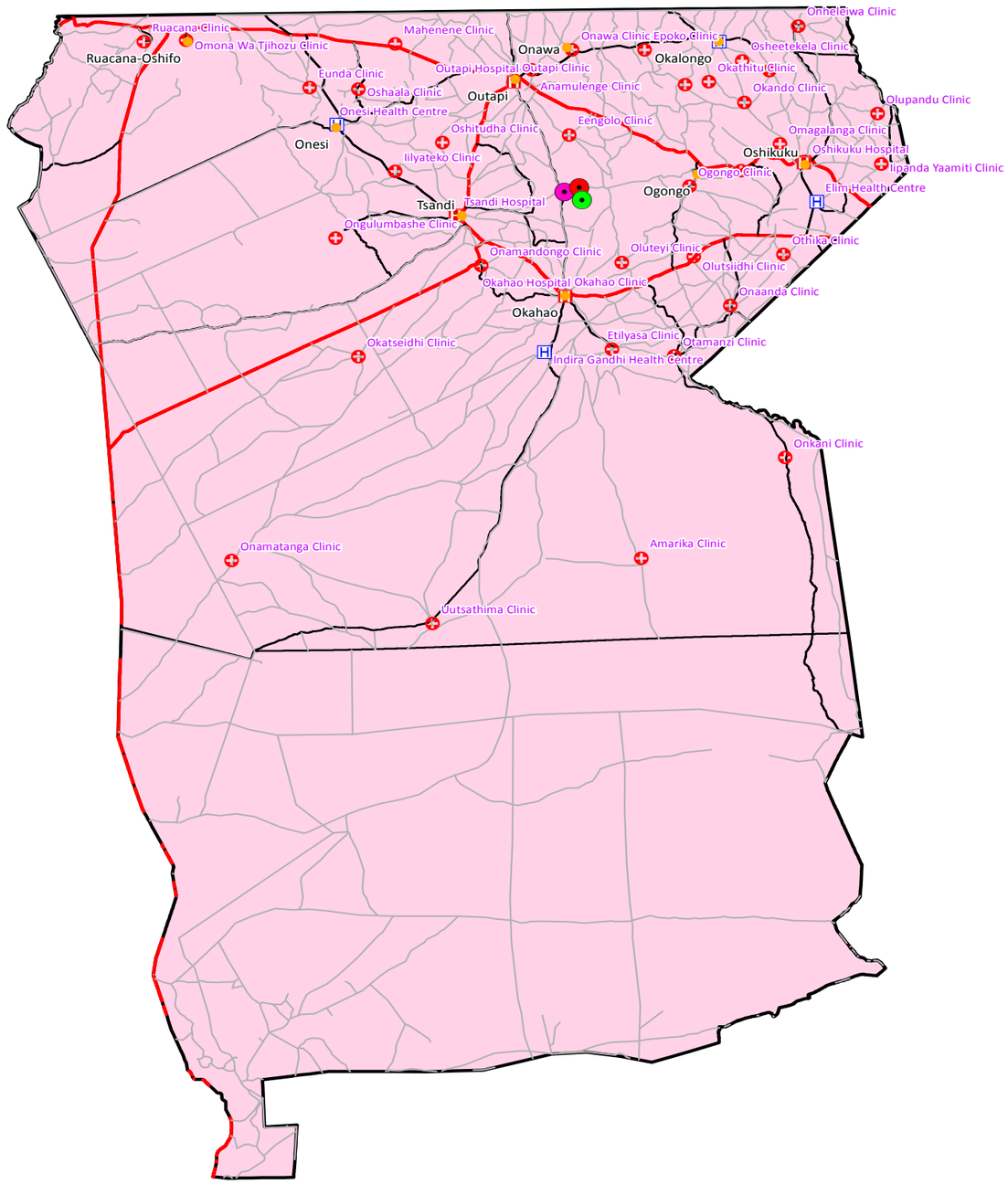
In 2011, 13 % of all surveyed structures in the Omusati Region were outside of a 10 km distance to the nearest health facility.

Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Health Facilities Buffer 10km
- Omusati

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.6.4 OMUSATI REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



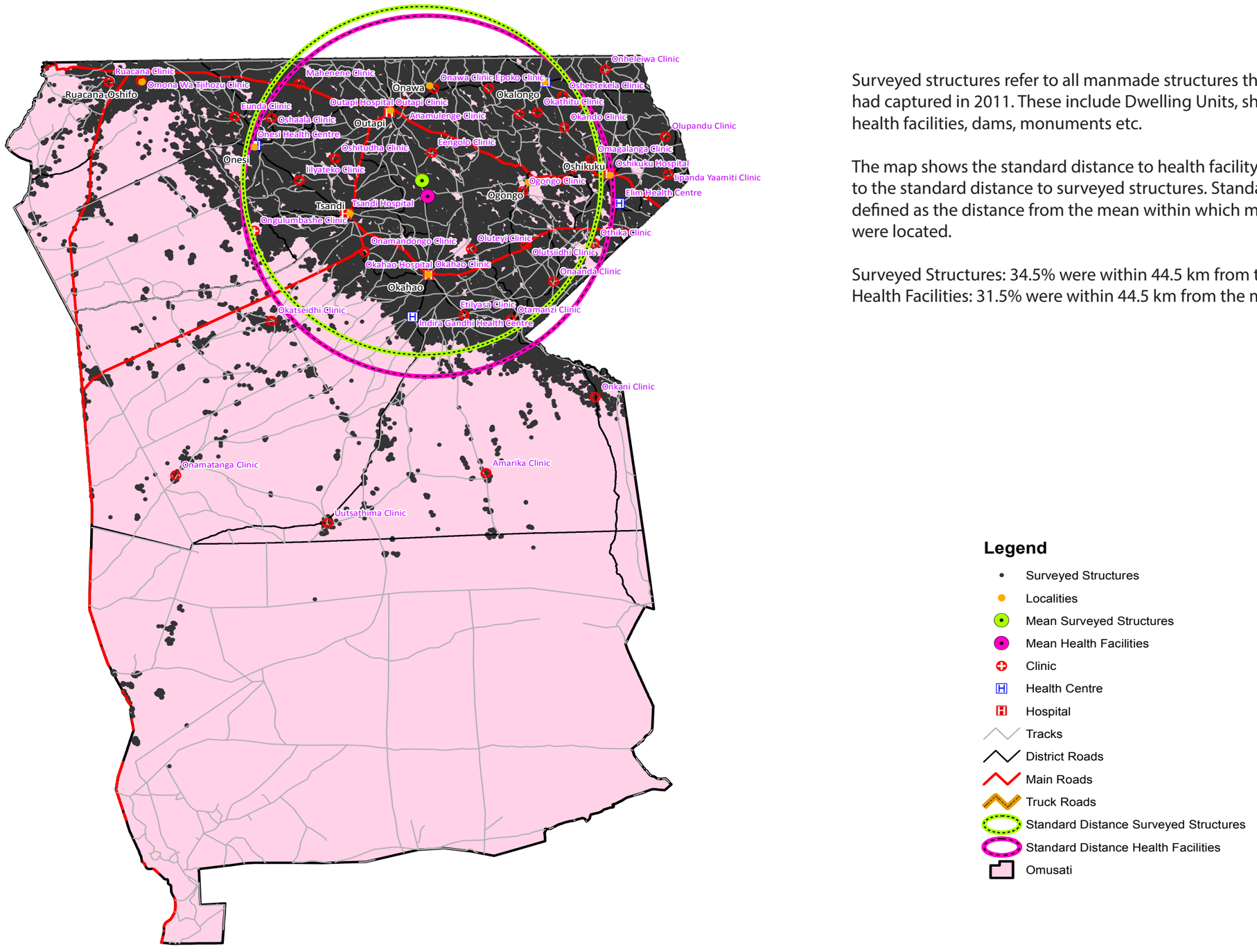
The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Omusati Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.6.5 OMUSATI REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



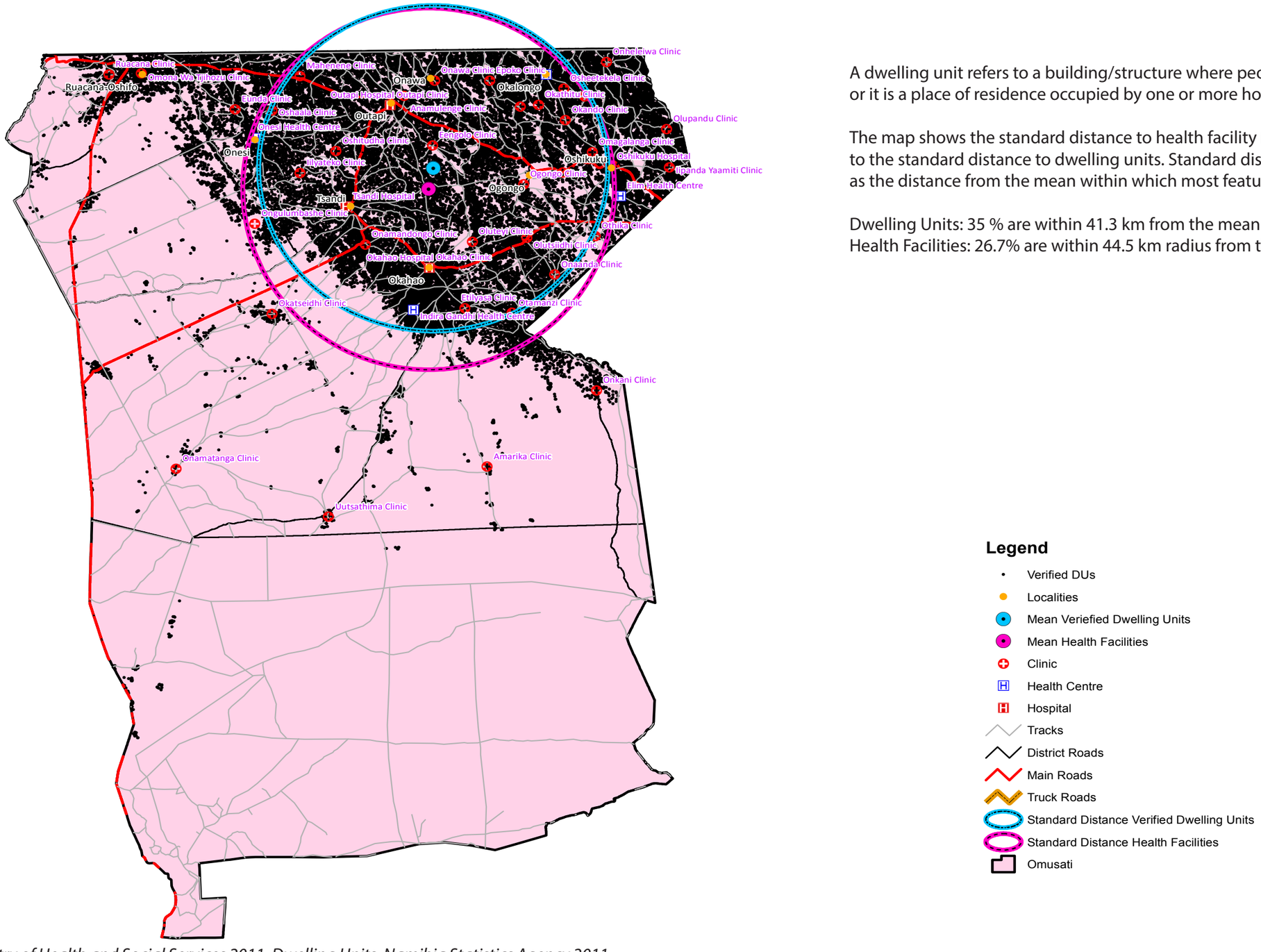
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 34.5% were within 44.5 km from the mean center.
Health Facilities: 31.5% were within 44.5 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.6.6 OMUSATI REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



A dwelling unit refers to a building/structure where people live or it is a place of residence occupied by one or more households.

The map shows the standard distance to health facility in comparison to the standard distance to dwelling units. Standard distance is defined as the distance from the mean within which most features are located.

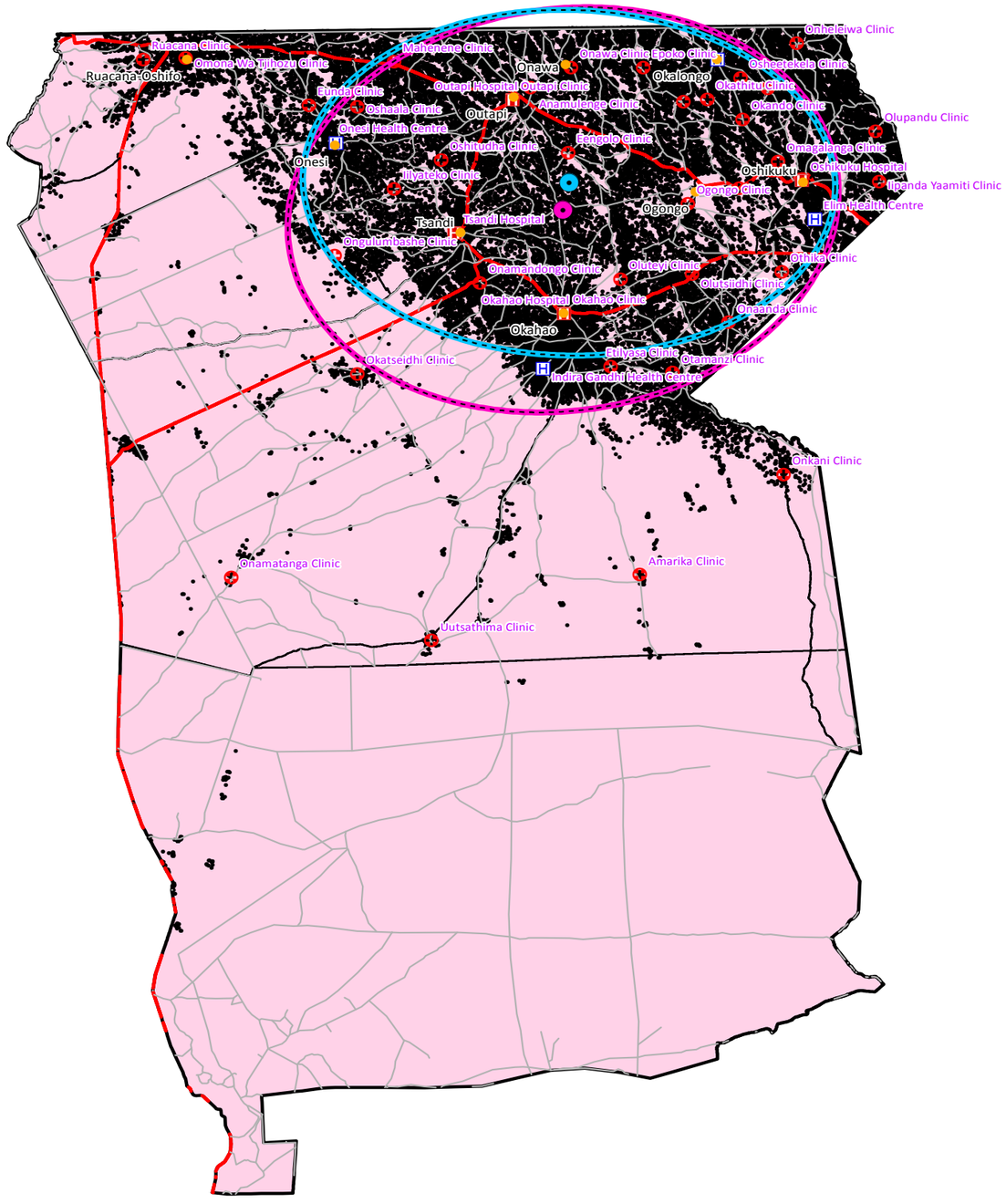
Dwelling Units: 35 % are within 41.3 km from the mean centre.
Health Facilities: 26.7% are within 44.5 km radius from the mean center.

Legend

- Verified DUs
- Localities
- Mean Veriefied Dwelling Units
- Mean Health Facilities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Standard Distance Verified Dwelling Units
- Standard Distance Health Facilities
- Omusati

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.6.7 OMUSATI REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

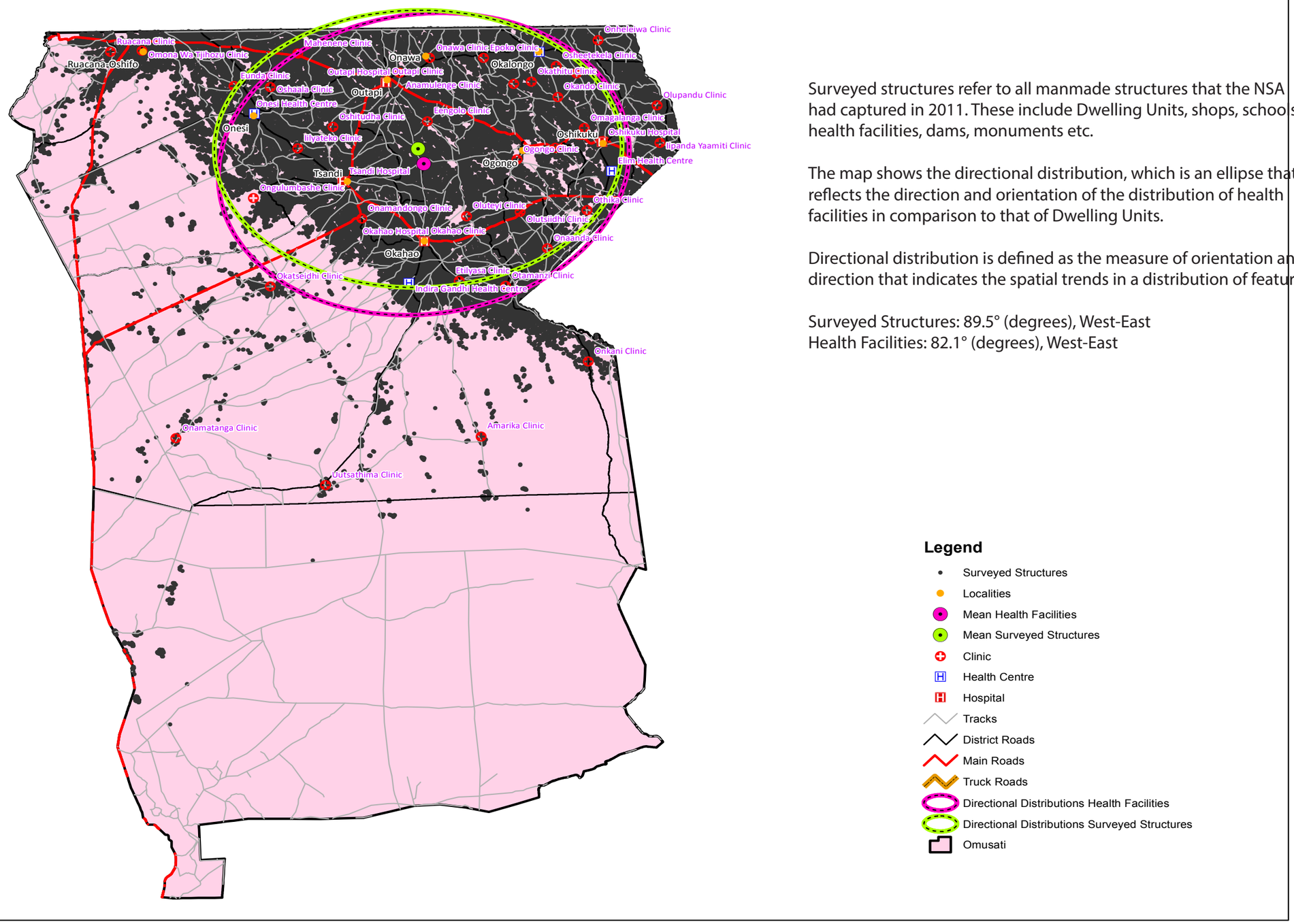
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of surveyed structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 91.6° (degrees), West-East
Health Facilities: 82.2° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.6.8 OMUSATI REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

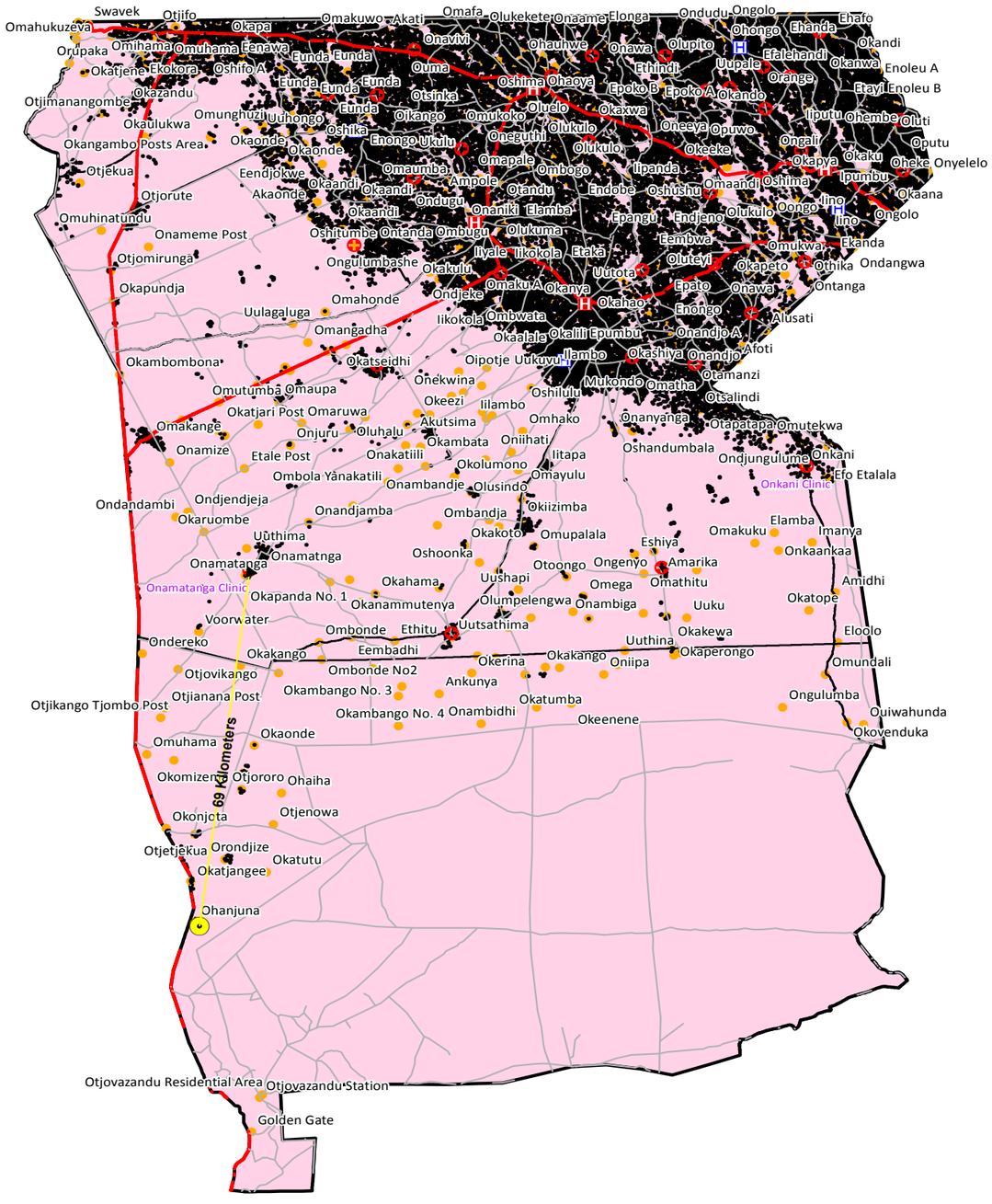
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 89.5° (degrees), West-East
Health Facilities: 82.1° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.6.9 OMUSATI REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



A dwelling unit refers to a building/structure where people live or it is a place of residence occupied by one or more households.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Omusati Region in 2011.

People in and around Ohanjuna (Locality) travelled the furthest distance of approximately 69 km to the nearest health facility in Omusati Region in 2011.

Legend

- Verified DUs
- Localities
- Clinic
- Health Centre
- Hospital
- Furthest Dwelling Unit
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Omusati

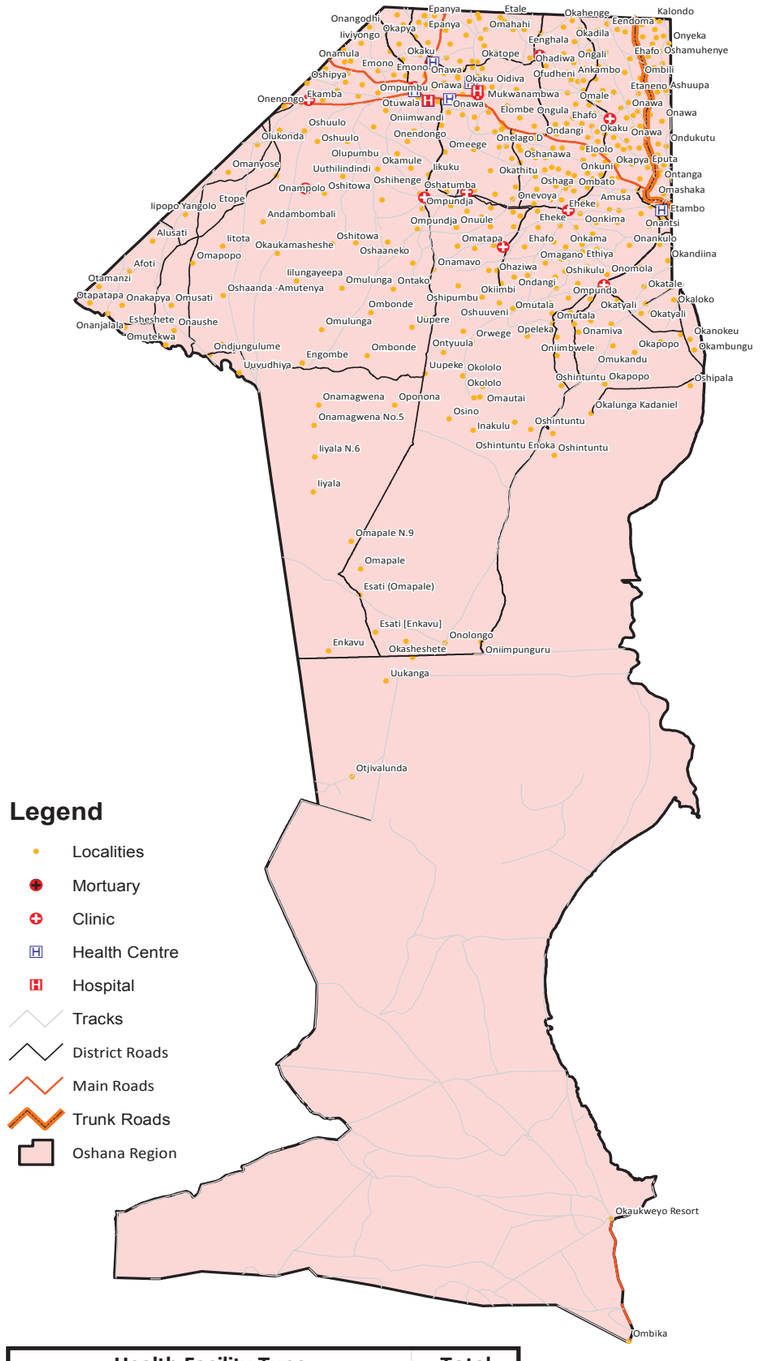
Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH

- OSHANA

Figure 2.7.1 OSHANA REGION - HEALTH FACILITIES IN 2011

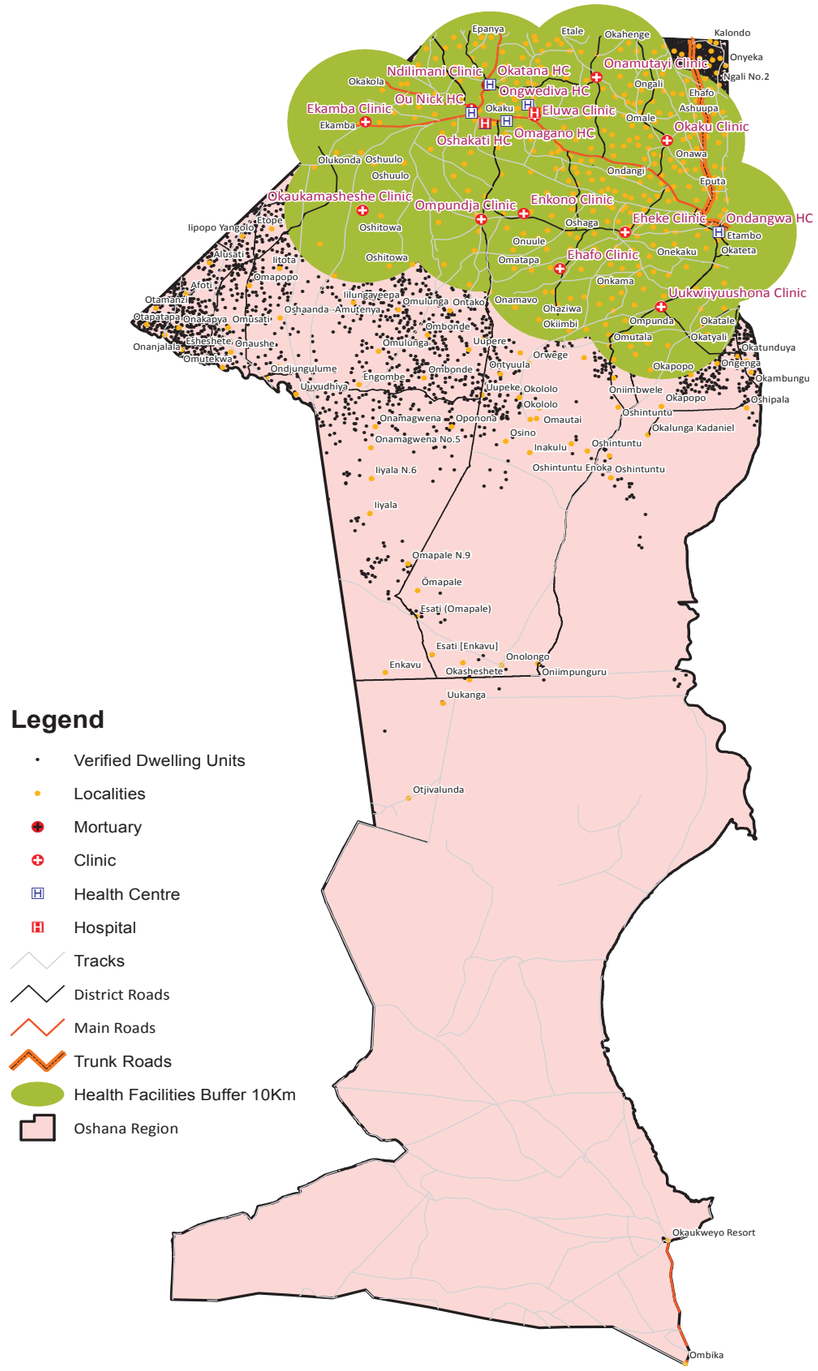
The map shows the location of health facilities and rehabilitation centres in the Oshana Region in 2011.



Health Facility Type	Total
Clinics	11
Health Centre	6
Hospital	2
Mortuary	1

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.7.2 OSHANA REGION - DWELLING UNITS PROXIMITY TO PRIMARY SCHOOLS IN 2007



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Oshana Region.

In 2011, 6.7% of all Verified Dwelling Units in the Oshana Region are outside of a 10 km distance to the nearest health facility.

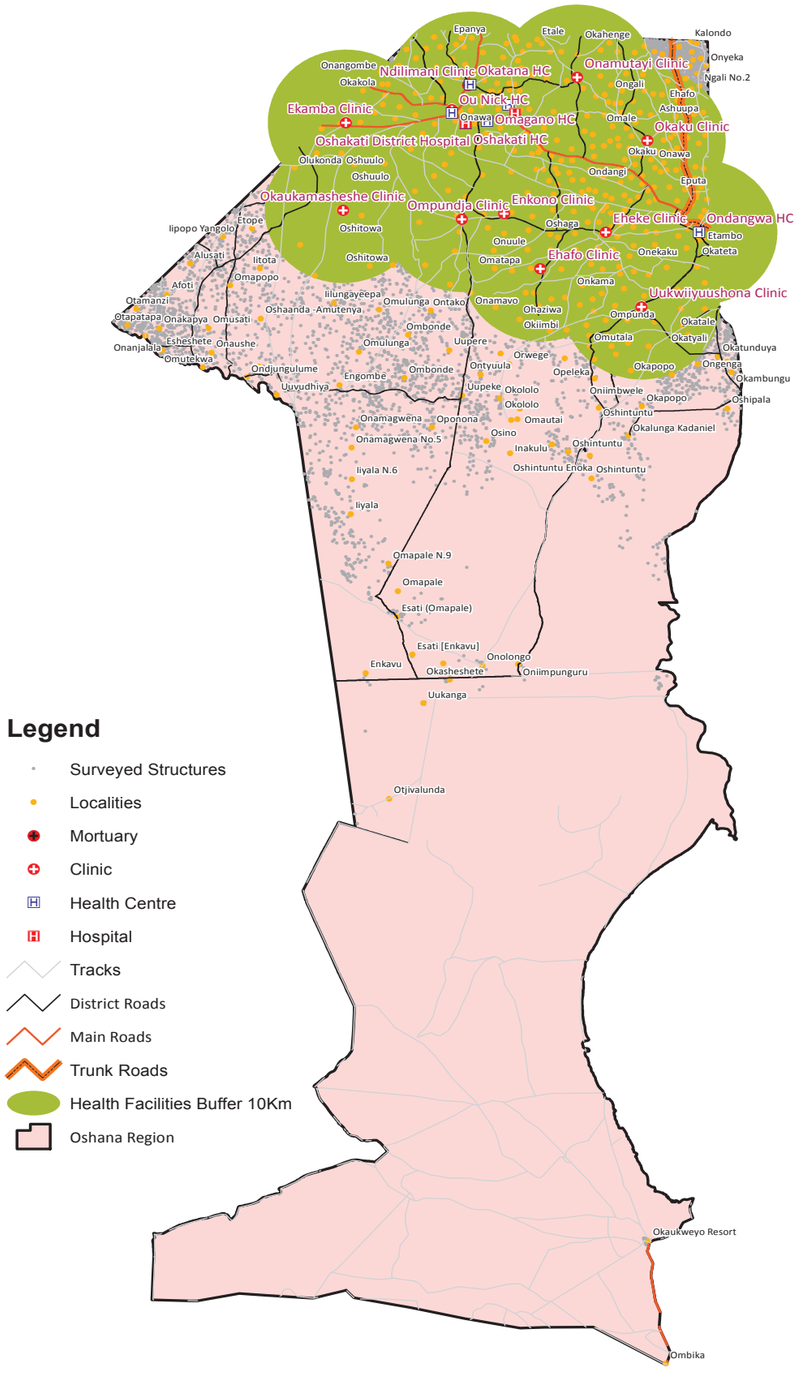
Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011.

Figure 2.7.3 OSHANA REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011

Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Oshana Region.

In 2011, 9.1% of all surveyed structures in the Oshana Region are outside of a 10 km distance to the nearest health facility.



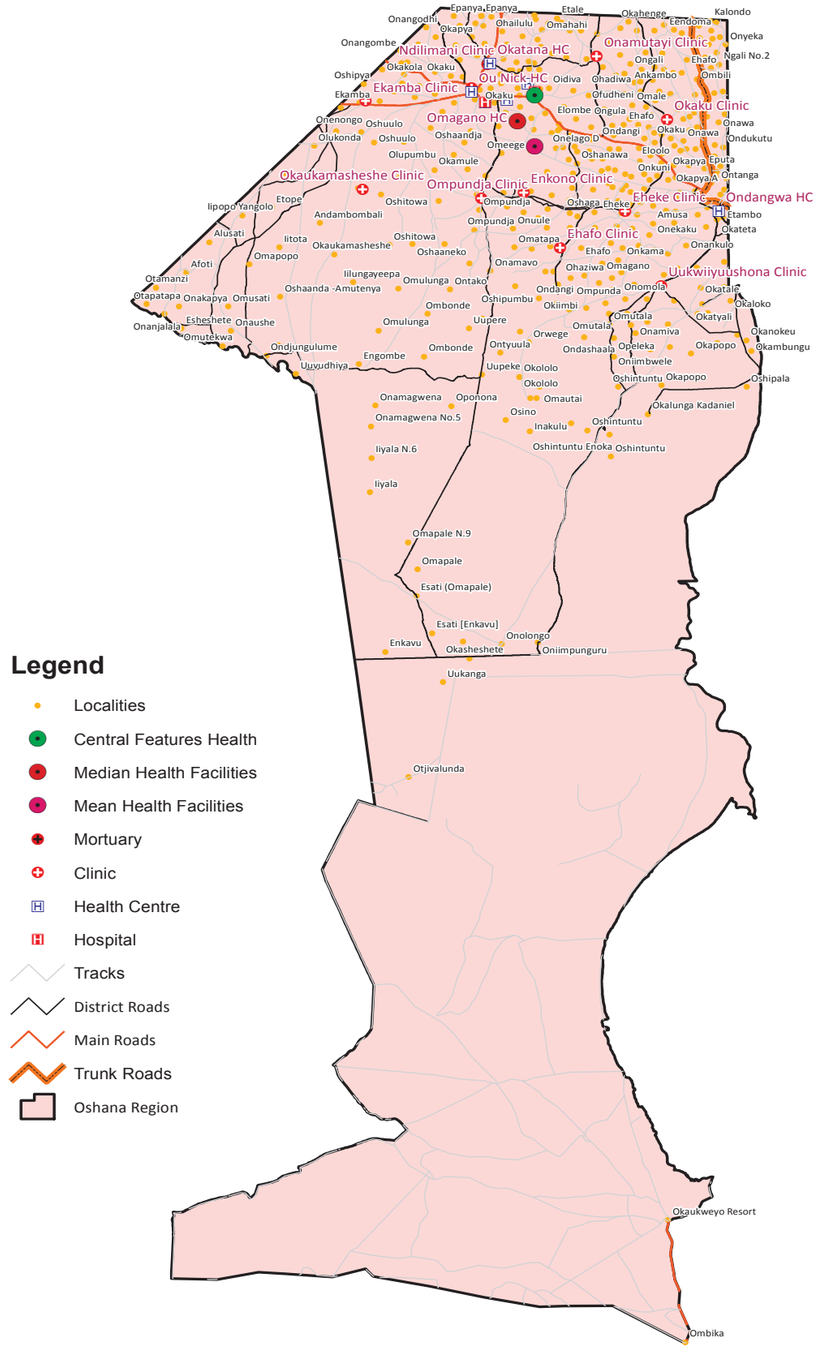
Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011

Figure 2.7.4 OSHANA REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011

The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Oshana Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.



Source: Health Facilities, Ministry of Health and Social Services 2011.

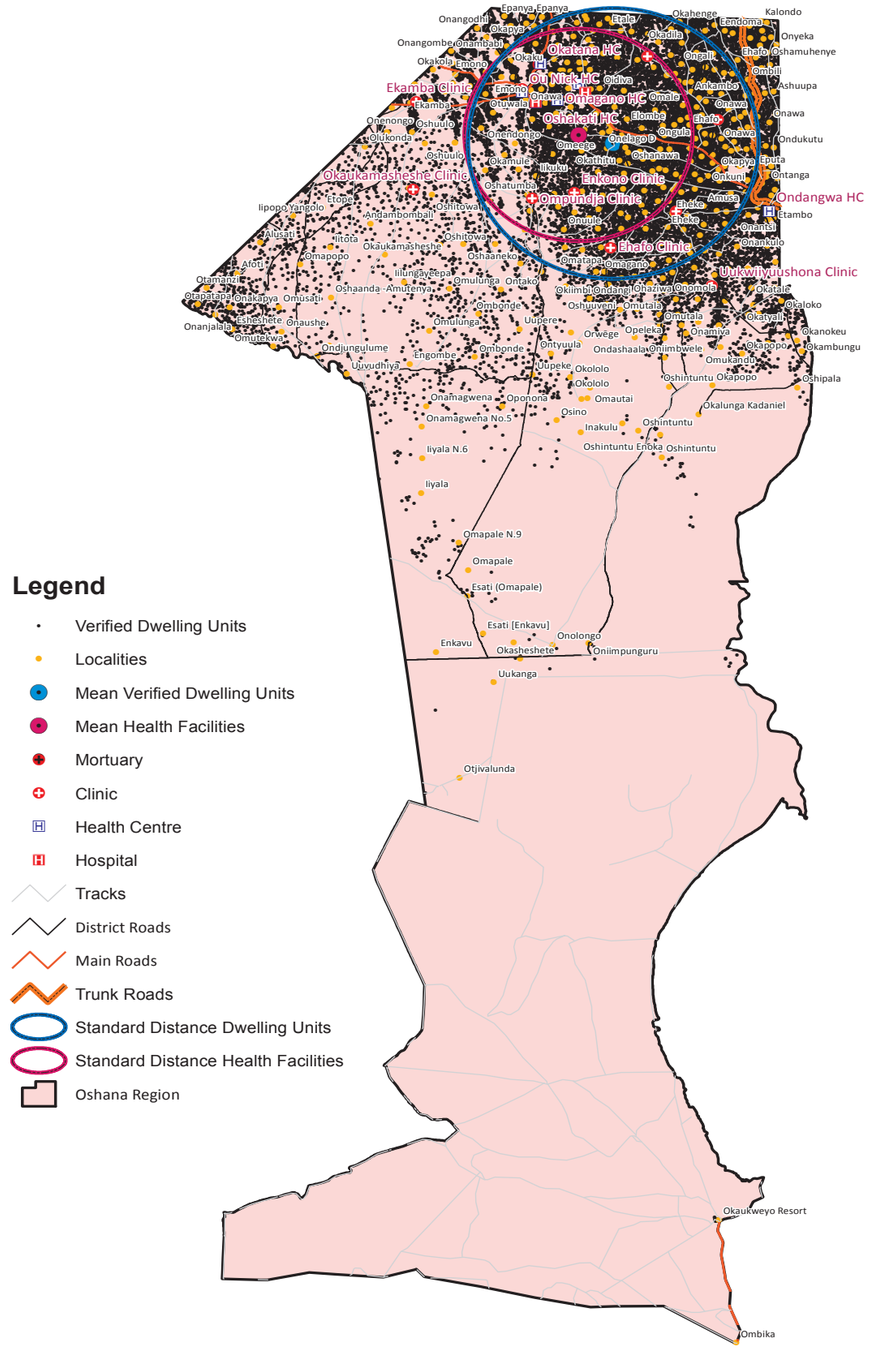
Figure 2.7.5 OSHANA REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011D STRUCTURES IN 2007

Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 74.9% are within 20.9 km radius from the mean center.

Health Facilities: 65% are within 14.6 km radius from the mean center.



Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

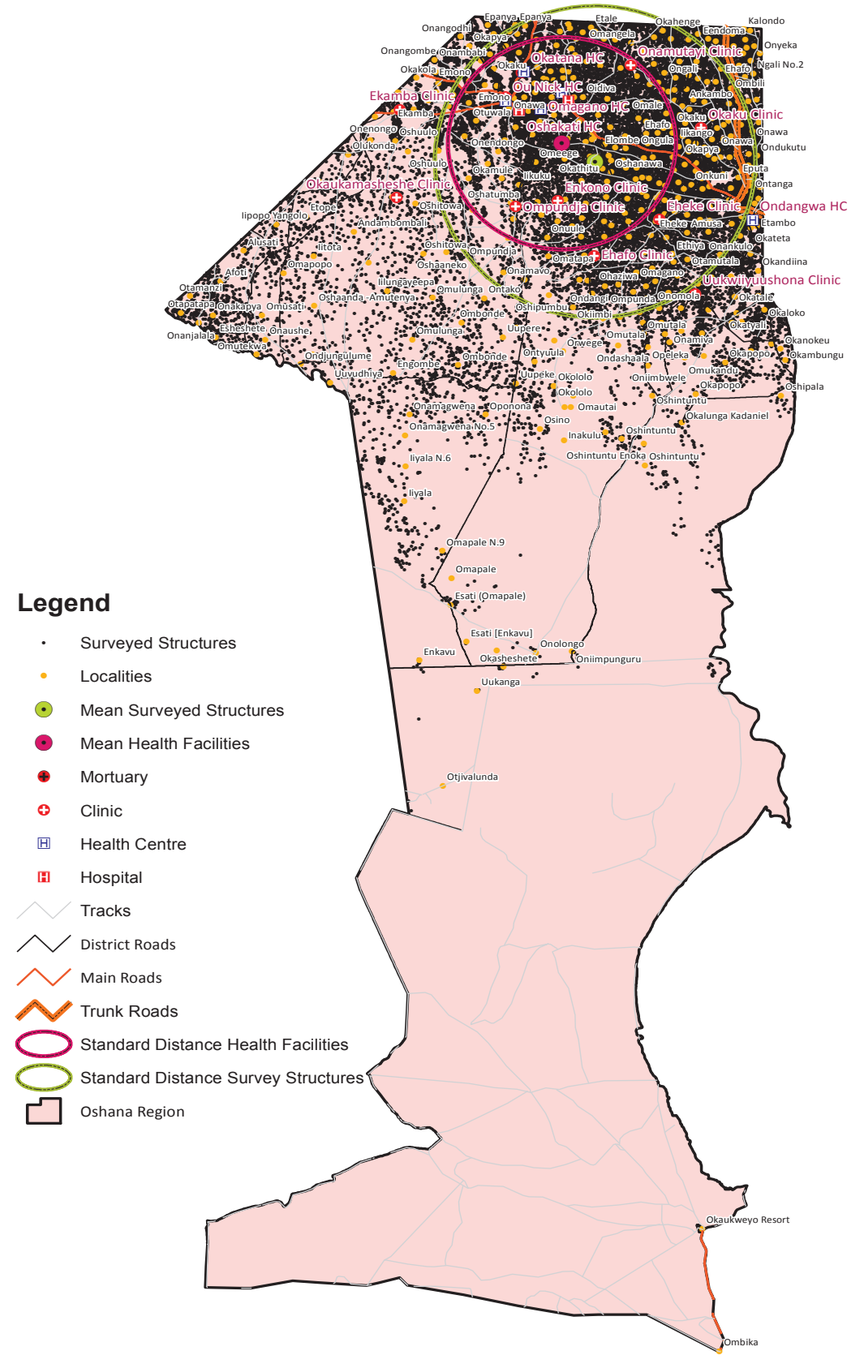
Figure 2.7.6 OSHANA REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to health facility in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 67.8 % are within 18.6 km from the mean centre.

Health Facilities: 65% are within 14.6 km radius from the mean center.



Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.7.7 OSHANA REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011

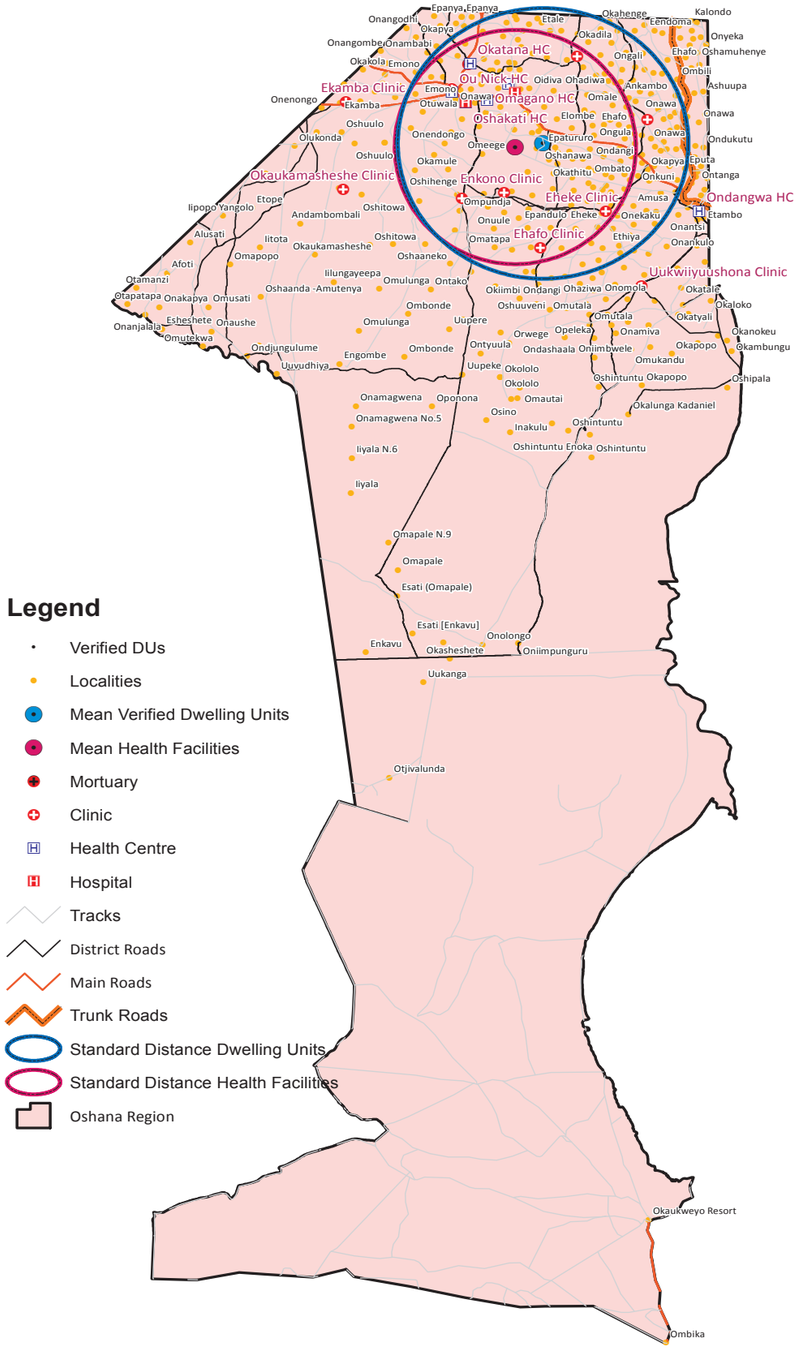
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 110.2° (degrees), SE-NW

Health Facilities: 117.8° (degrees), SE-NW



Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011.

Figure 2.7.8 OSHANA REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011

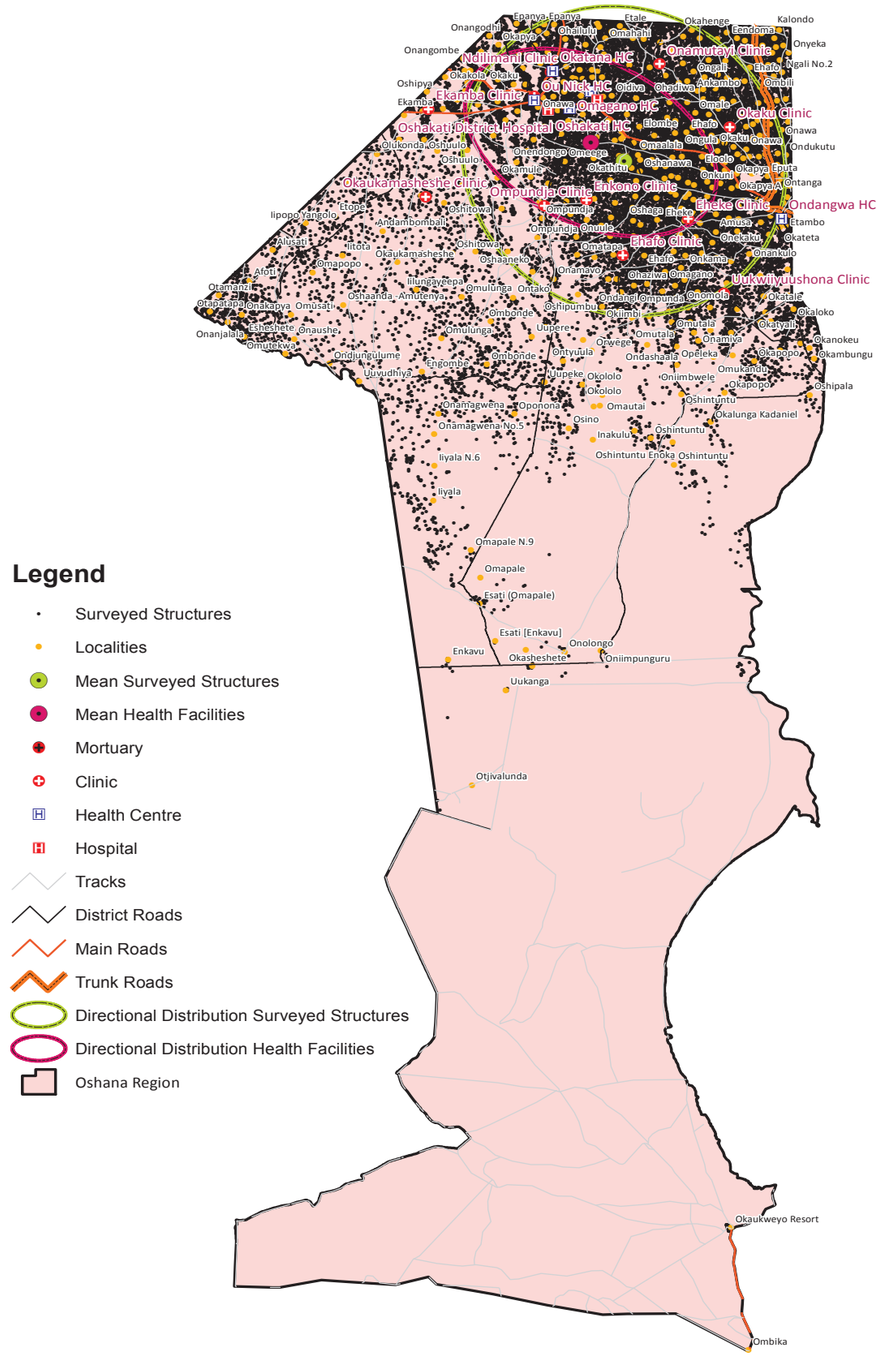
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 129.6° (degrees), SE-NW

Health Facilities: 117.8° (degrees), SE-NW



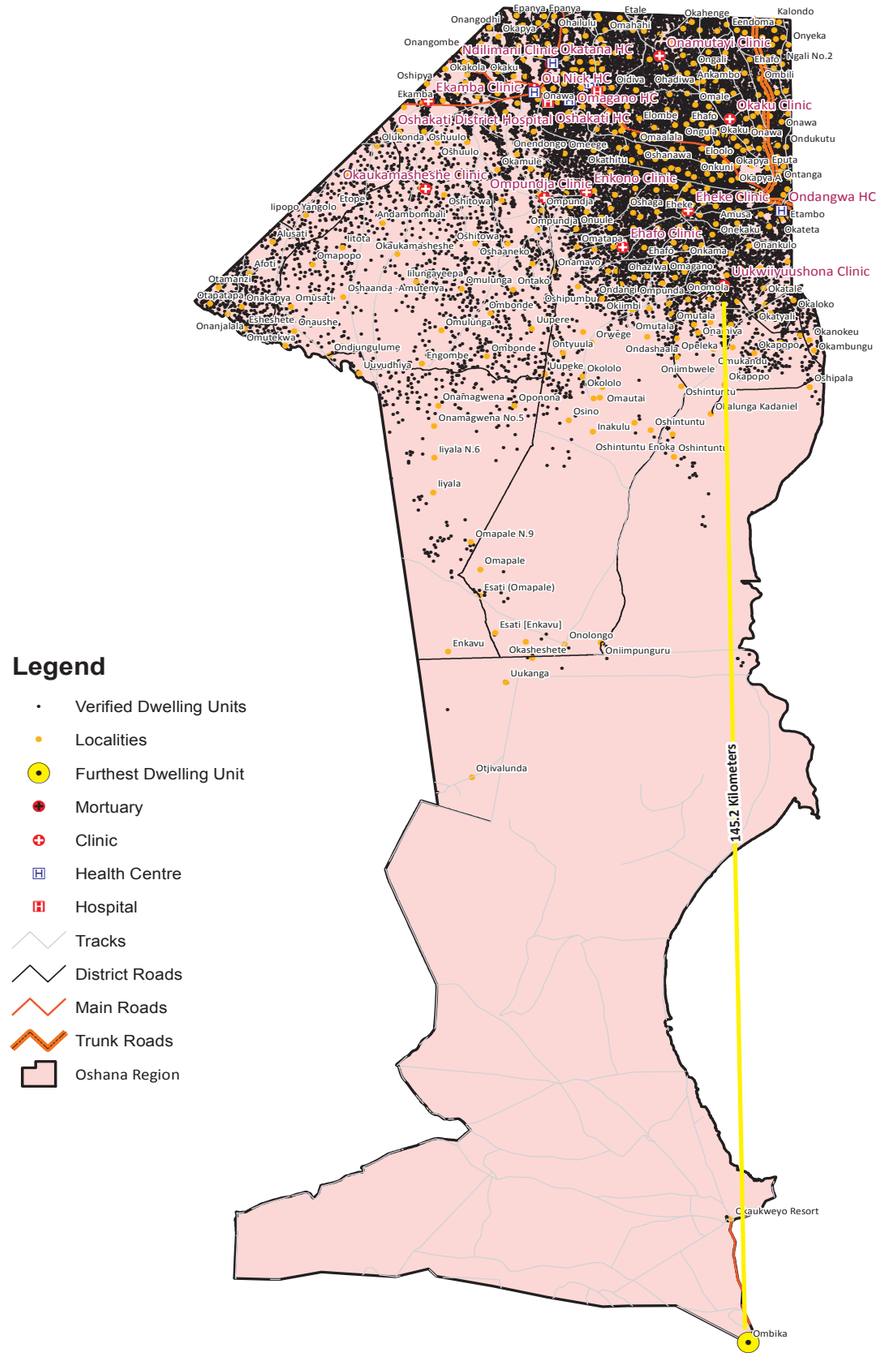
Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.7.9 OSHANA REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Oshana Region in 2011.

People in and around Ombika travelled the furthest distance of approximately 145.2 km to the nearest health facility in Oshana Region in 2011.

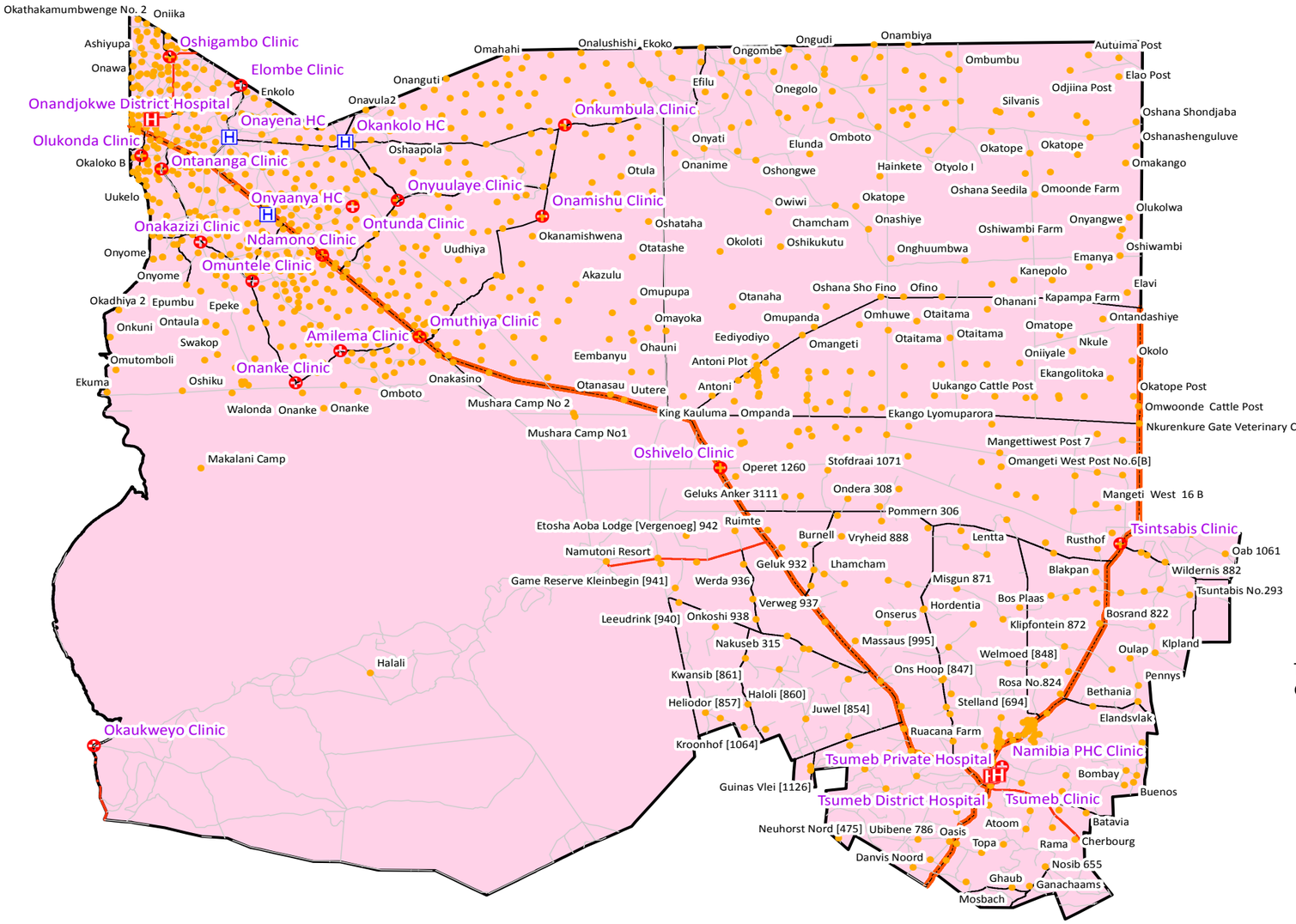


Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH

- OSHIKOTO

Figure 2.8.1 OSHIKOTO REGION - HEALTH FACILITIES IN 2011

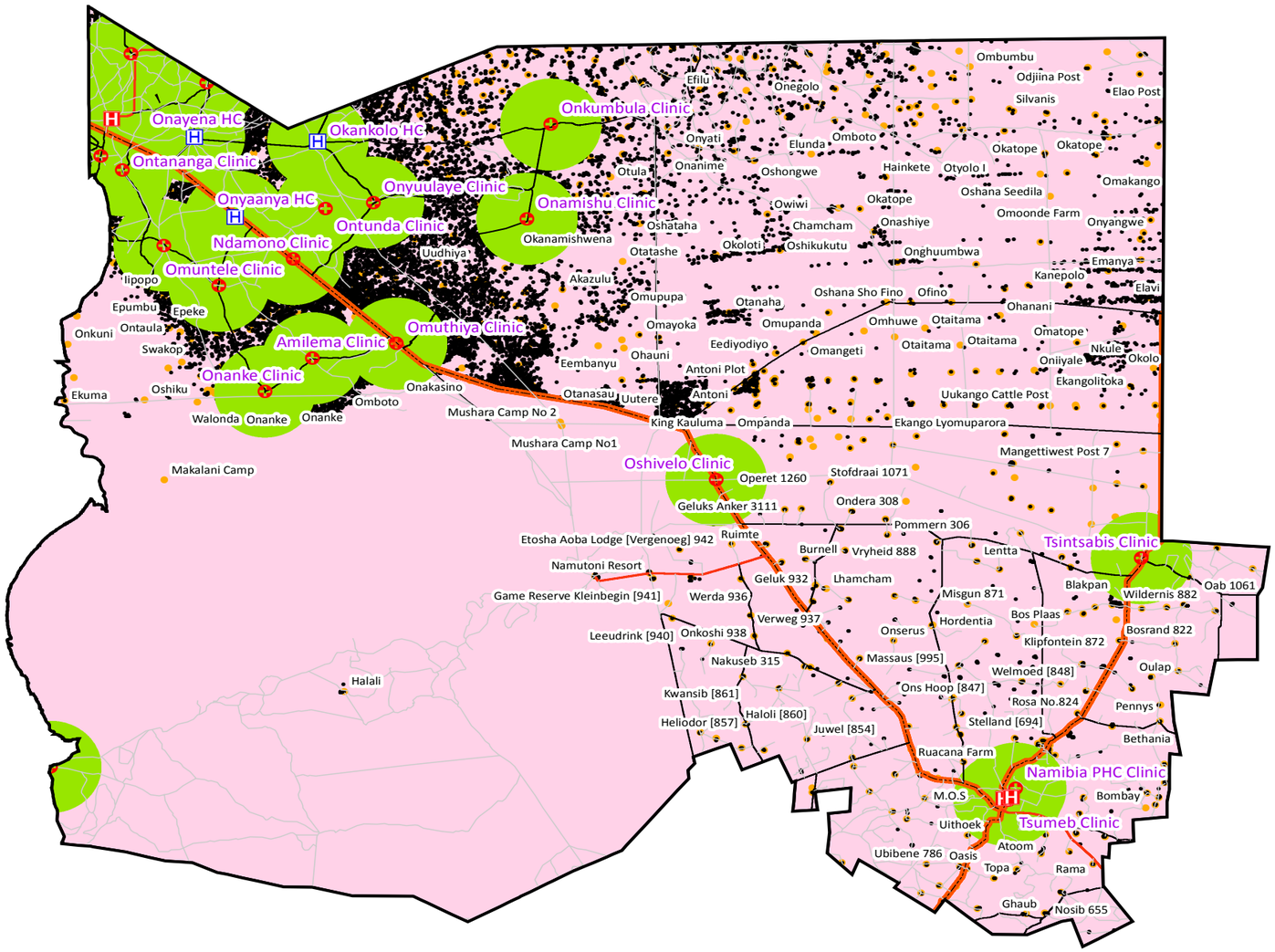


Health Facility Type	Total
Clinic	21
Health Centre	3
Hospital	3

The map shows the location of health facilities in the Oshikoto Region in 2011.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.8.2 OSHIKOTO REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



Legend

- Verified Dwelling Units
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Health Facilities Buffer10 Km
- Oshikoto Region

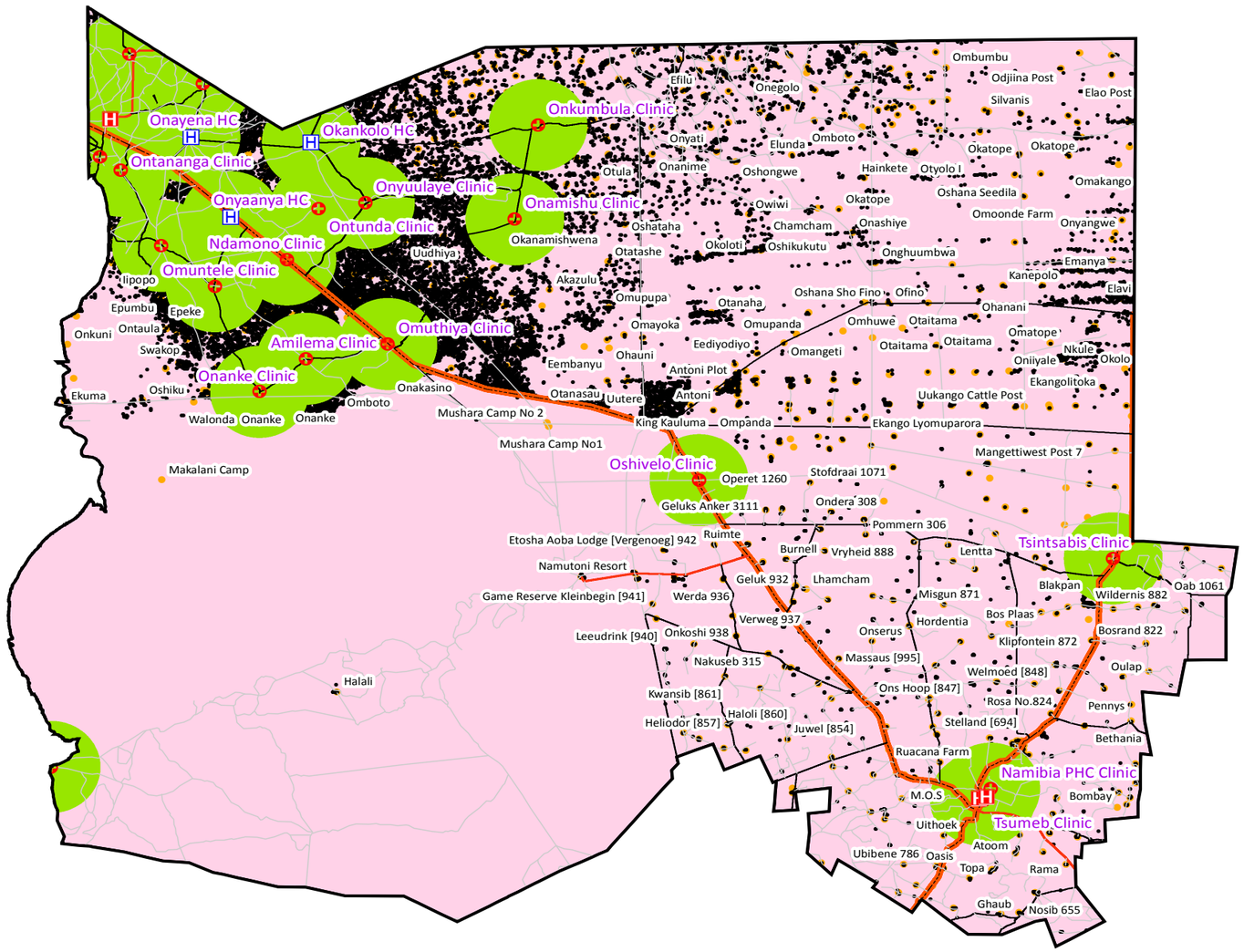
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Oshikoto Region.

In 2011, 28.7%of all Verified Dwelling Units in the Oshikoto Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.8.3 OSHIKOTO REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Health Facilities Buffer10 Km
- Oshikoto Region

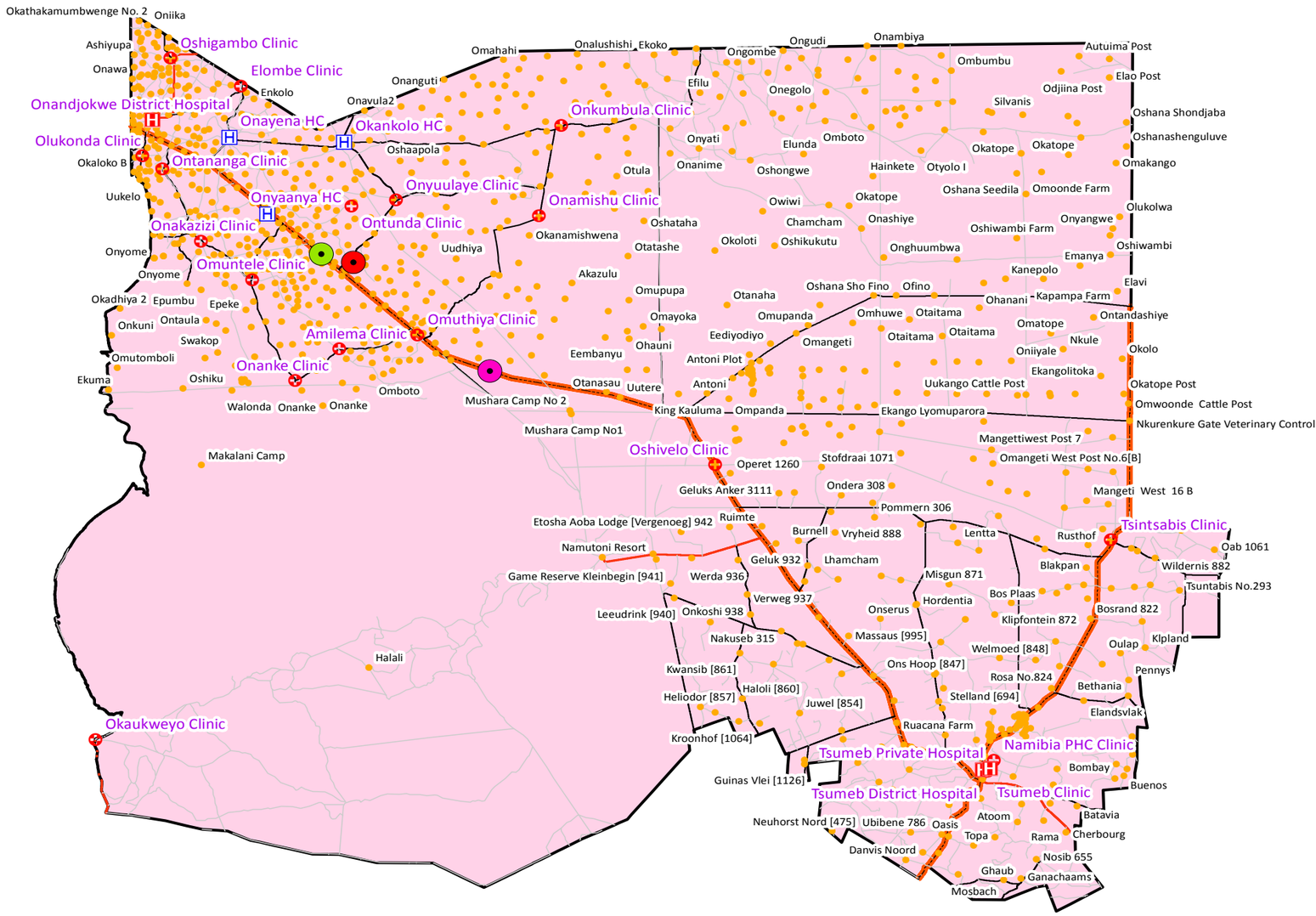
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Oshikoto Region.

In 2011, 32.4% of all surveyed structures in the Oshikoto Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.8.4 OSHIKOTO REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



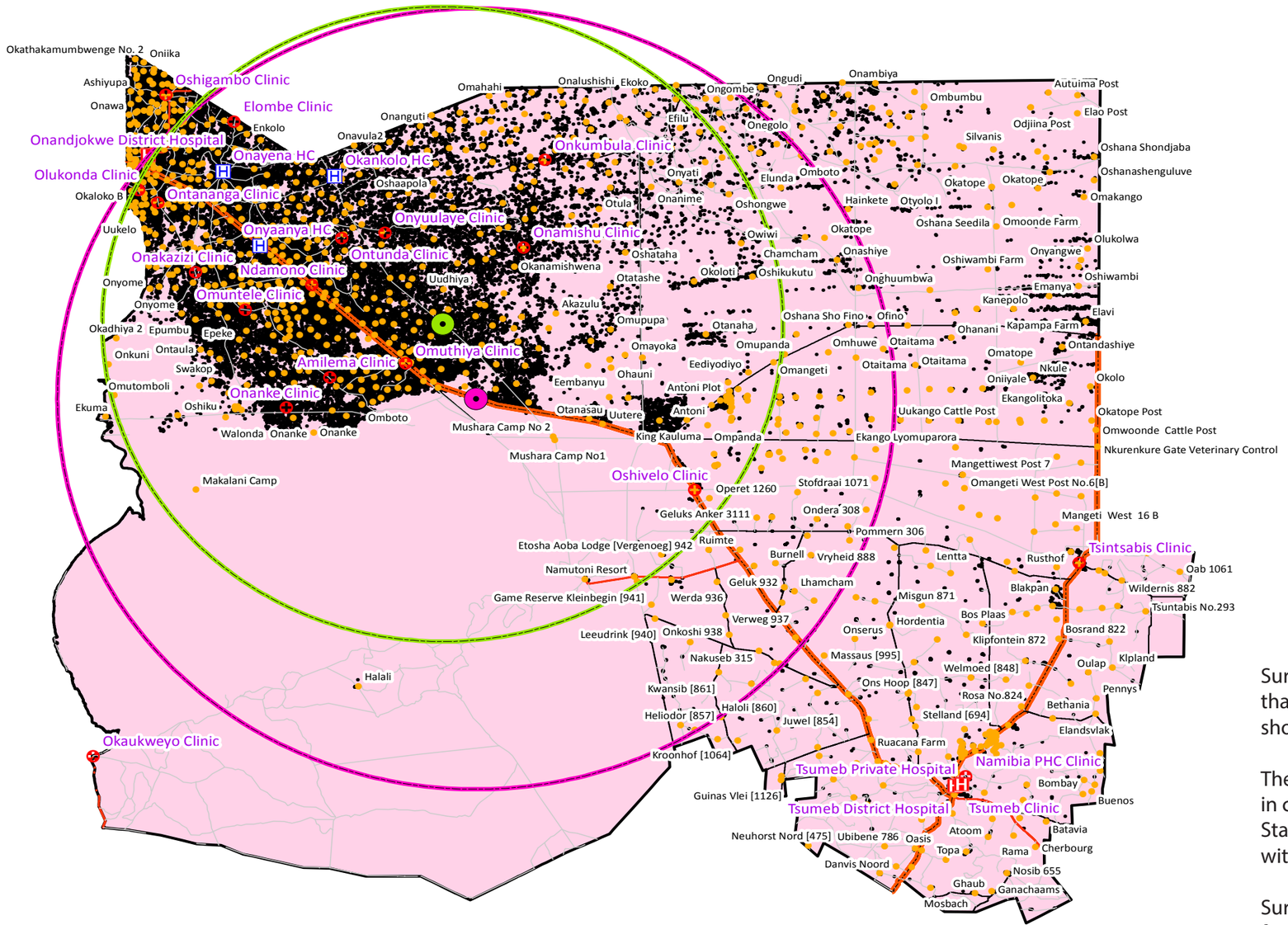
The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Oshikoto Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.8.5 OSHIKOTO REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



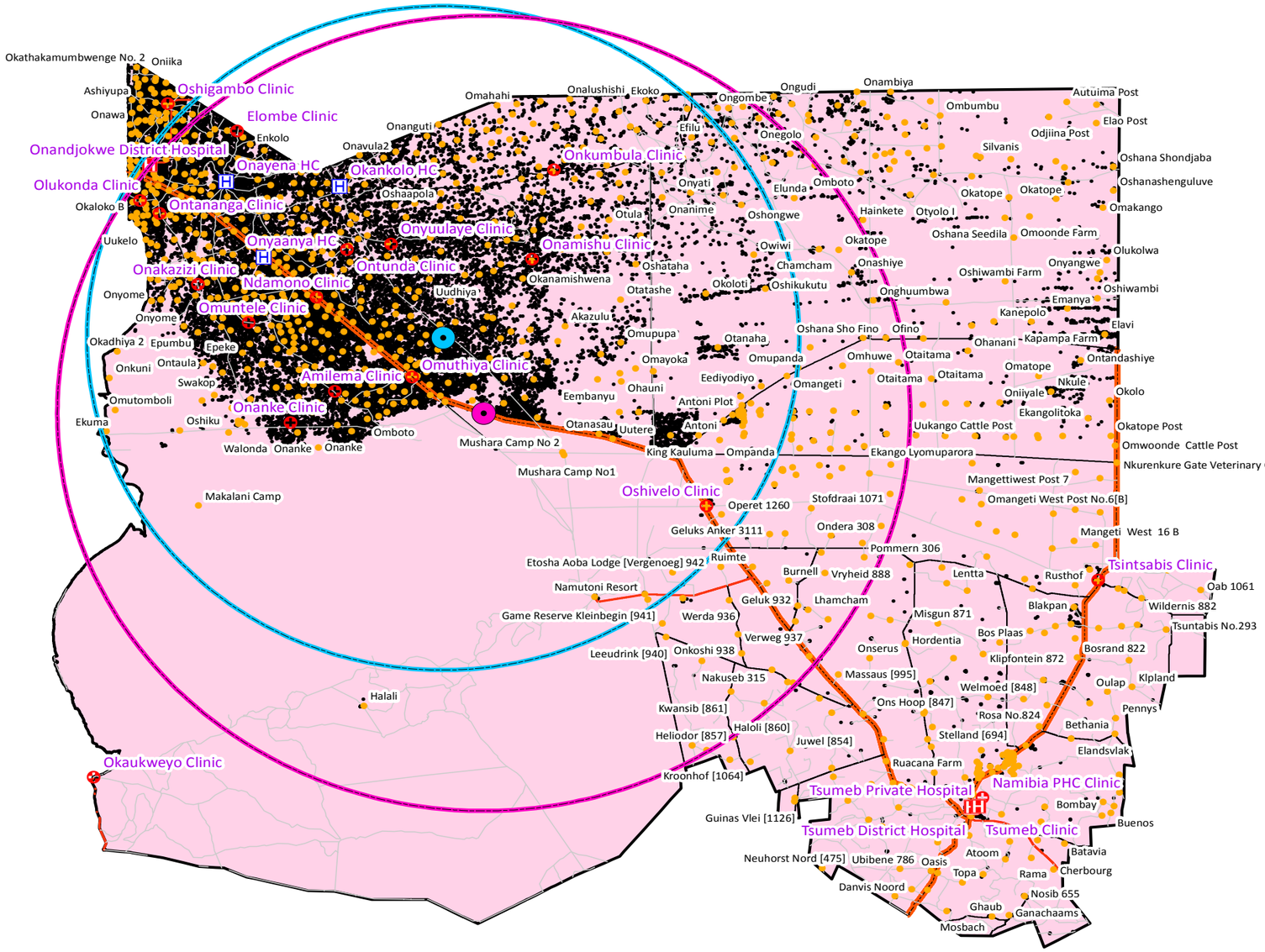
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These includeDwelling Units, shops, schools, health facilities,dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 71.2% were within 74.2 km from the mean center.
Health Facilities: 62.9% were within 91.3 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.8.6 OSHIKOTO REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



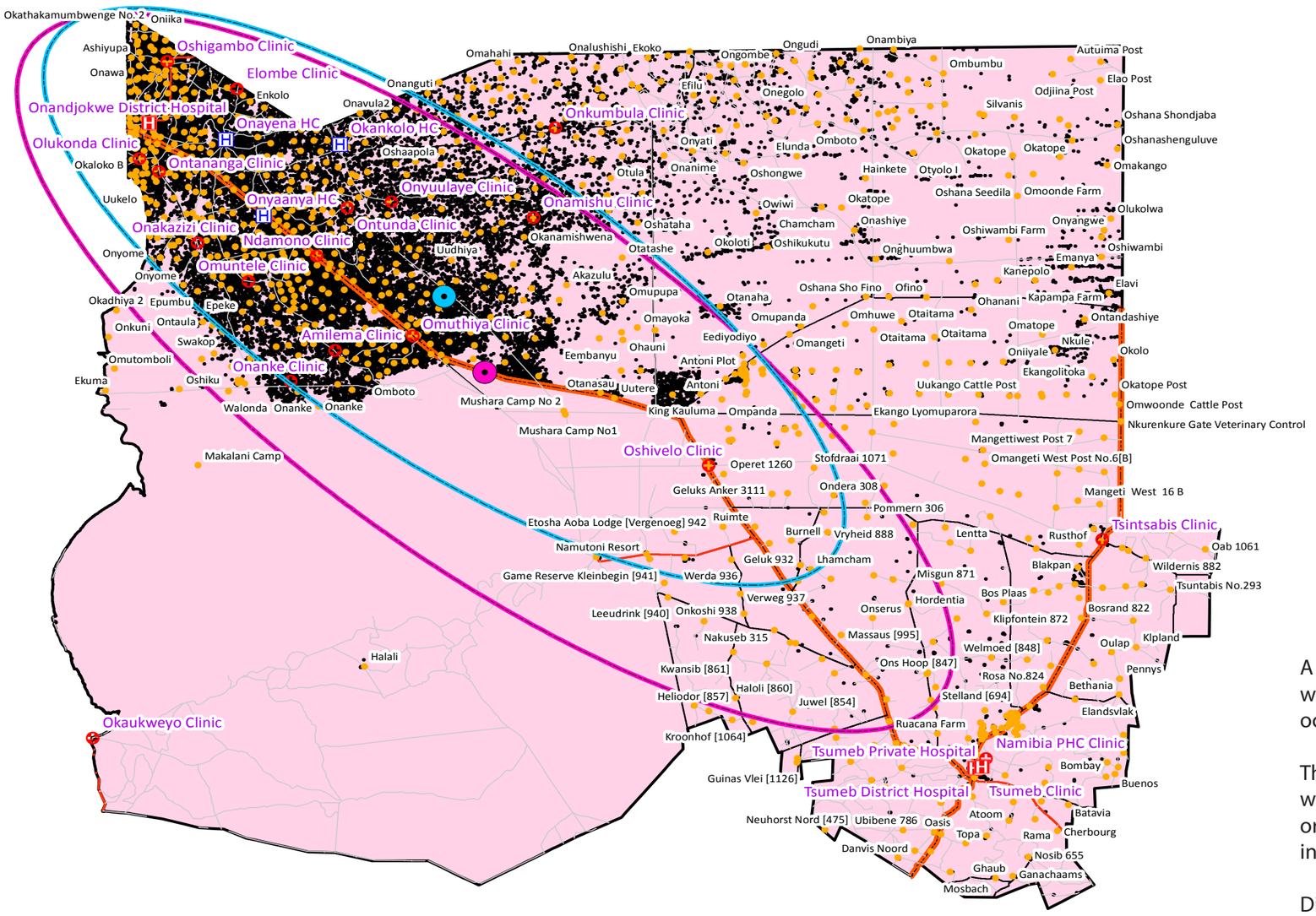
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to health facility in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 75.4 % were within 76.2 km from the mean centre.
Health Facilities: 62.9% were within 91.3 km from the mean center.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.8.7 OSHIKOTO REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



Legend

- Verified Dwelling Units
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Verified Dweling Units
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distibution Verified Dwelling Units
- Directional Distribution Health Facilities
- Oshikoto Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

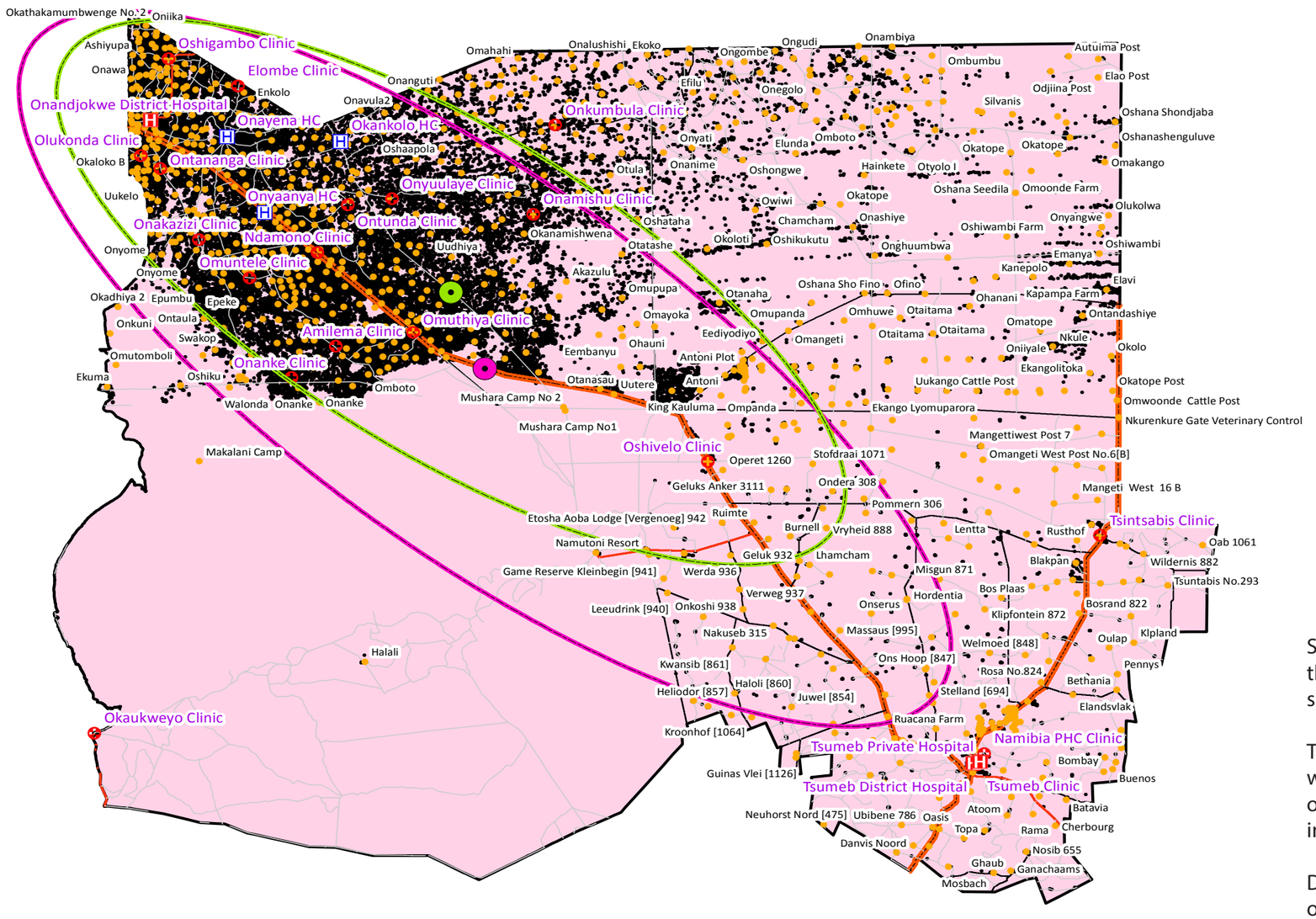
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of surveyed structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 125.6° (degrees), South East- North West
Health Facilities: 127.9° (degrees), South East- North West

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.8.8 OSHIKOTO REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Legend

- Surveyed Structures
- Localities
- Clinic
- Health Centre
- Hospital
- Mean Surveyed Structures
- Mean Health Facilities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Surveyed Structures
- Directional Distribution Health Facilities
- Oshikoto Region

Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

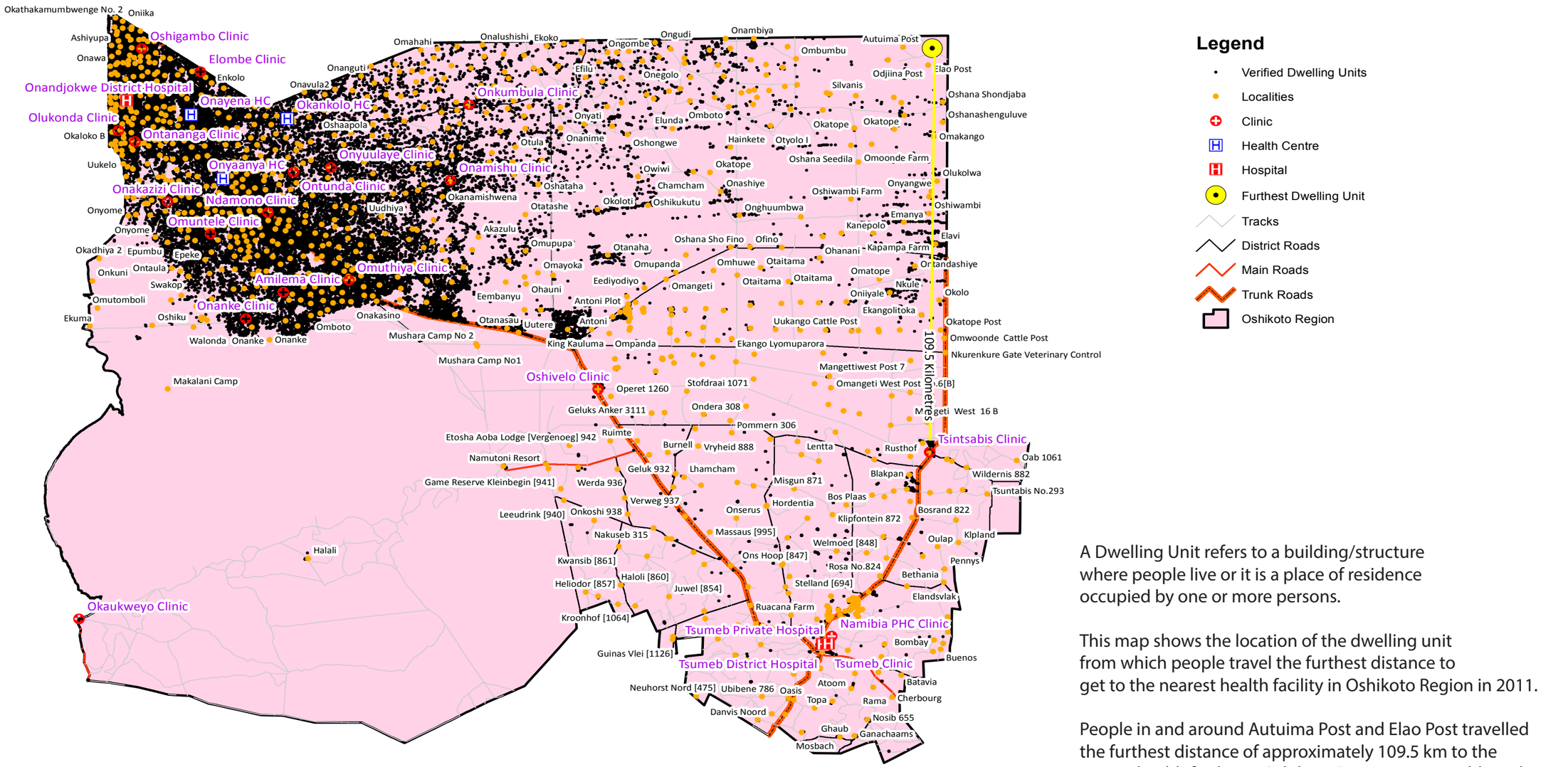
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 123.7° (degrees), South East- North West
Health Facilities: 127.9° (degrees), South East-North West

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.8.9 OSHIKOTO REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

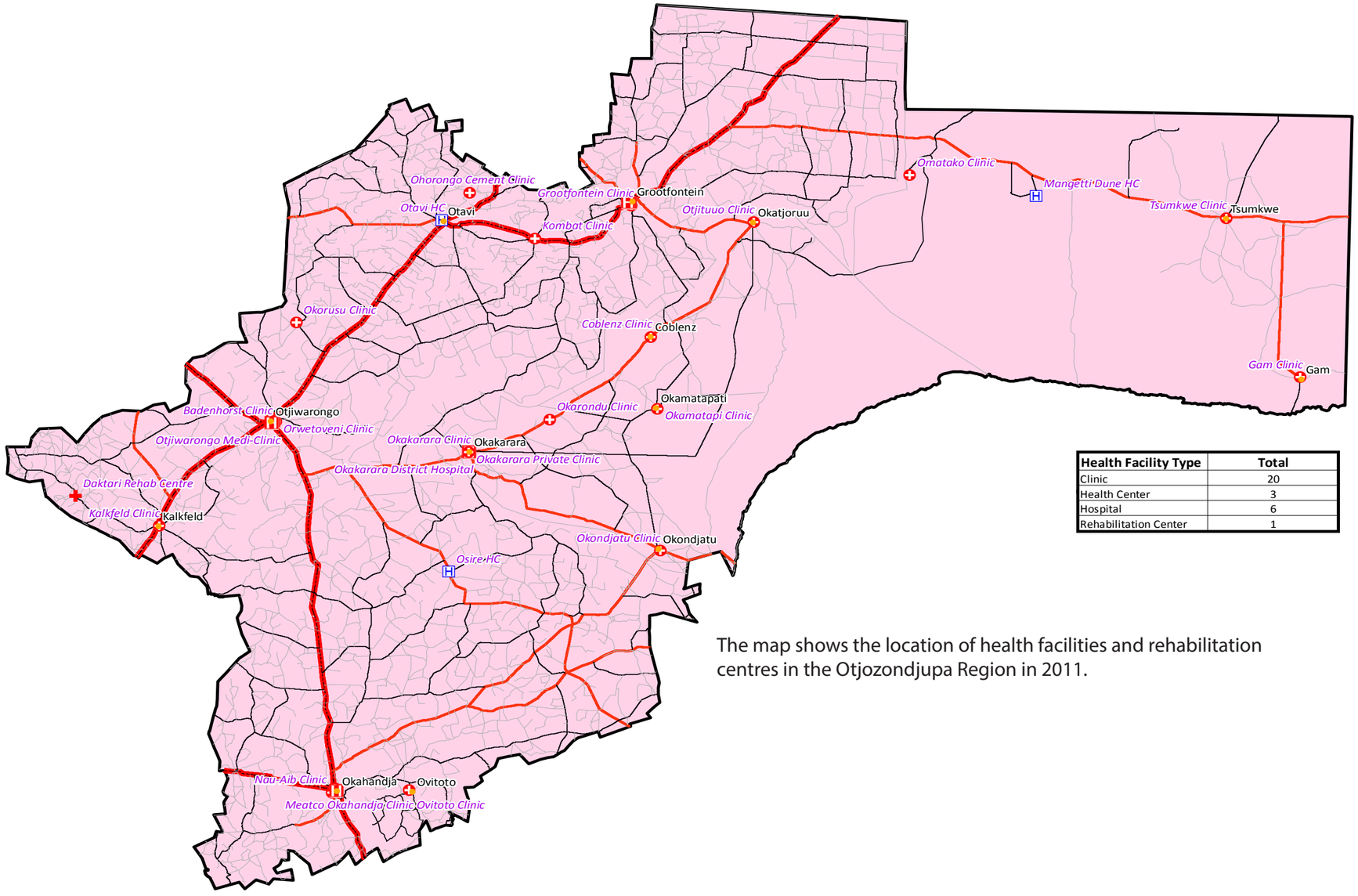
This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Oshikoto Region in 2011.

People in and around Autuima Post and Elao Post travelled the furthest distance of approximately 109.5 km to the nearesthealth facility in Oshikoto Region in 2011, although they might have been served by a neighbouring region.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH
- OTJOZONDJUPA

Figure 2.9.1 OTJOZONDJUPA REGION - HEALTH FACILITIES IN 2011



Health Facility Type	Total
Clinic	20
Health Center	3
Hospital	6
Rehabilitation Center	1

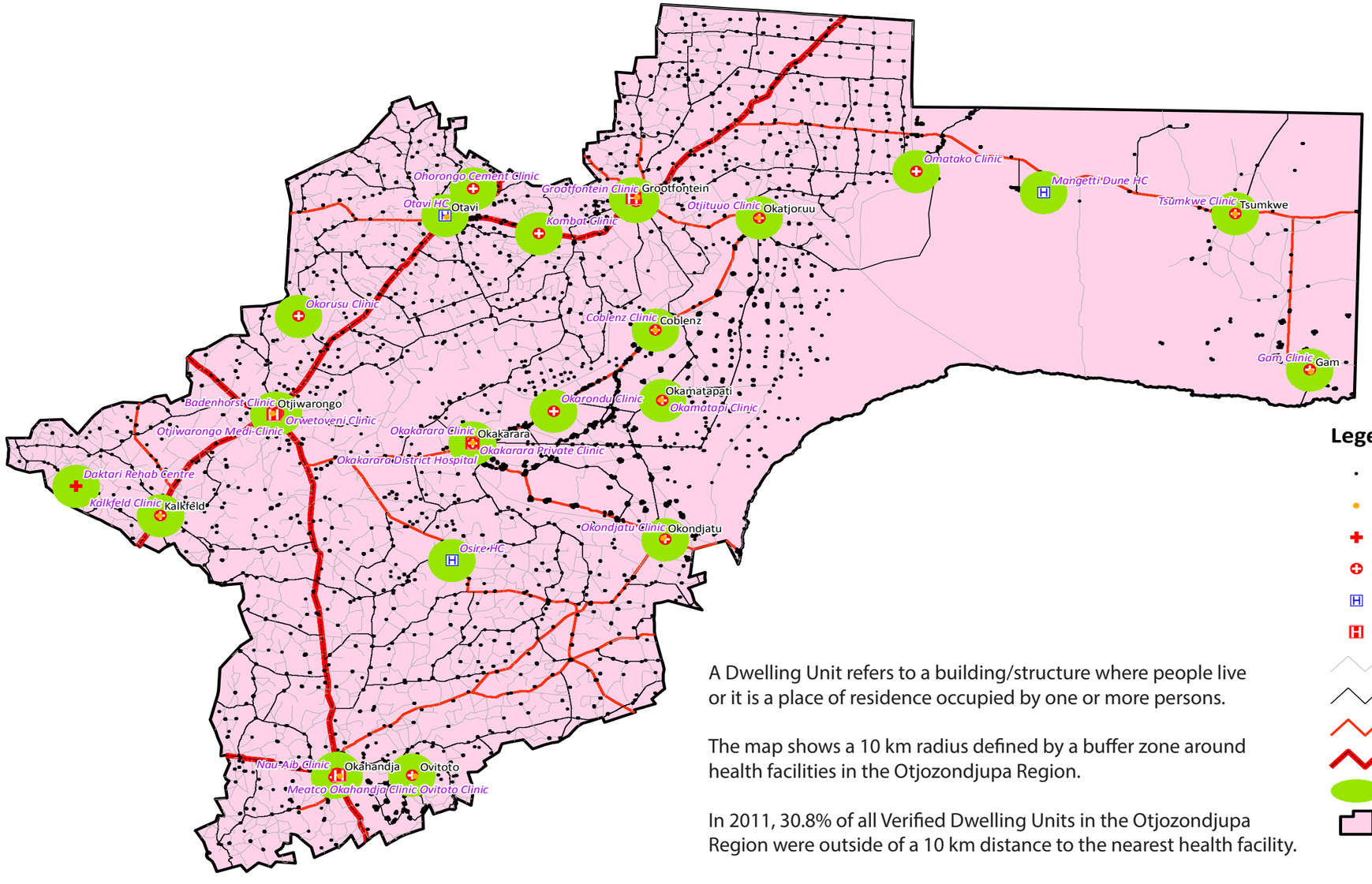
The map shows the location of health facilities and rehabilitation centres in the Otjozondjupa Region in 2011.

Legend

- Localities
- Rehab Centre
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Otjozondjupa Region

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.9.2 OTJOZONDJUPA REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



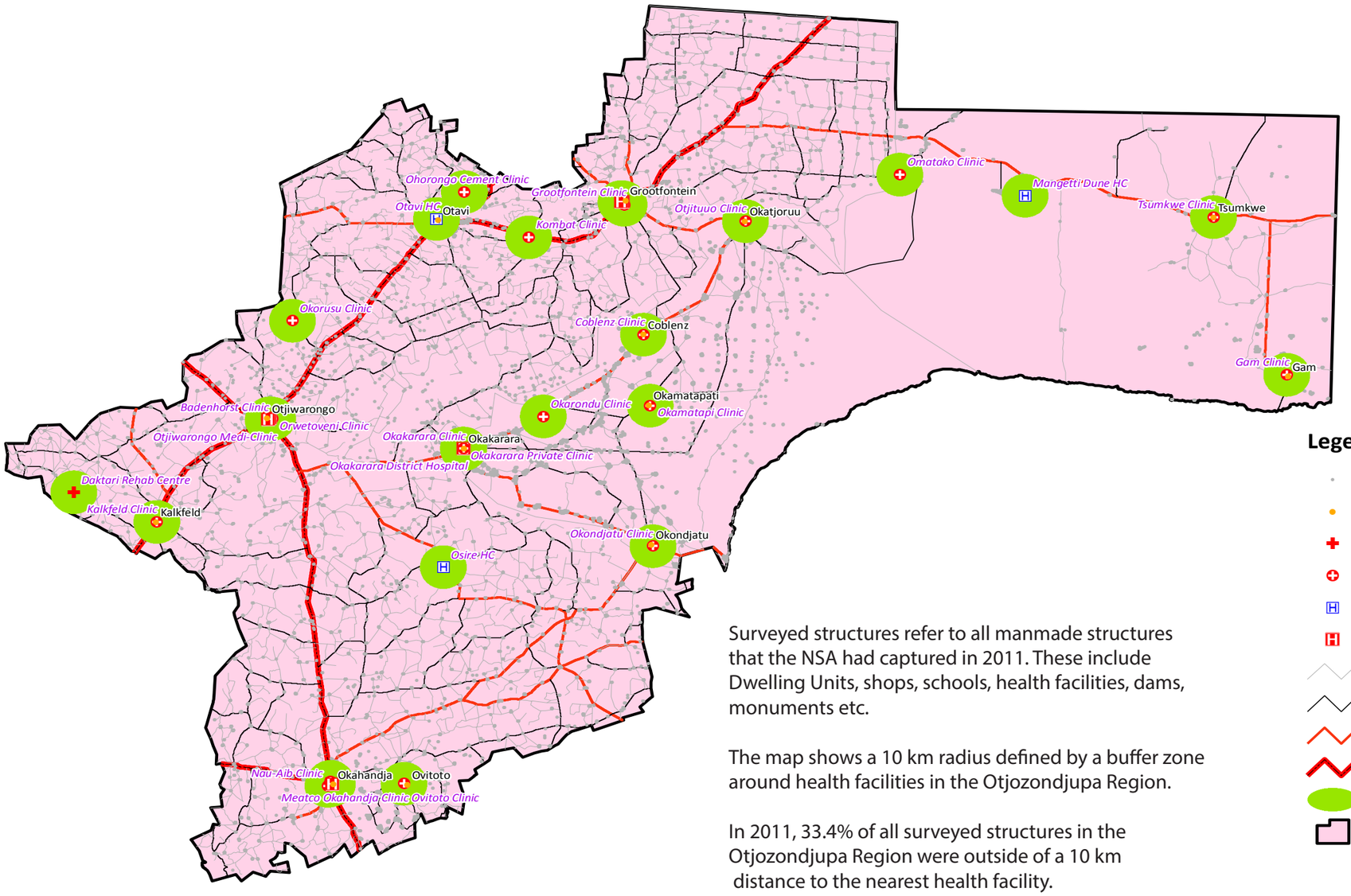
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Otjozondjupa Region.

In 2011, 30.8% of all Verified Dwelling Units in the Otjozondjupa Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.9.3 OTJOZONDJUPA REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



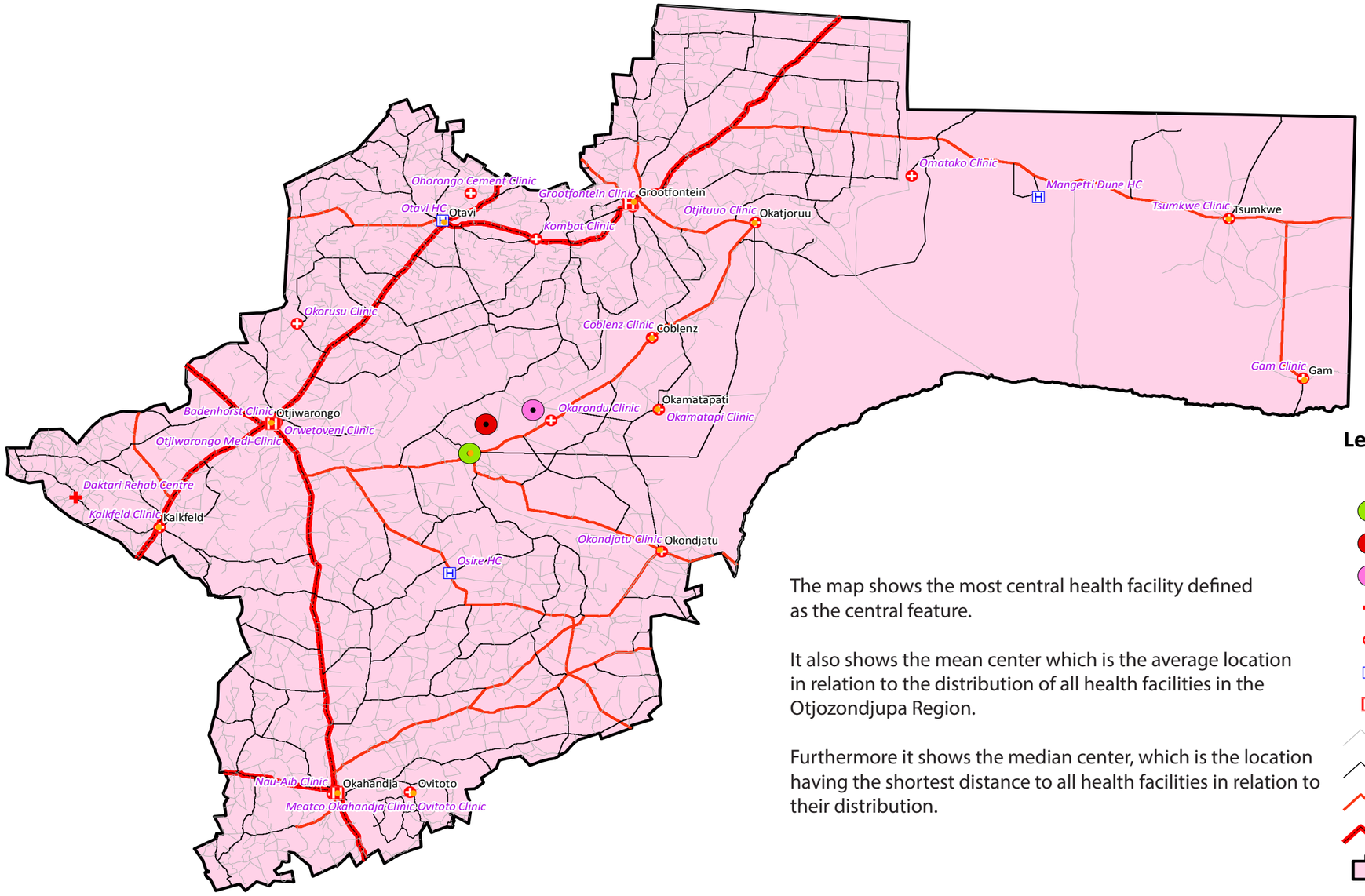
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Otjozondjupa Region.

In 2011, 33.4% of all surveyed structures in the Otjozondjupa Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.9.4 OTJOZONDJUPA REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Otjozondjupa Region.

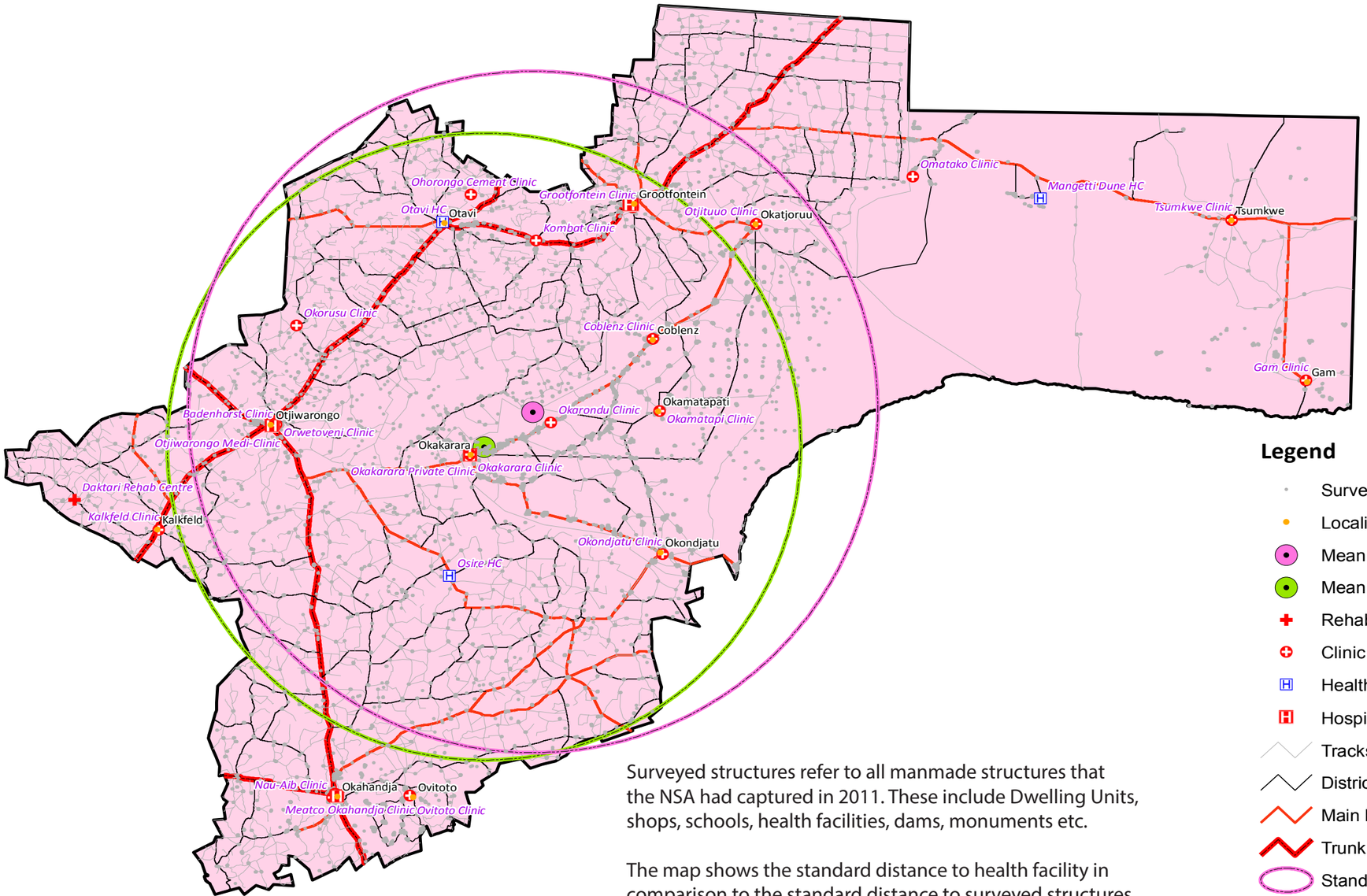
Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

Legend

- Localities
- Central Health Facilities
- Median Health Facilities
- Mean Health Facilities
- Rehab Centre
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Otjozondjupa Region

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.9.5 OTJOZONDJUPA REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



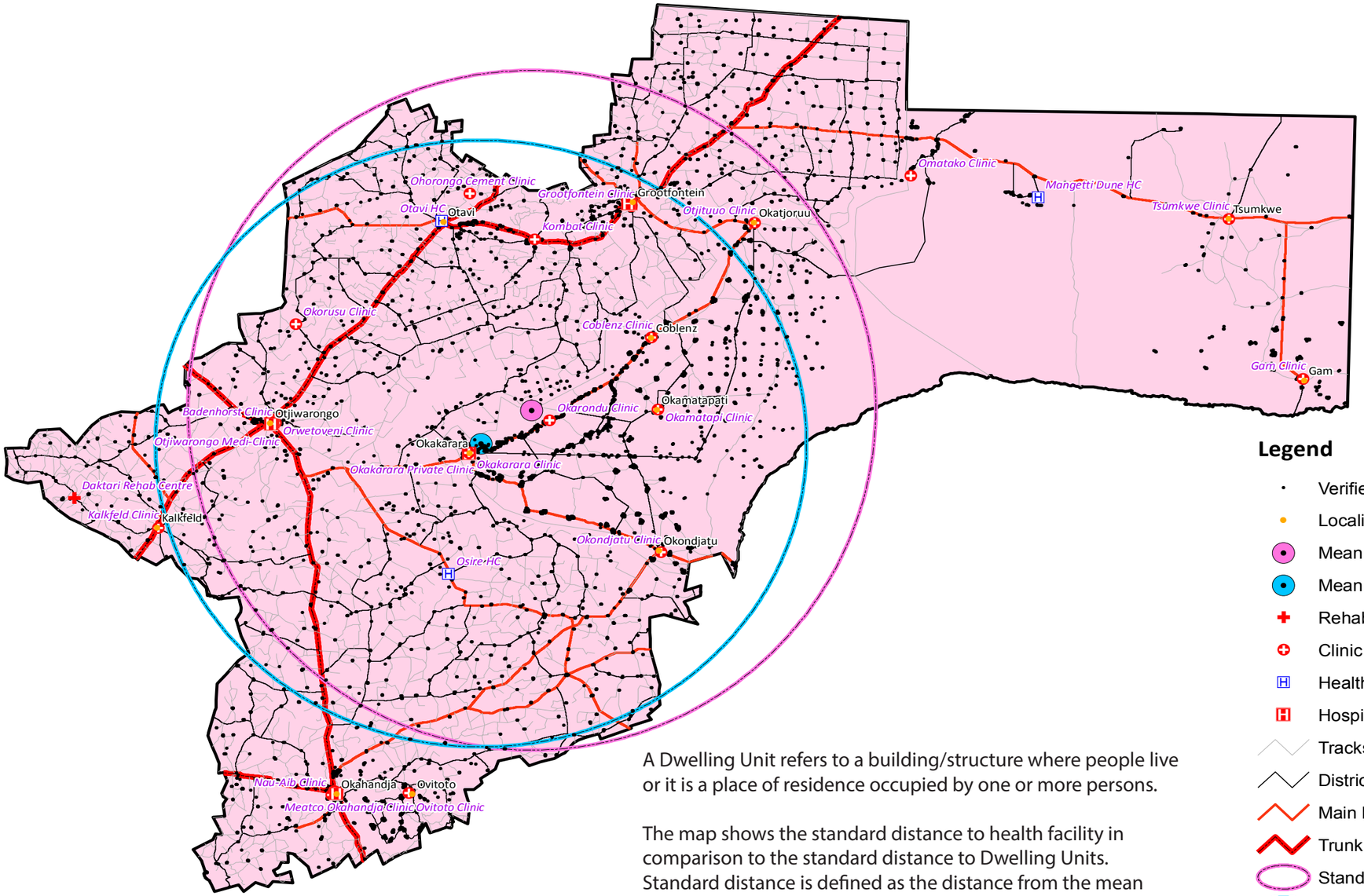
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 65.5% were within 142.4 km from the mean center.
Health Facilities: 66.7% were within 154.8 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.9.6 OTJOZONDJUPA REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



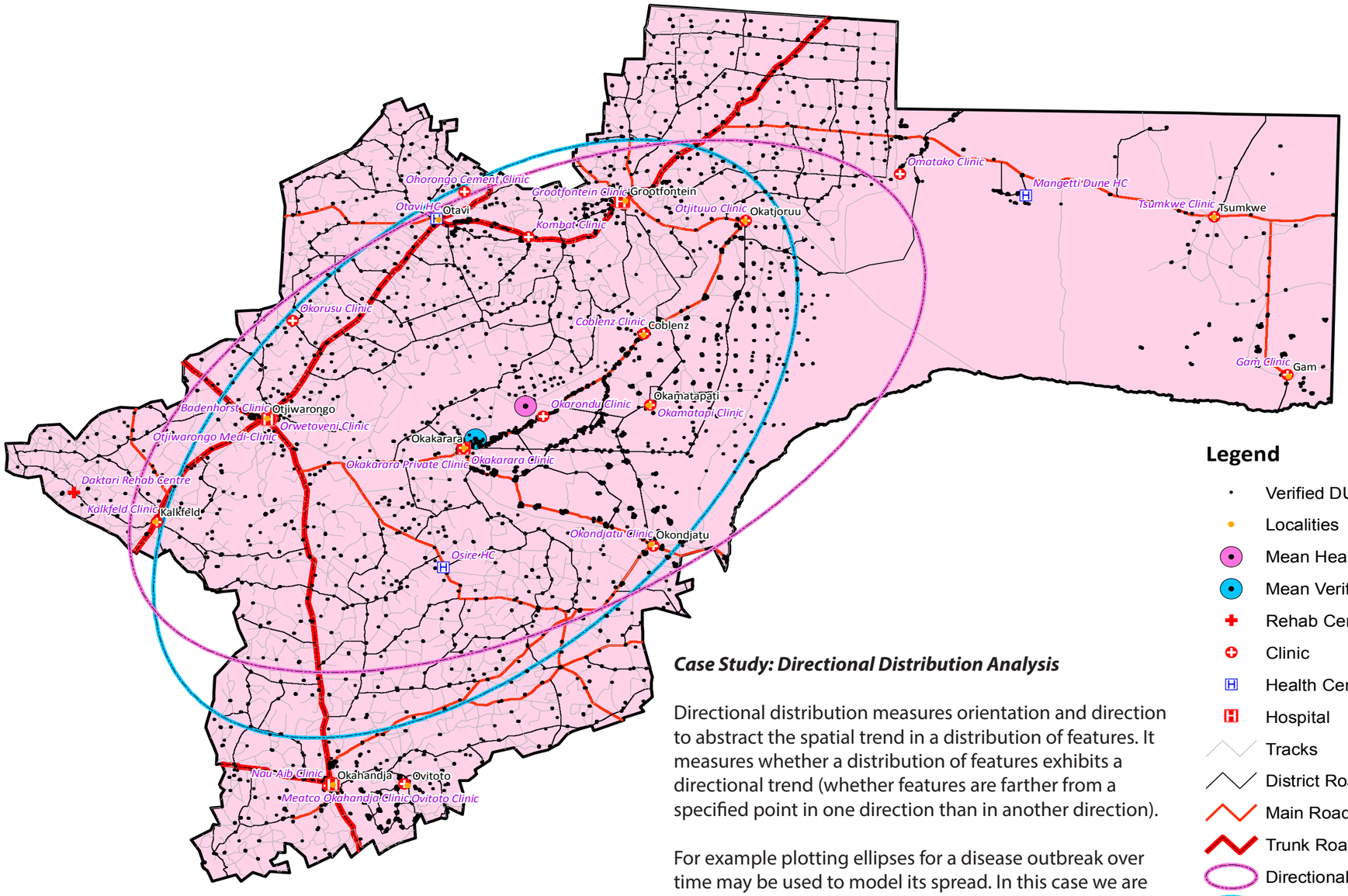
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to health facility in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 66.5 % were within 137.4 km from the mean centre.
Health Facilities: 66.7% were within 154.8 km from the mean

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.9.7 OTJOZONDJUPA REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of surveyed structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 45.2° (degrees), North West-South East
Health Facilities: 64.4° (degrees), North West- South East

Legend

- Verified DUs
- Localities
- Mean Health Facilities
- Mean Verified Dwelling Units
- Rehab Centre
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Directional Distribution Health Facilities
- Directional Distribution Verified Dwelling Units
- Otjozondjupa Region

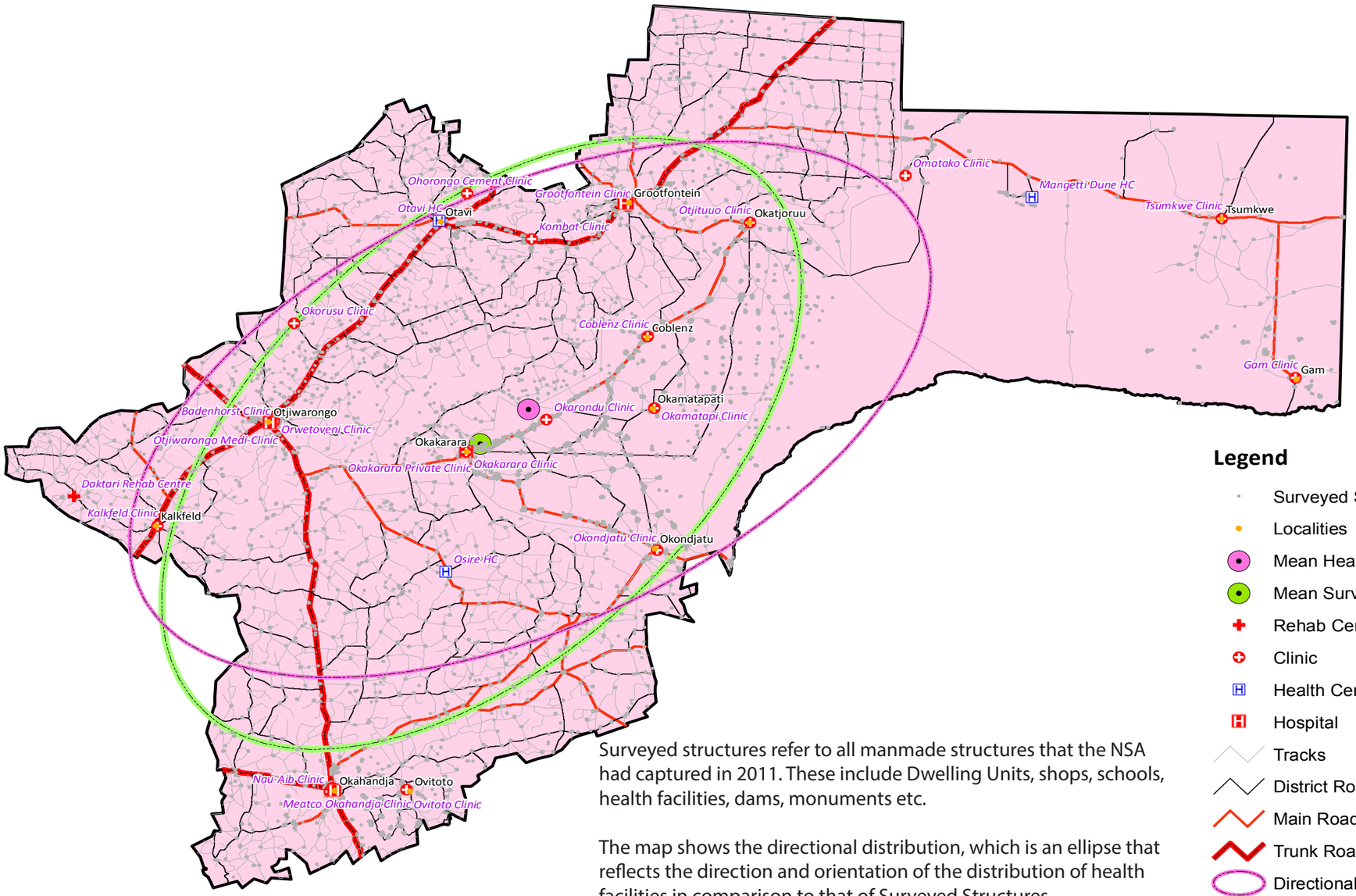
Case Study: Directional Distribution Analysis

Directional distribution measures orientation and direction to abstract the spatial trend in a distribution of features. It measures whether a distribution of features exhibits a directional trend (whether features are farther from a specified point in one direction than in another direction).

For example plotting ellipses for a disease outbreak over time may be used to model its spread. In this case we are comparing the orientation and direction of distribution of health facilities to those of the dwelling unit in Otjozondjupa region. Thus the map shows that the health facilities and dwelling unit are growing in the same direction and are distributed around the ellipse.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.9.8 OTJOZONDJUPA REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

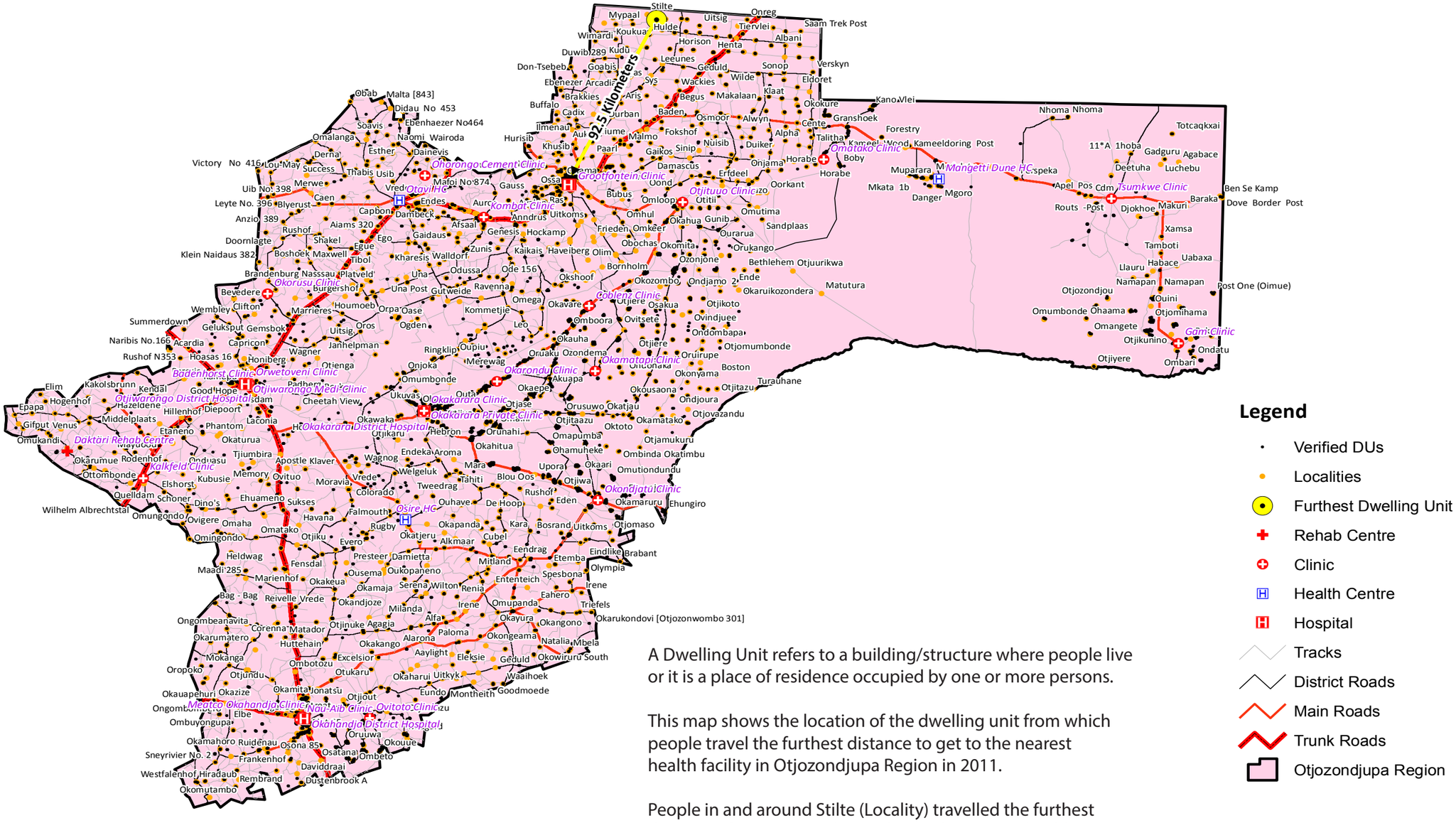
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Surveyed Structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 46.8° (degrees), North West-South East
Health Facilities: 64.4° (degrees), North West- South East

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.9.9 OTJOZONDJUPA REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



Legend

- Verified DUs
- Localities
- Furthest Dwelling Unit
- Rehab Centre
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Otjozondjupa Region

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

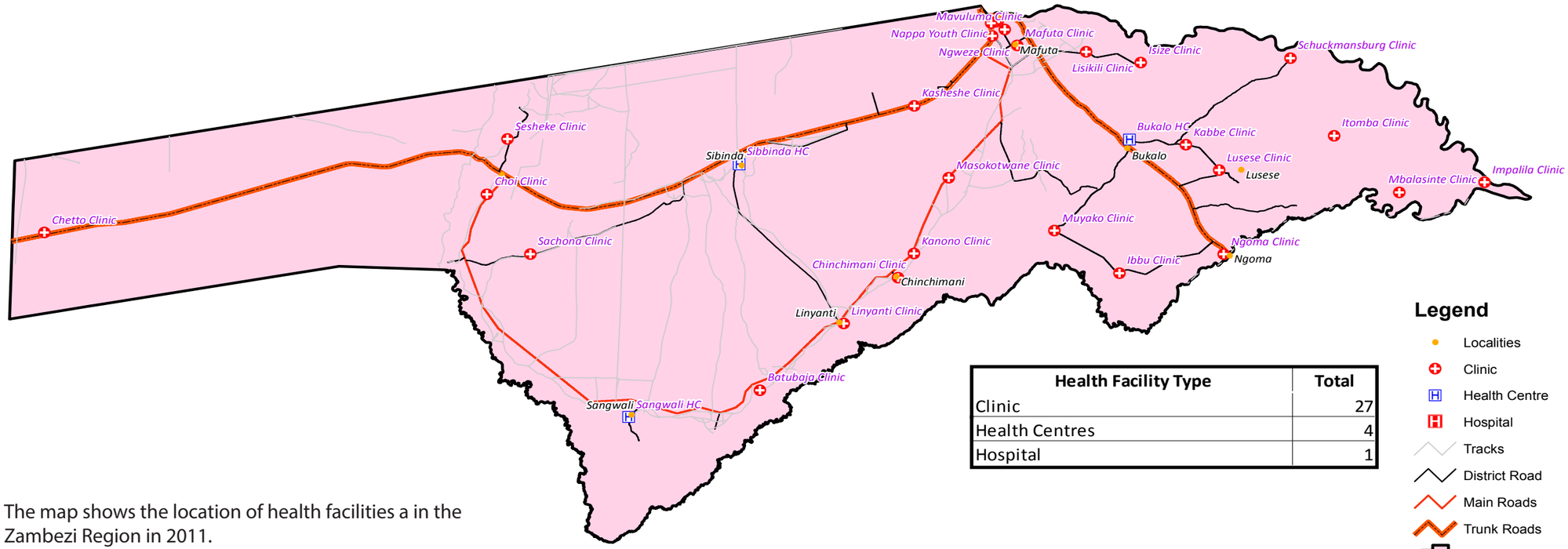
This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Otjozondjupa Region in 2011.

People in and around Stilte (Locality) travelled the furthest distance of approximately 92.5 km to the nearest health facility in Otjozondjupa Region in 2011, although they might have been served by a neighbouring region.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

HEALTH
-
ZAMBEZI

Figure 2.10.1 ZAMBEZI REGION - HEALTH FACILITIES IN 2011

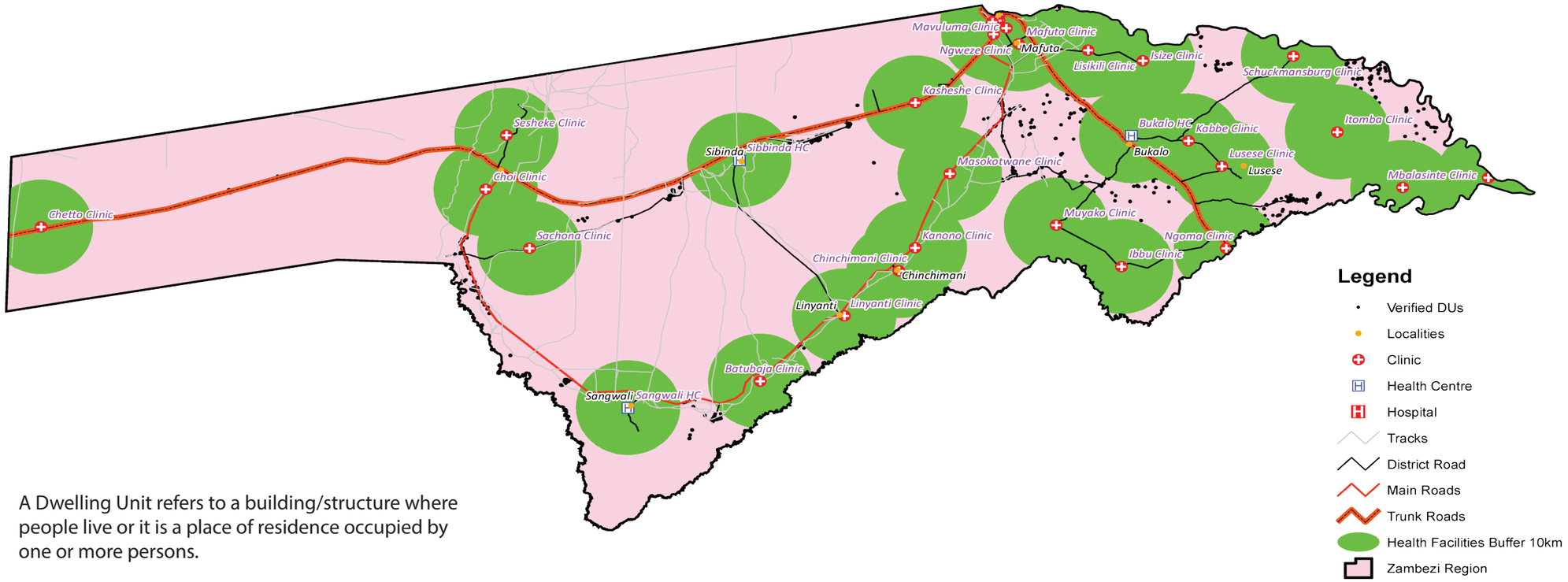


Health Facility Type	Total
Clinic	27
Health Centres	4
Hospital	1

The map shows the location of health facilities a in the Zambezi Region in 2011.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.10.2 ZAMBEZI REGION - DWELLING UNITS PROXIMITY TO HEALTH FACILITIES IN 2011



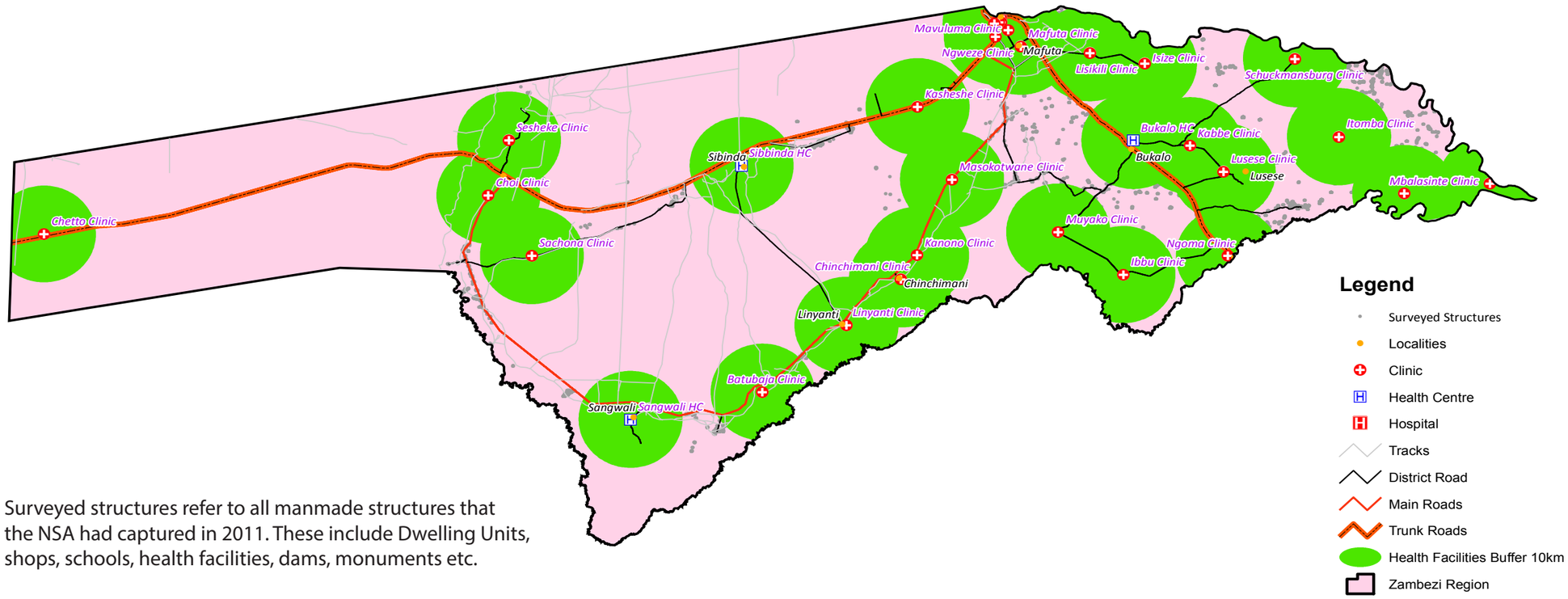
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Zambezi Region.

In 2011, 12.8% of all Verified Dwelling Units in the Zambezi Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Unit, Namibia Statistics Agency 2011

Figure 2.10.3 ZAMBEZI REGION – SURVEYED STRTUCTURES PROXIMITY TO HEALTH FACILITIES IN 2011



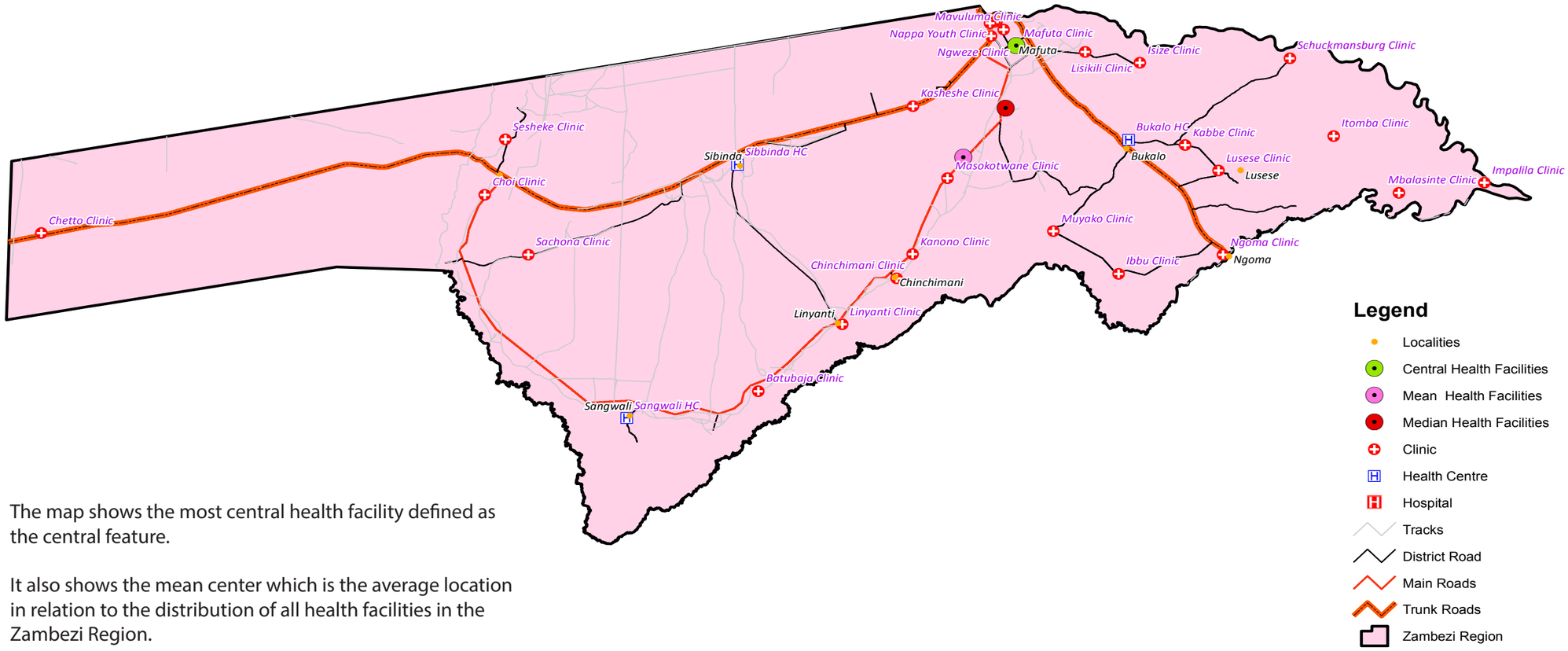
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows a 10 km radius defined by a buffer zone around health facilities in the Zambezi Region.

In 2011, 14.3% of all surveyed structures in the Zambezi Region were outside of a 10 km distance to the nearest health facility.

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.10.4 ZAMBEZI REGION – HEALTH FACILITIES CENTRAL FEATURE, MEDIAN & MEAN CENTER IN 2011



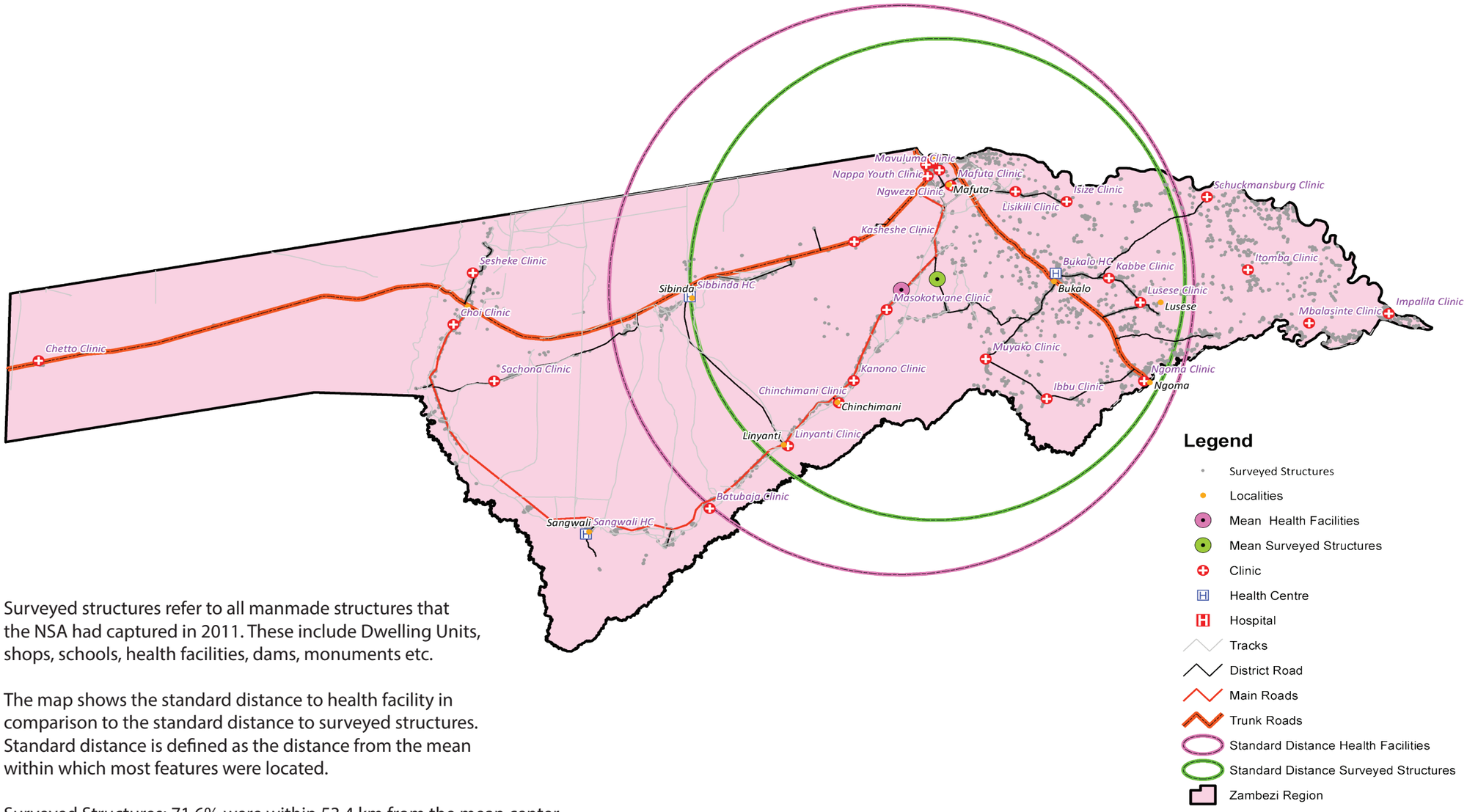
The map shows the most central health facility defined as the central feature.

It also shows the mean center which is the average location in relation to the distribution of all health facilities in the Zambezi Region.

Furthermore it shows the median center, which is the location having the shortest distance to all health facilities in relation to their distribution.

Source: Health Facilities, Ministry of Health and Social Services 2011.

Figure 2.10.5 ZAMBEZI REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF SURVEYED STRUCTURES IN 2011



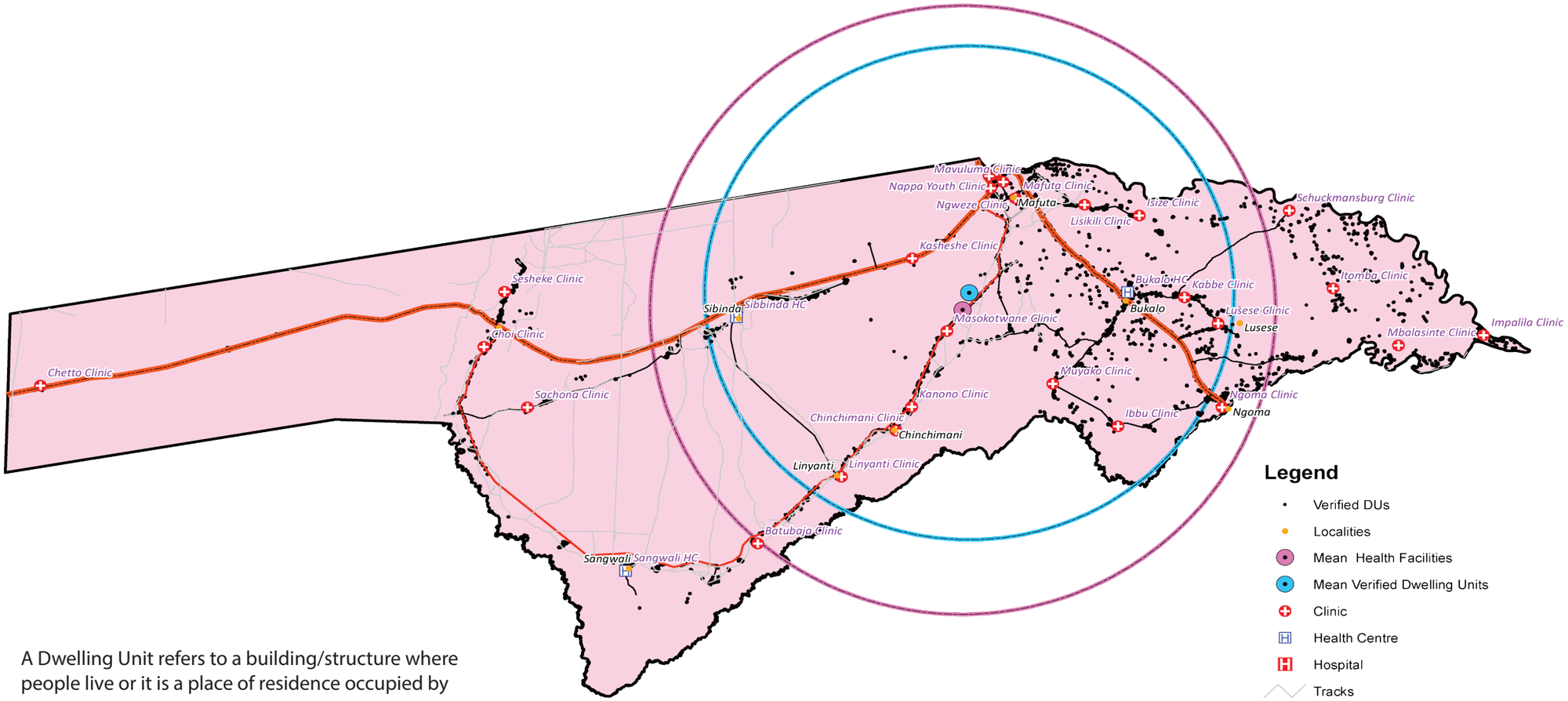
Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

The map shows the standard distance to health facility in comparison to the standard distance to surveyed structures. Standard distance is defined as the distance from the mean within which most features were located.

Surveyed Structures: 71.6% were within 53.4 km from the mean center.
Health Facilities: 68.8% were within 63.2 km from the mean center.

Source: Schools, Ministry of Health 2007. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.10.6 ZAMBEZI REGION – STANDARD DISTANCE OF HEALTH FACILITIES VERSUS STANDARD DISTANCE OF DWELLING UNITS IN 2011



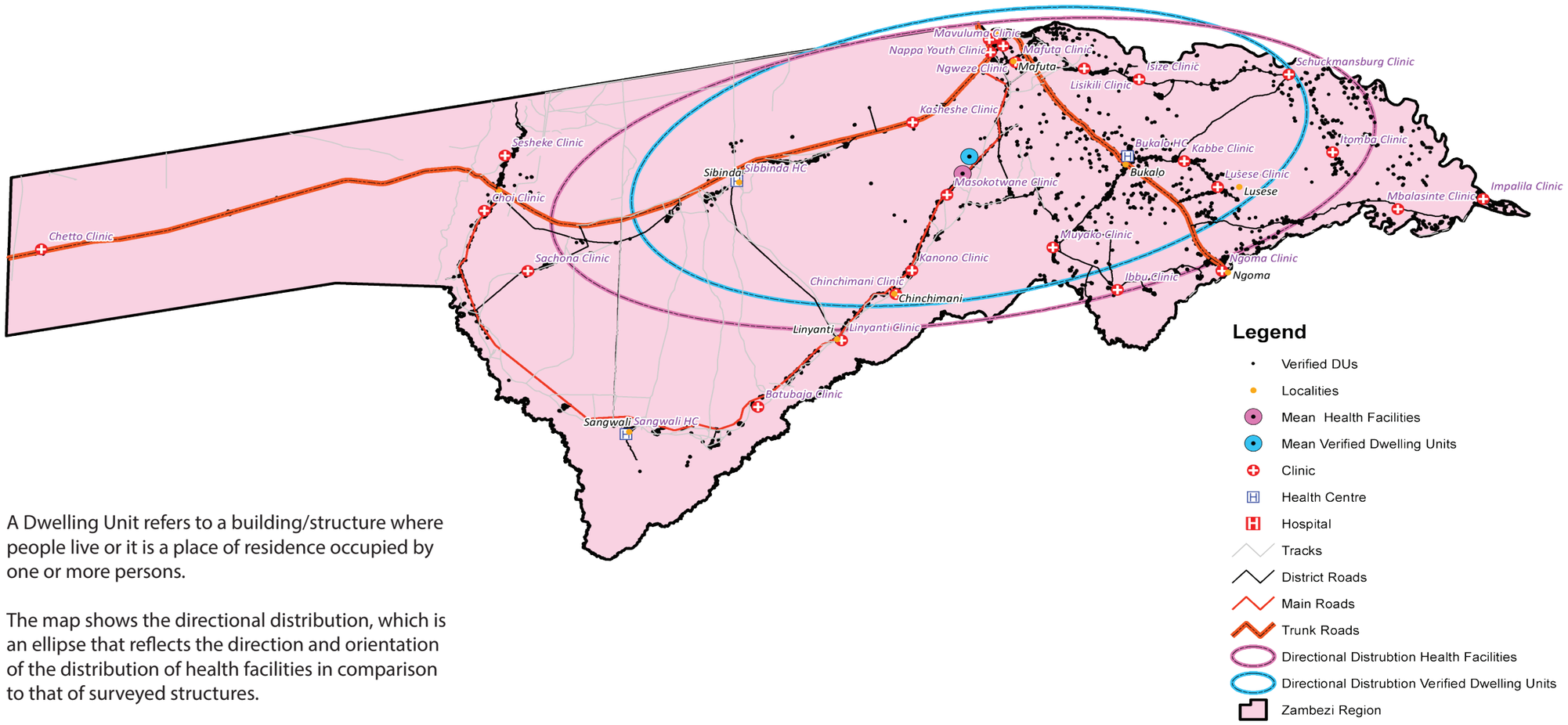
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the standard distance to health facility in comparison to the standard distance to Dwelling Units. Standard distance is defined as the distance from the mean within which most features were located.

Dwelling Units: 72.7% were within 51.3 km from the mean centre.
Health Facilities: 68.8% were within 63.2 km from the mean center.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011

Figure 2.10.7 ZAMBEZI REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF DWELLING UNITS IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

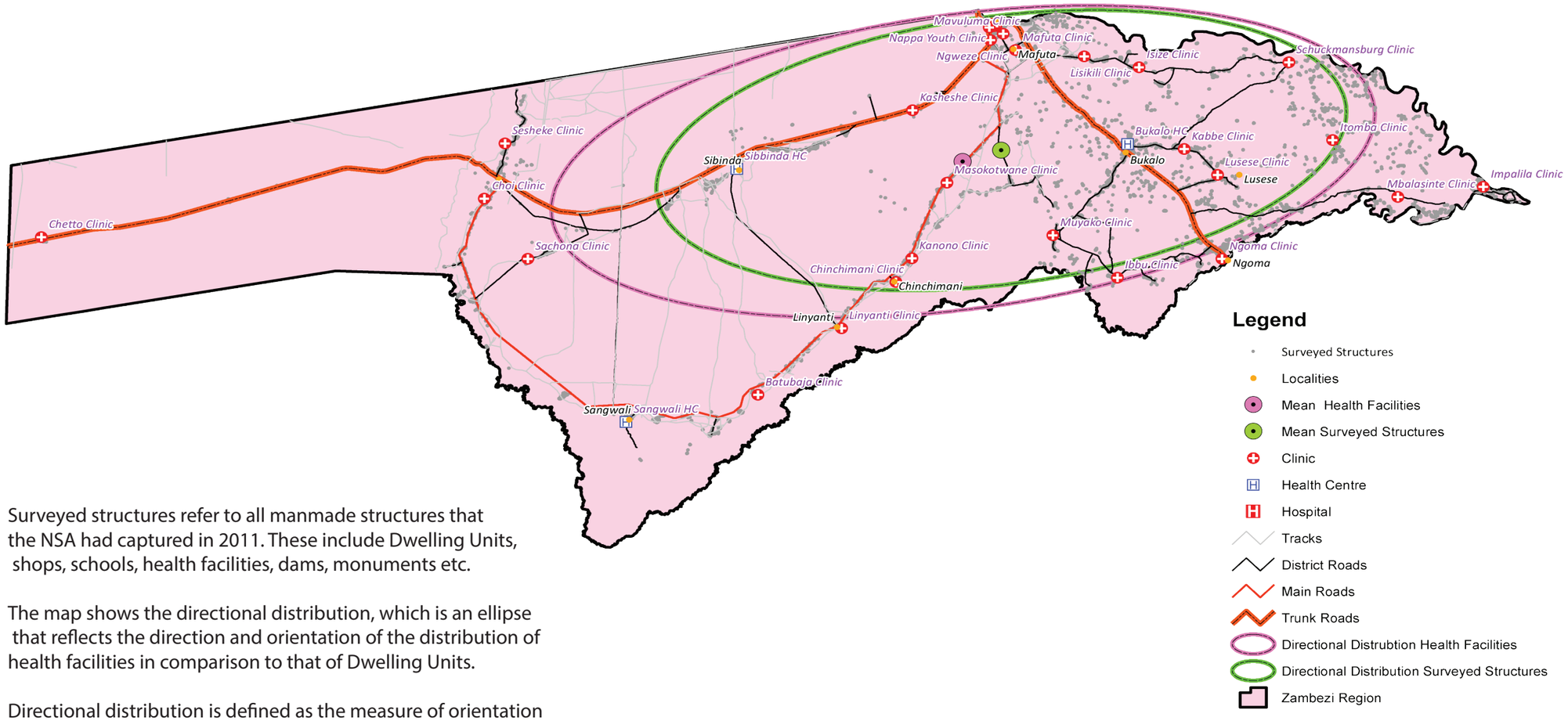
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of surveyed structures.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Dwelling Units: 79.9° (degrees), West-East
Health Facilities: 80.0° ° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

Figure 2.10.8 ZAMBEZI REGION – DIRECTIONAL DISTRIBUTION OF HEALTH FACILITIES VERSUS DIRECTIONAL DISTRIBUTION OF SURVEYED STRUCTURES IN 2011



Surveyed structures refer to all manmade structures that the NSA had captured in 2011. These include Dwelling Units, shops, schools, health facilities, dams, monuments etc.

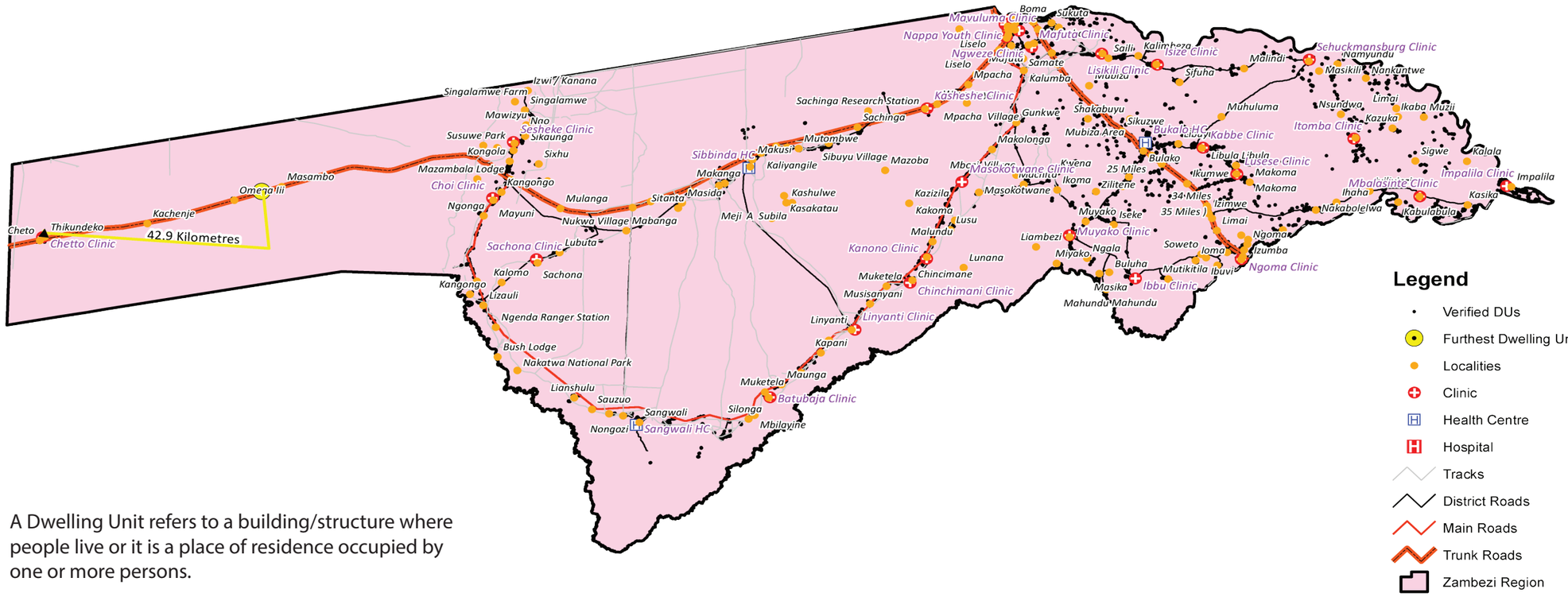
The map shows the directional distribution, which is an ellipse that reflects the direction and orientation of the distribution of health facilities in comparison to that of Dwelling Units.

Directional distribution is defined as the measure of orientation and direction that indicates the spatial trends in a distribution of features.

Surveyed Structures: 80.2° (degrees), West-East
Health Facilities: 80.0° (degrees), West-East

Source: Health Facilities, Ministry of Health and Social Services 2011. Surveyed Structures, Namibia Statistics Agency 2011.

Figure 2.10.9 ZAMBEZI REGION – FURTHEST DWELLING UNIT FROM NEAREST HEALTH FACILITY IN 2011



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

This map shows the location of the dwelling unit from which people travel the furthest distance to get to the nearest health facility in Zambezi Region in 2011.

People in and around Omega iii and Masambo travelled the furthest distance of approximately 42.9 km to the nearest health facility in Zambezi Region in 2011.

Source: Health Facilities, Ministry of Health and Social Services 2011. Dwelling Units, Namibia Statistics Agency 2011.

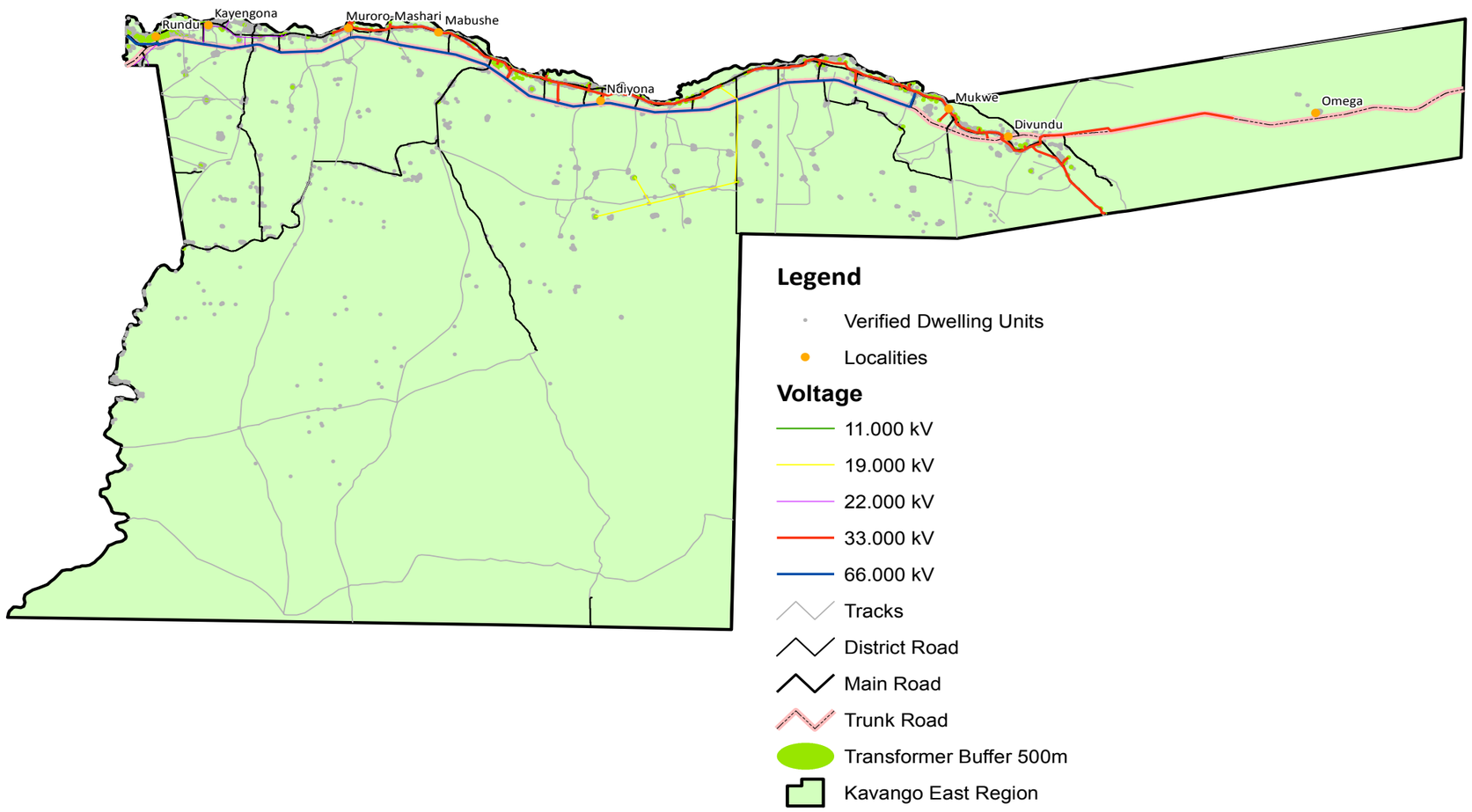
CHAPTER 3

ENERGY

ENERGY

- KAVANGO EAST

Figure 3.1.1 KAVANGO EAST REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



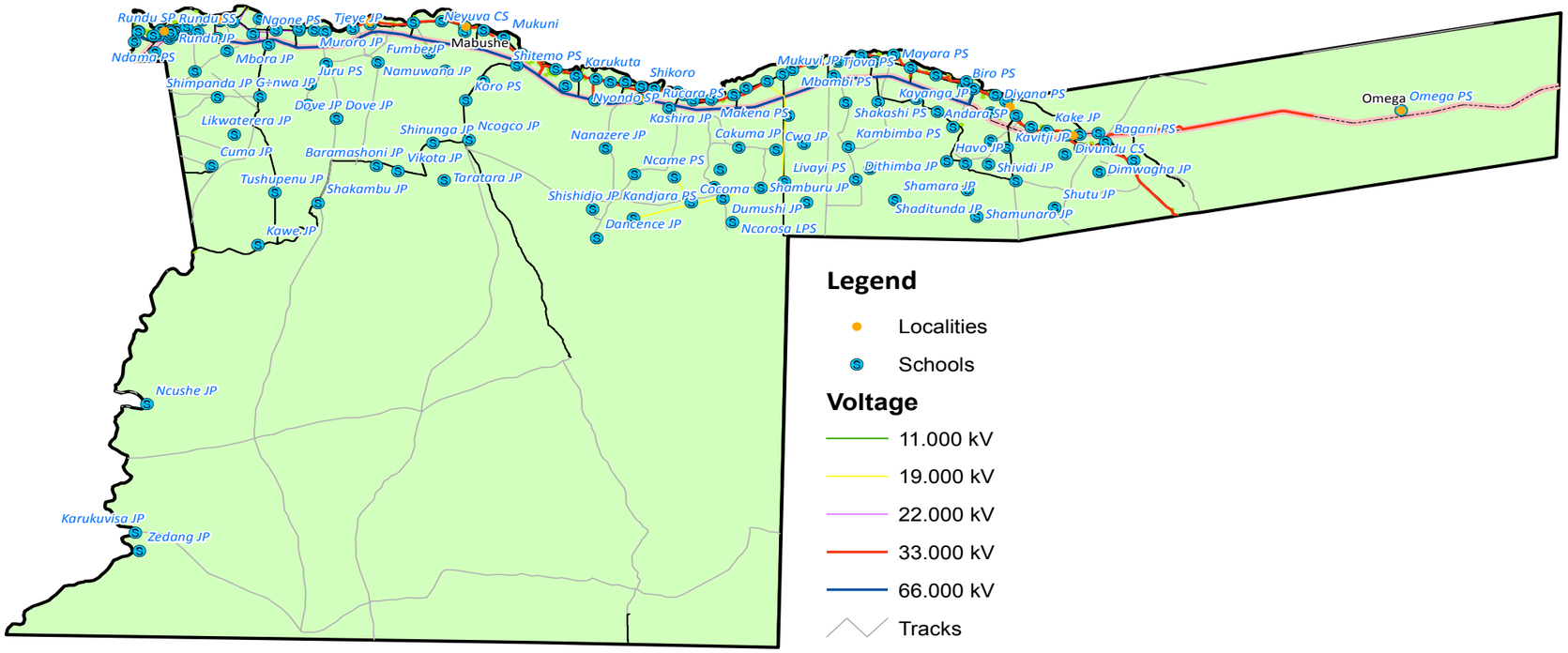
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Kavango East Region in 2010.

In 2010, 58.2% of the health facilities in Kavango East region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.1.2 KAVANGO EAST REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010

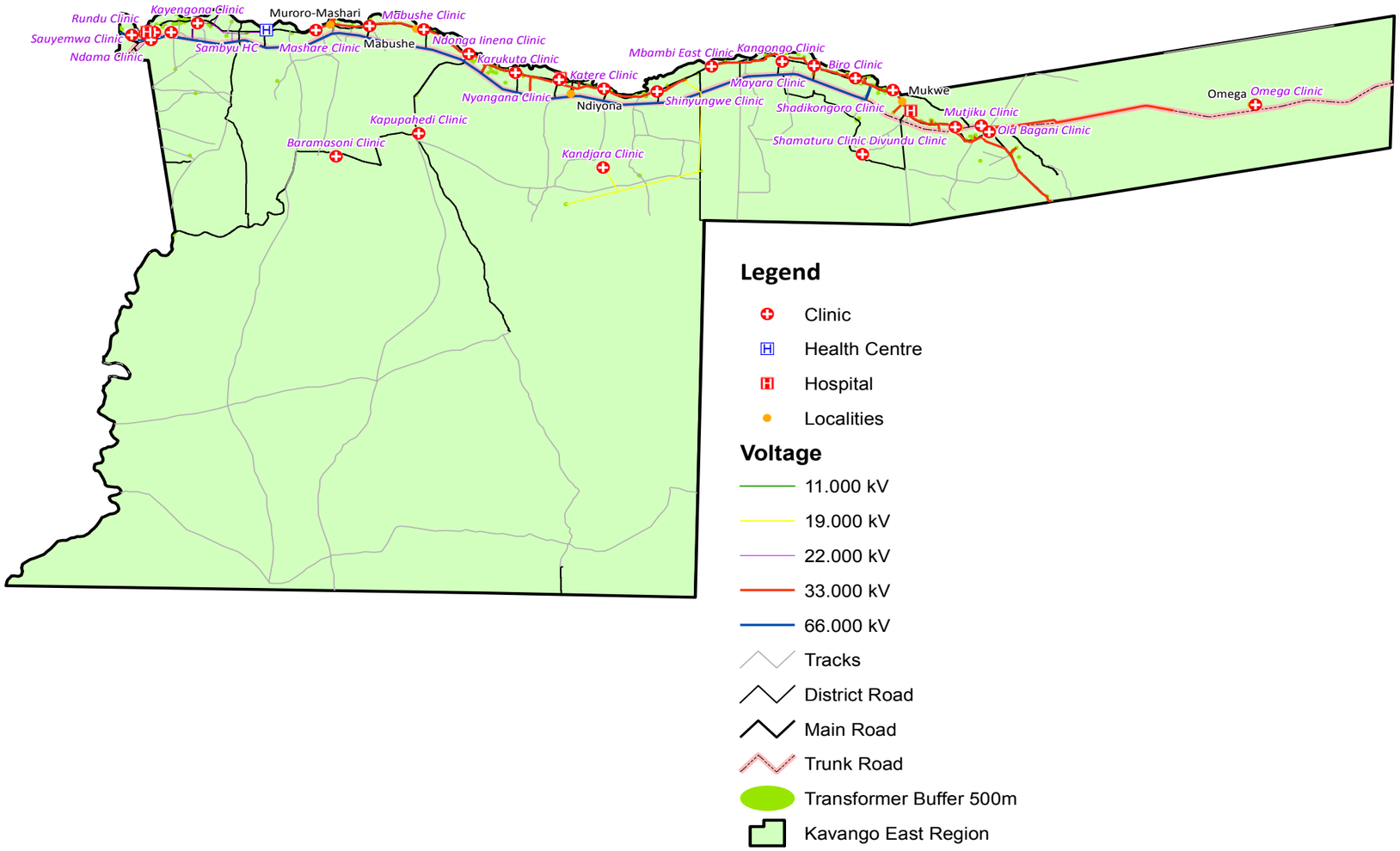


The map shows location of schools in relation to the national medium voltage power grid for the Kavango East Region in 2010.

In 2010, 45.0% of the Schools in Kavango East Region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.1.3 KAVANGO EAST REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010

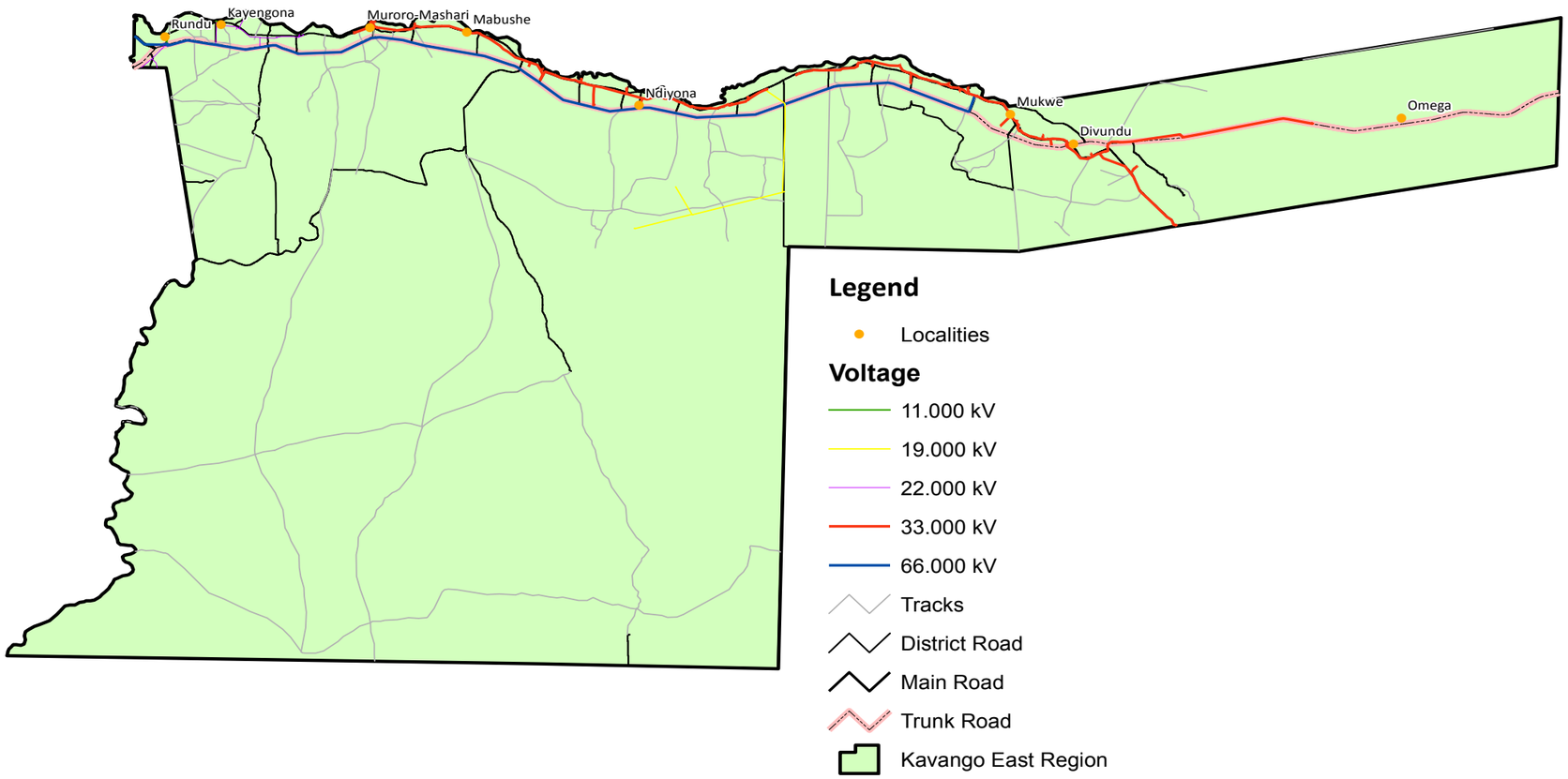


The map shows location of health facilities in relation to the national medium voltage power grid for the Kavango East Region in 2010.

In 2010, 11.7% of the health facilities in Kavango East region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.1.4 KAVANGO EAST REGION – NATIONAL POWER GRID IN 2010



The map shows the national medium voltage power grid for the Kavango East Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

ENERGY

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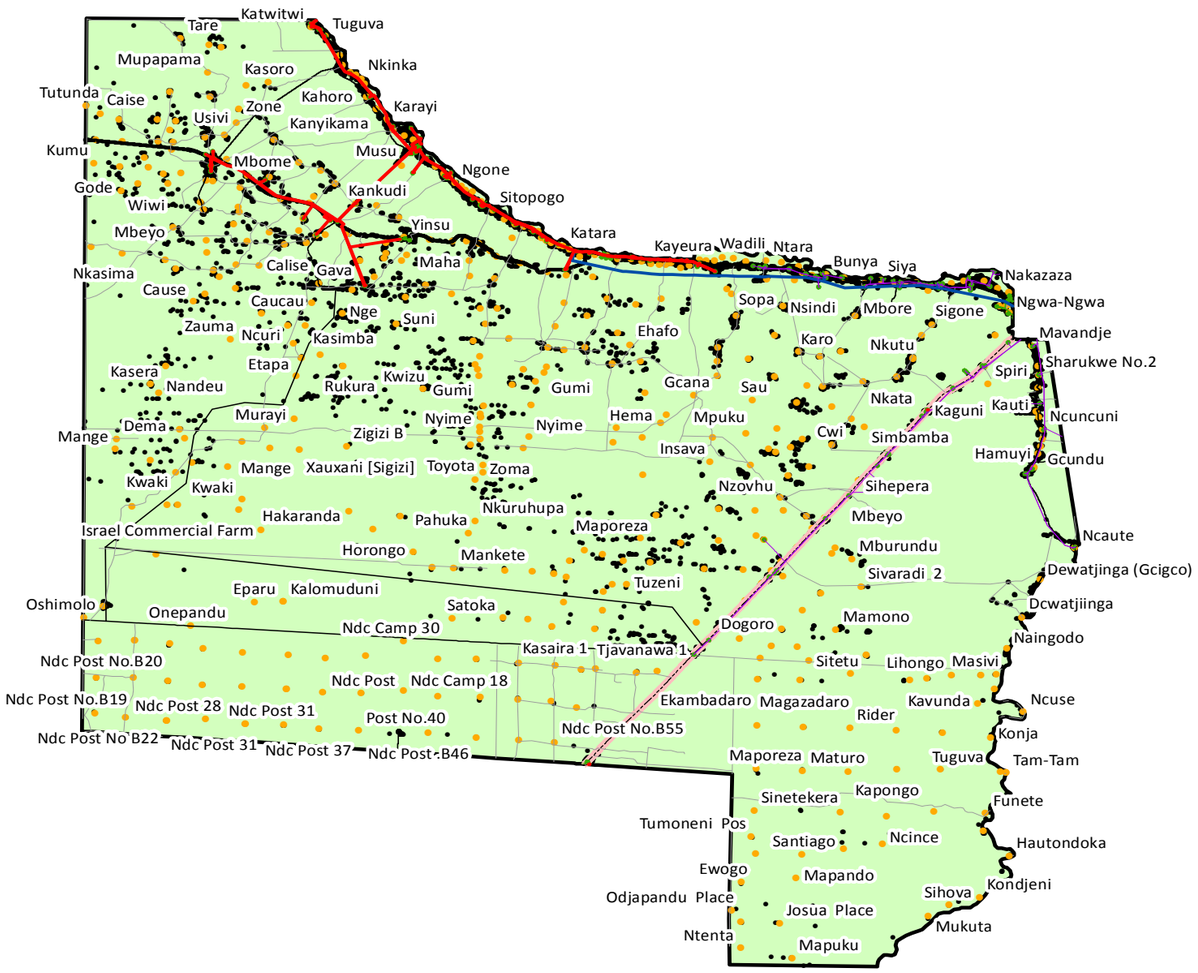
KAVANGO WEST

Figure 3.2.1 KAVANGO WEST REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



Legend

- Verified Dwelling Units
- Localities

Voltage

- 11.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Kavango West Region

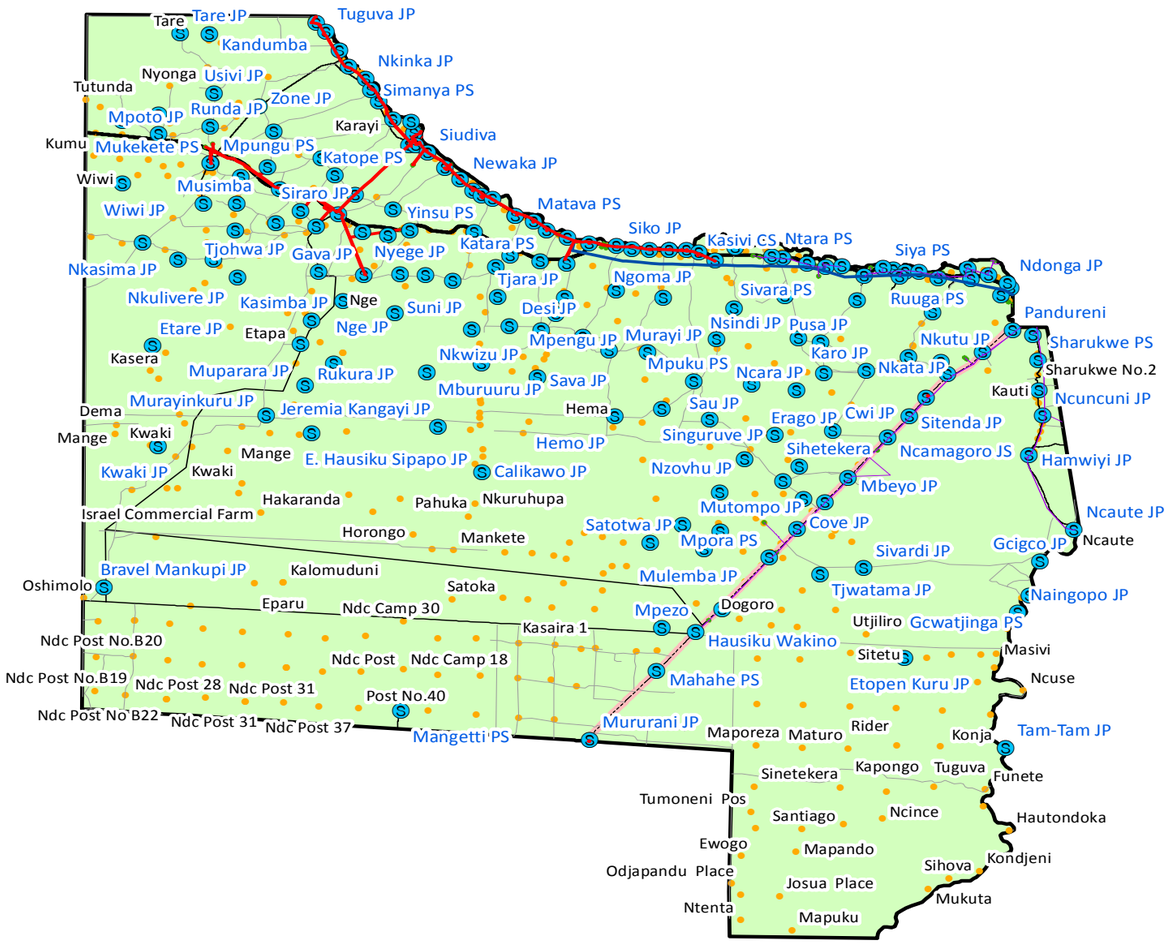
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Kavango West Region in 2010.

In 2010, 74.8% of the dwelling units in Kavango West region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.2.2 KAVANGO WEST REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010



Legend

- Localities
- School

Voltage

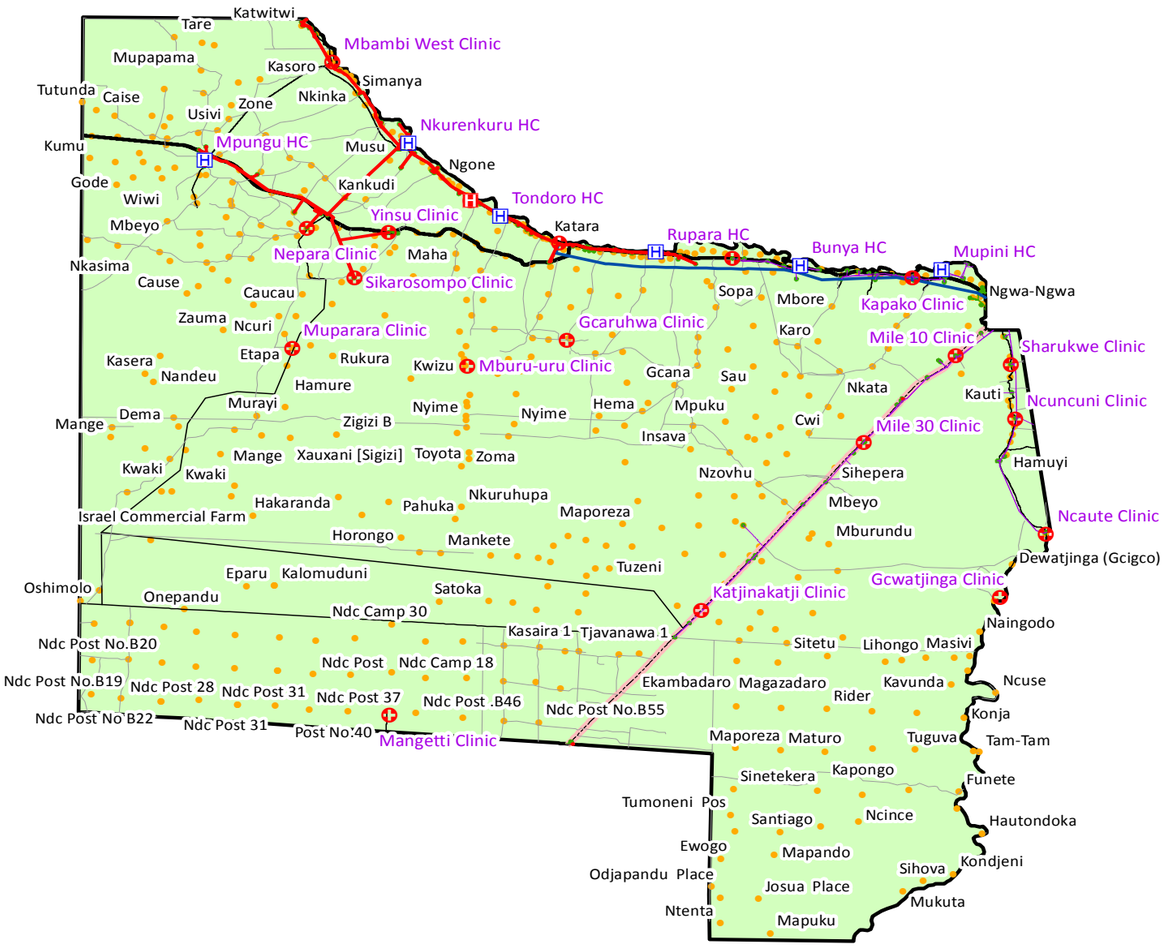
- 11.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Kavango West Region

The map shows location of schools in relation to the national medium voltage power grid for the Kavango West Region in 2010.

In 2010, 66.5% of the schools in Kavango West Region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.2.3 KAVANGO WEST REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010



Legend

- Localities
- Clinic
- Health Centre
- Hospital

Voltage

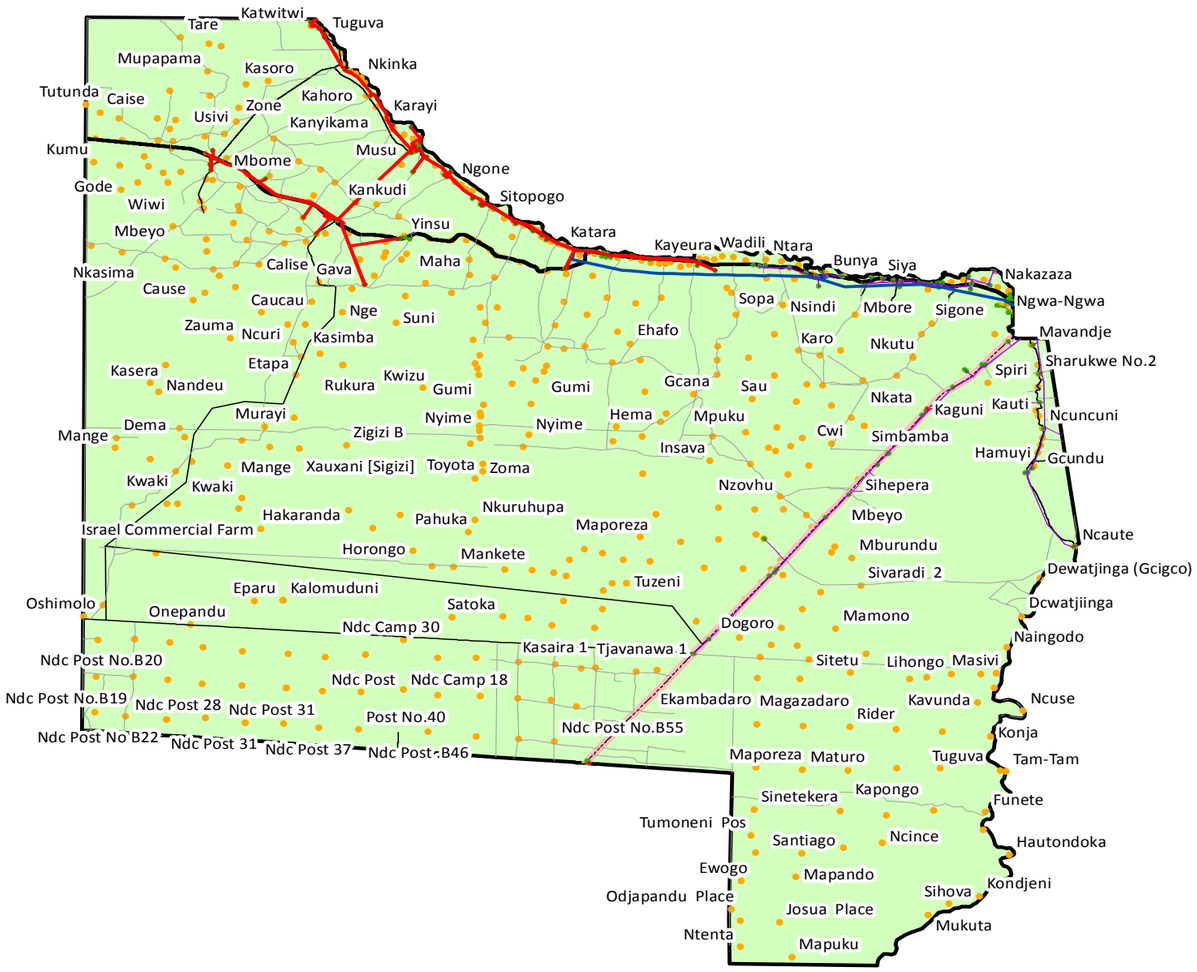
- 11.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Kavango West Region

The map shows location of health facilities in relation to the national medium voltage power grid for the Kavango West Region in 2010.

In 2010, 30.7% of the health facilities in Kavango West region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.2.4 KAVANGO WEST REGION – NATIONAL POWER GRID IN 2010



Legend

- Localities

Voltage

- 11.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Kavango West Region

The map shows the national medium voltage power grid for the Kavango West Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

ENERGY

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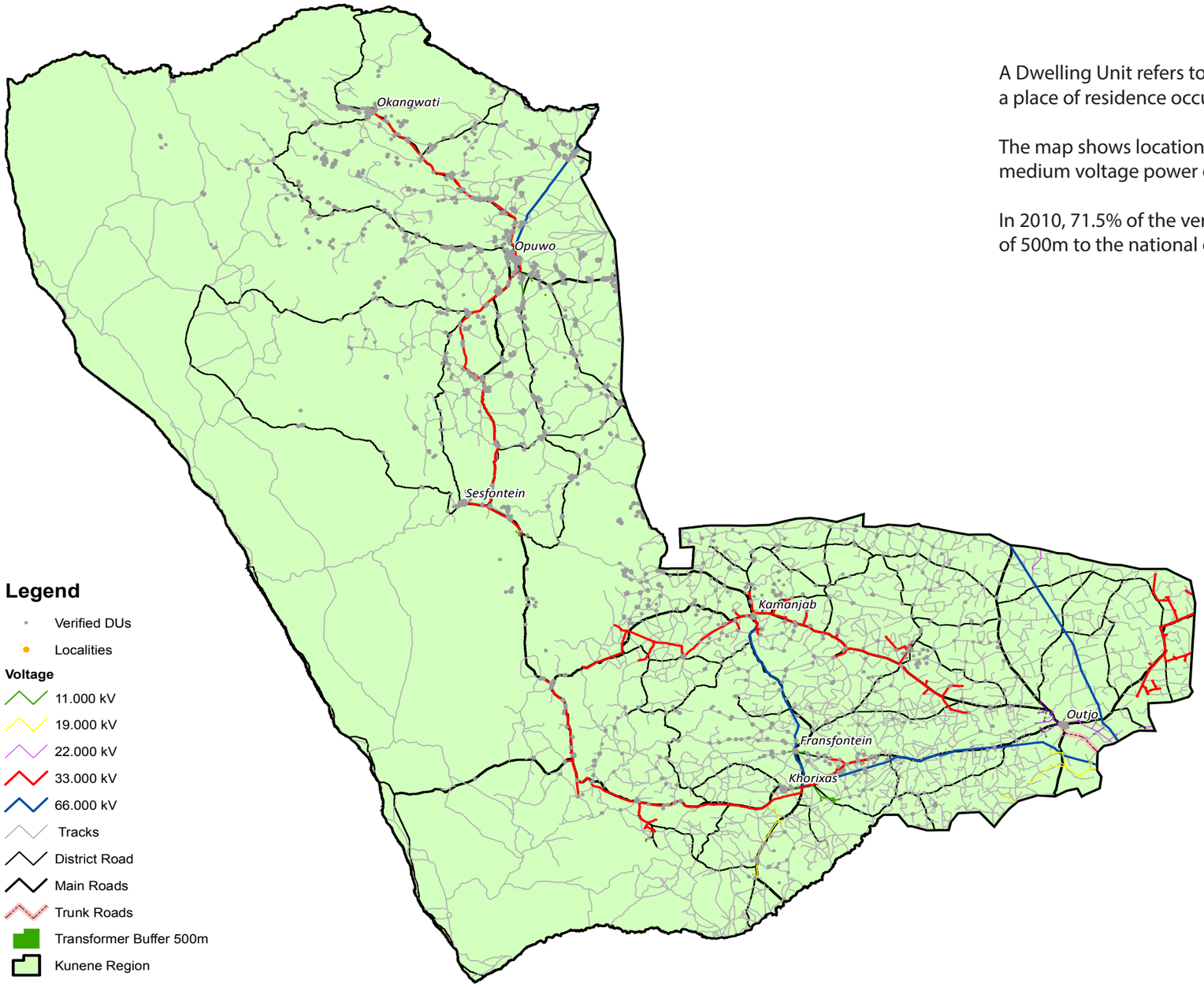
KUNENE

Figure 3.3.1 KUNENE REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



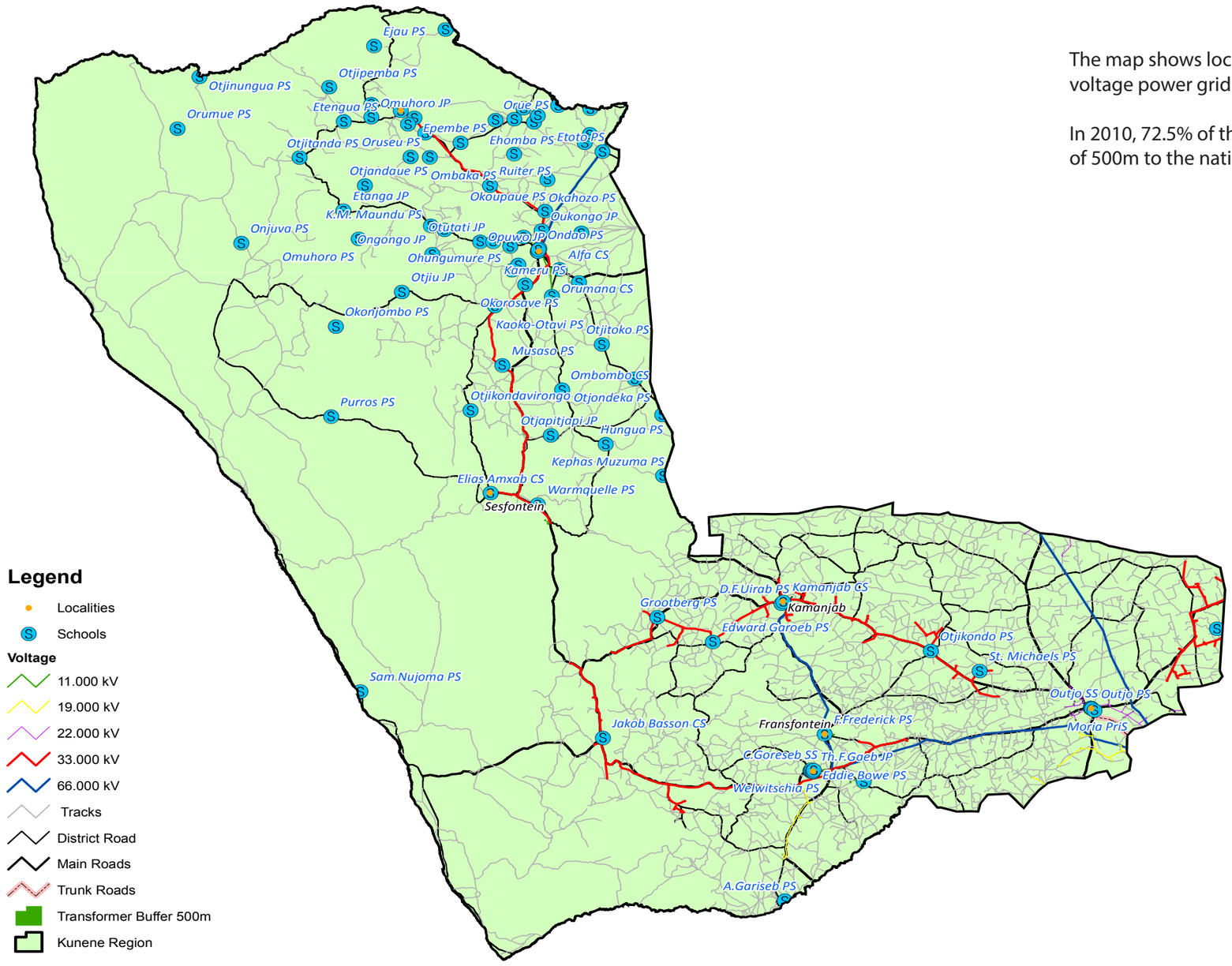
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Kunene Region in 2010.

In 2010, 71.5% of the verified Dwelling Units in Kunene region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.3.2 KUNENE REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010

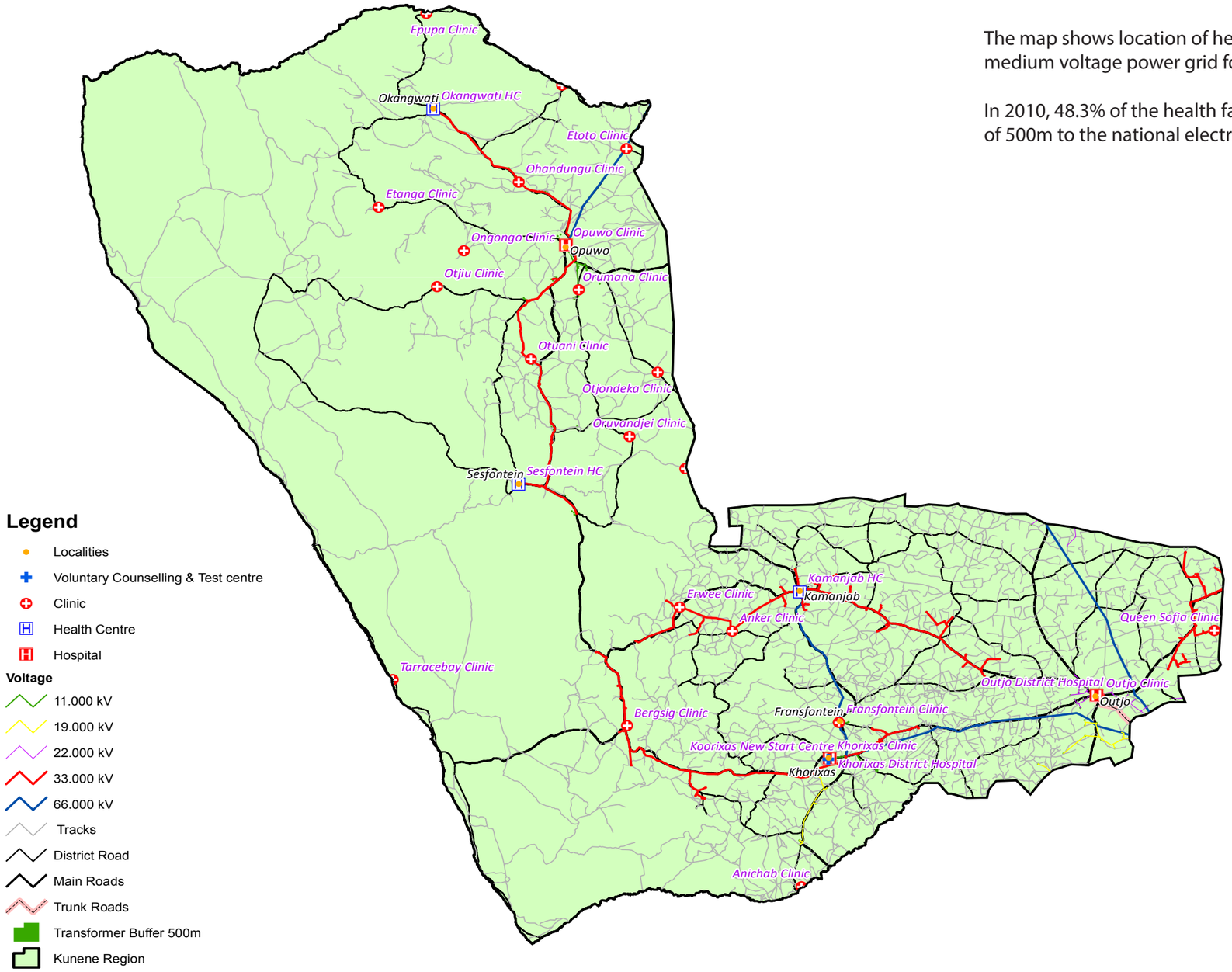


The map shows location of schools in relation to the national medium voltage power grid for the Kunene Region in 2010.

In 2010, 72.5% of the schools in Kunene Region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.3.3 KUNENE REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010

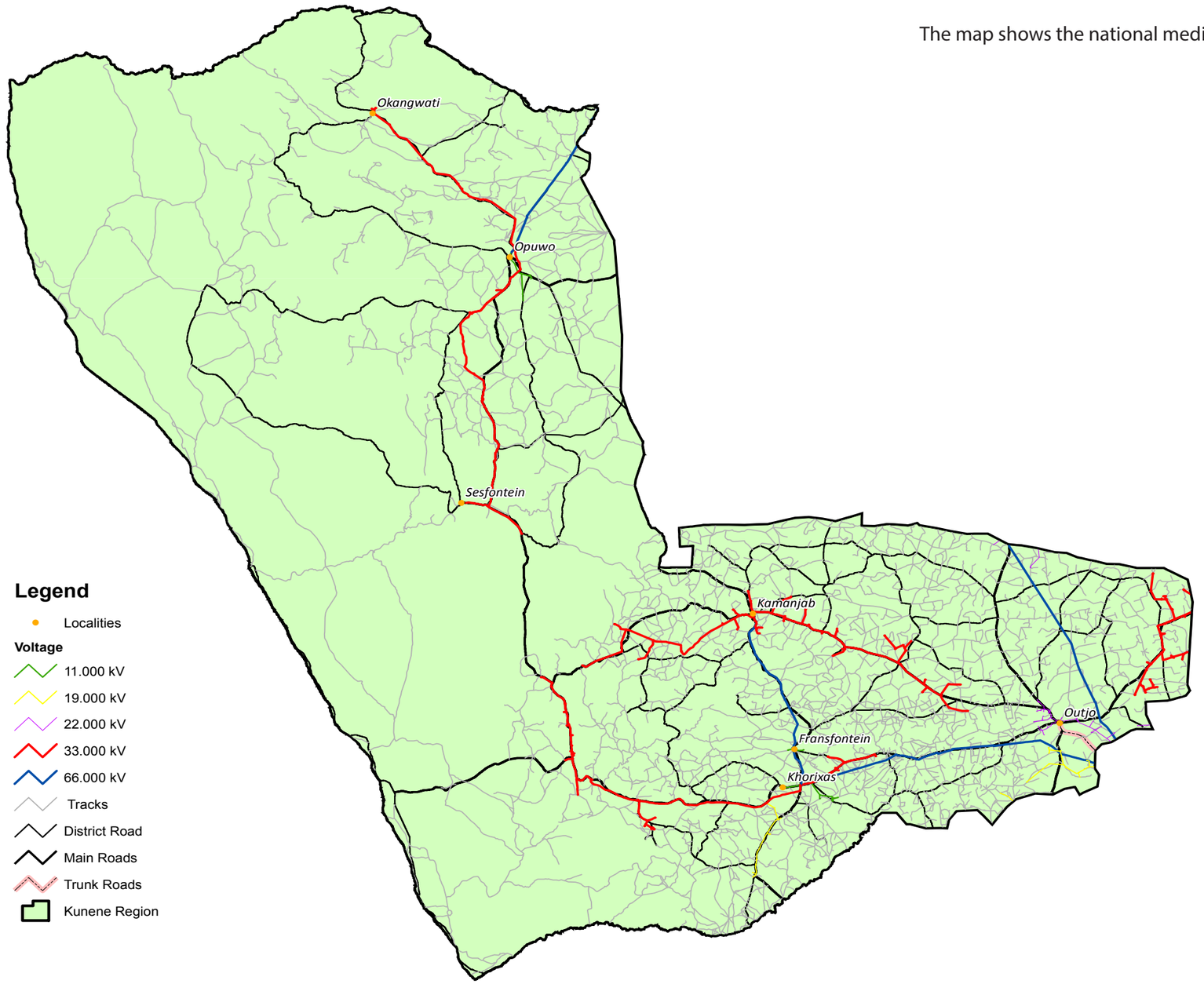


The map shows location of health facilities in relation to the national medium voltage power grid for the Kunene Region in 2010.

In 2010, 48.3% of the health facilities in Kunene region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.3.4 KUNENE REGION – NATIONAL POWER GRID IN 2010



The map shows the national medium voltage power grid for the Kunene Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

ENERGY

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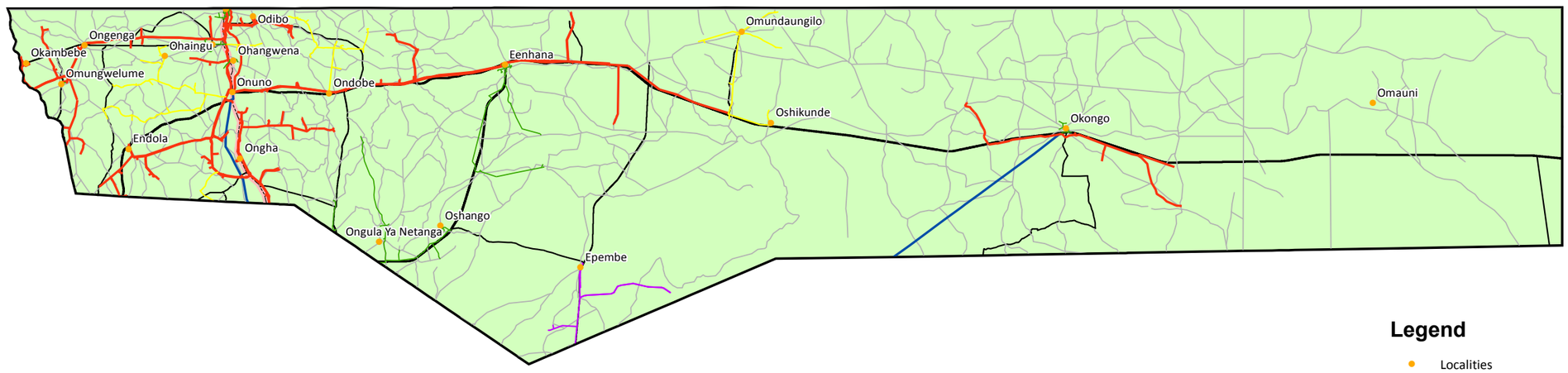
OHANGWENA

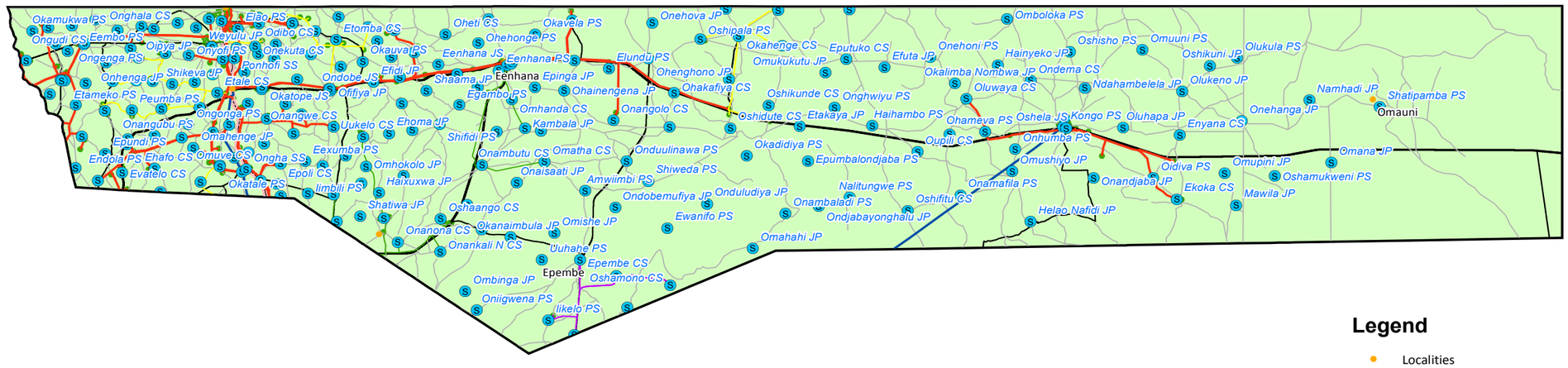
Figure 3.4.1 OHANGWENA REGION – NATIONAL POWER GRID IN 2010



The map shows the national medium voltage power grid for the Ohangwena Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

Figure 3.4.2 OHANGWENA REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010



Legend

- Localities
- Schools

Voltage

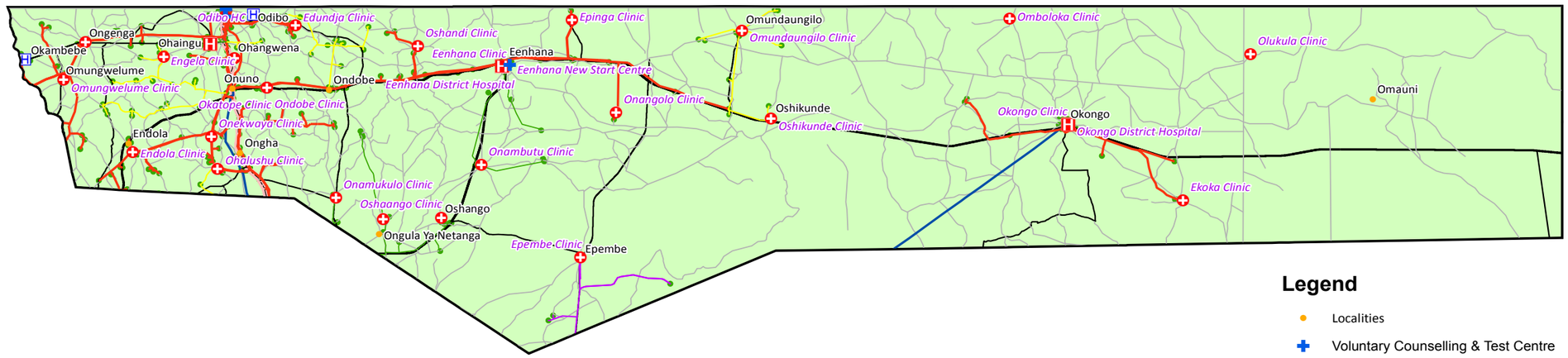
- 11.000 kV
- 19.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Ohangwena Region

The map shows location of schools in relation to the national medium voltage power grid for the Ohangwena Region in 2010.

In 2010, 56.41% of the schools in Ohangwena Region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.4.3 OHANGWENA REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010

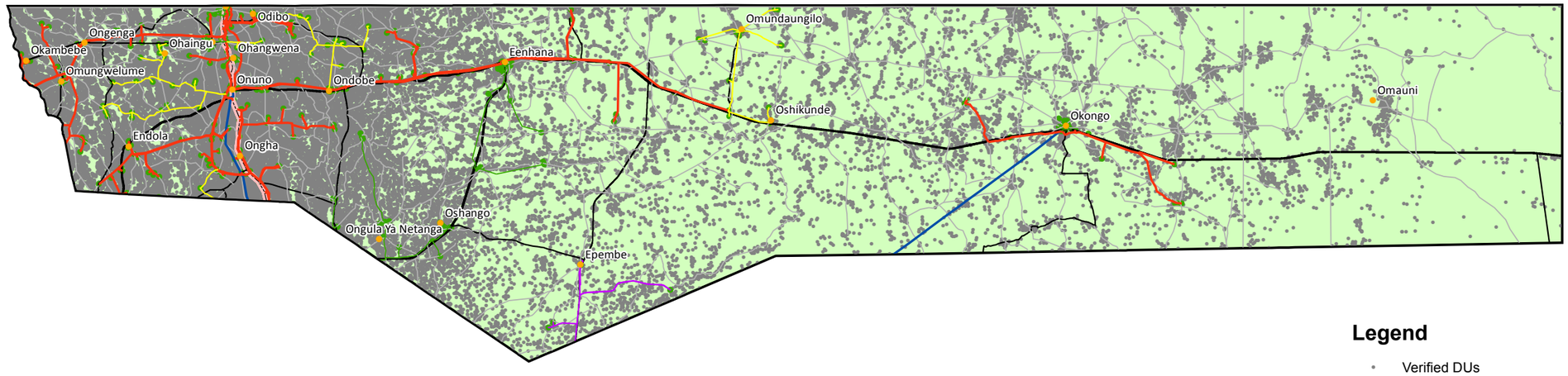


The map shows location of health facilities in relation to the national medium voltage power grid for the Ohangwena Region in 2010.

In 2010, 11.11% of the health facilities in Ohangwena region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.4.4 OHANGWENA REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Ohangwena Region in 2010.

In 2010, 82.6% of the verified Dwelling Units in Ohangwena region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014, Dwelling Units, Namibia Statistics Agency 2011..

ENERGY

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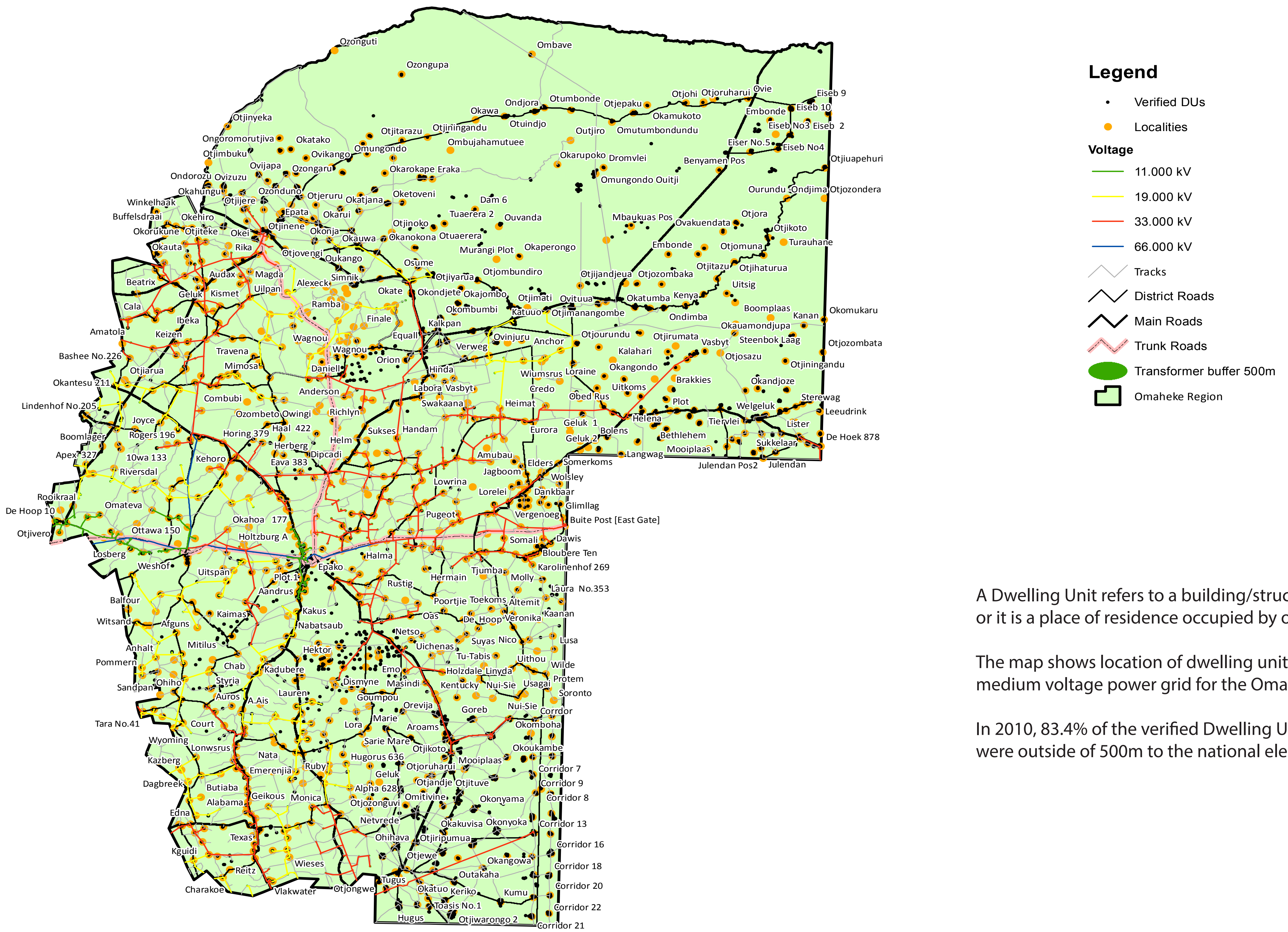
OMAHEKE

Figure 3.5.1 OMAHEKE REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Omaheke Region in 2010.

In 2010, 83.4% of the verified Dwelling Units in Omaheke region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.5.2 OMAHEKE REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010

Legend

- Localities
- Schools

Voltage

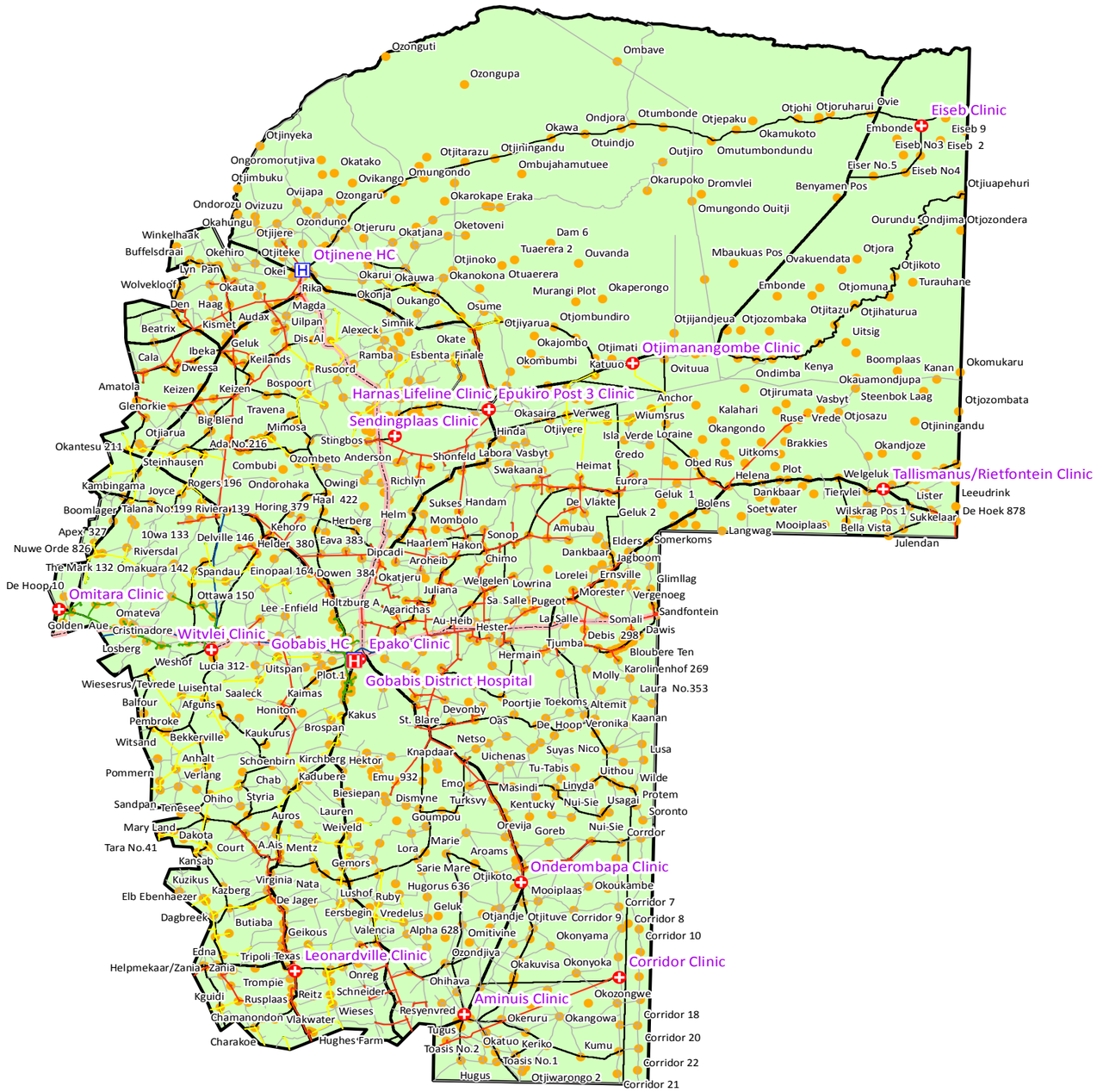
- 11.000 kV
- 19.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer buffer 500m
- Omaheke Region

The map shows location of schools in relation to the national medium voltage power grid for the Omaheke Region in 2010.

In 2010, 39.6% of the schools in Omaheke Region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.5.3 OMAHEKE REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010

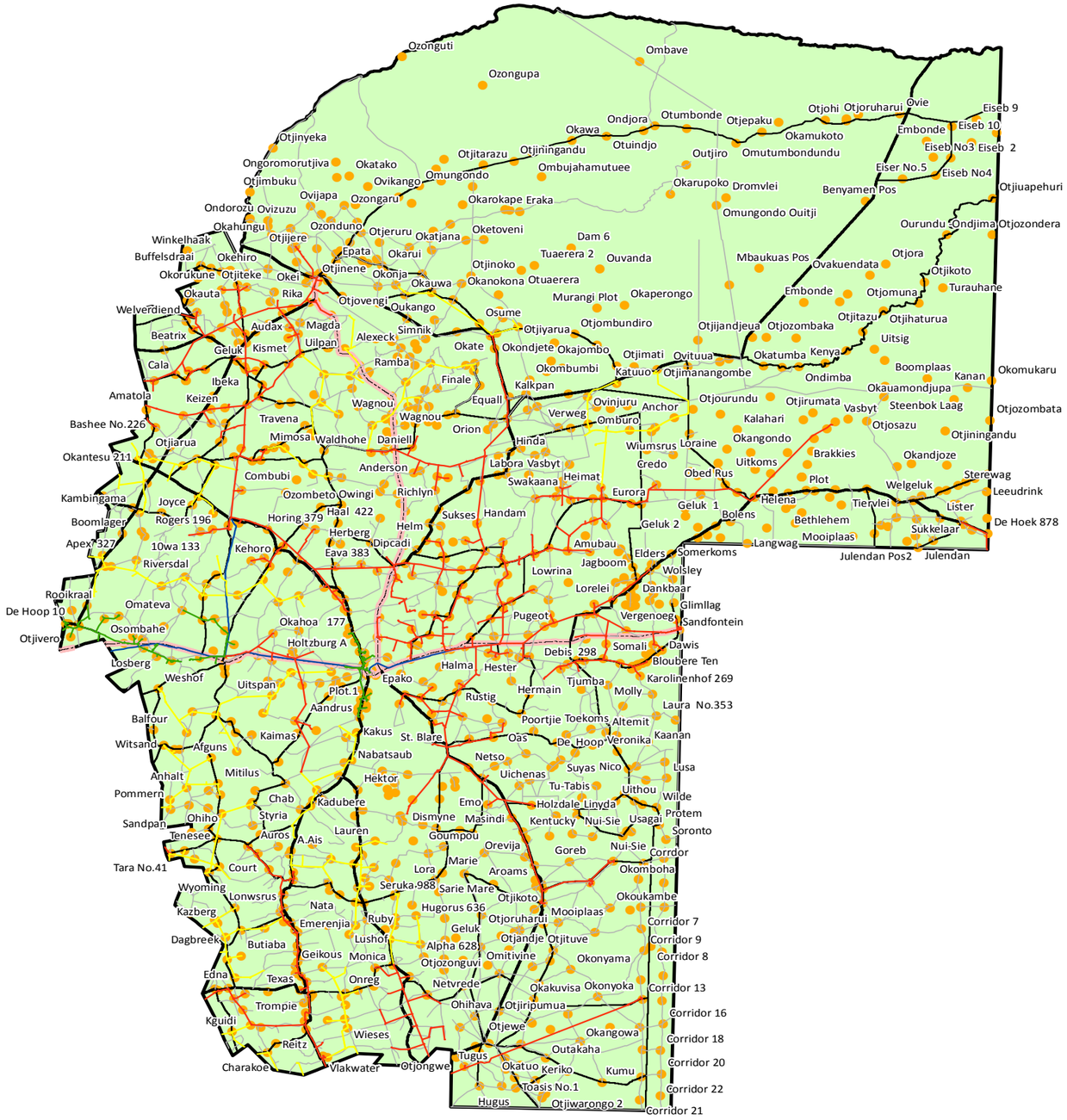


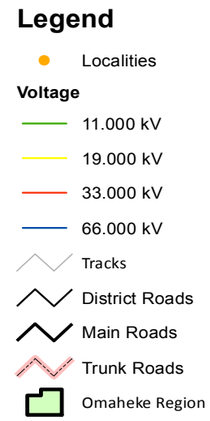
The map shows location of health facilities in relation to the national medium voltage power grid for the Omaheke Region in 2010.

In 2010, 18.8% of the health facilities in Omaheke region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.5.4 OMAHEKE REGION – NATIONAL POWER GRID IN 2010





The map shows the national medium voltage power grid for the Omaheke Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

ENERGY

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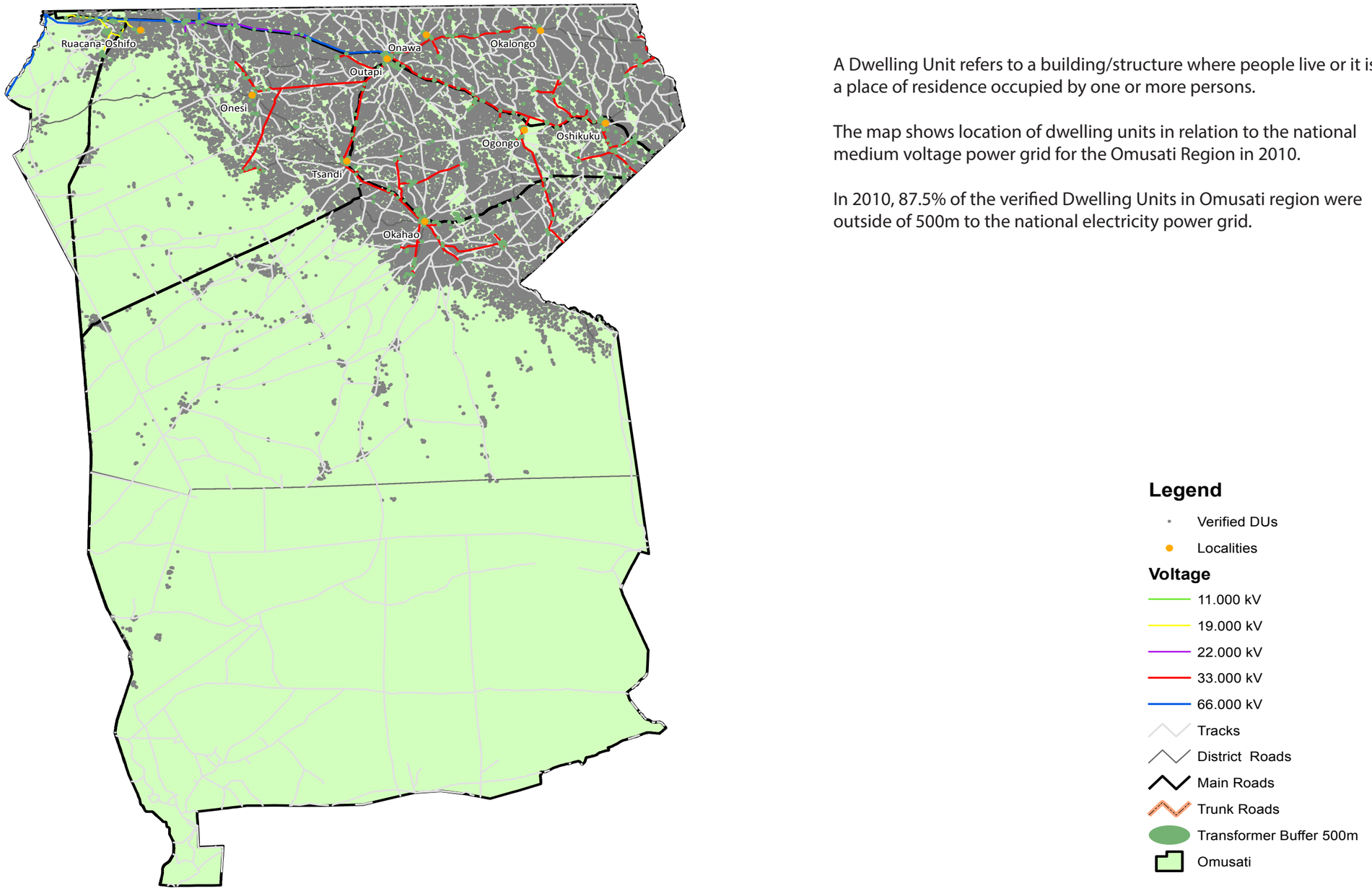
OMUSATI

Figure 3.6.1 OMUSATI REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



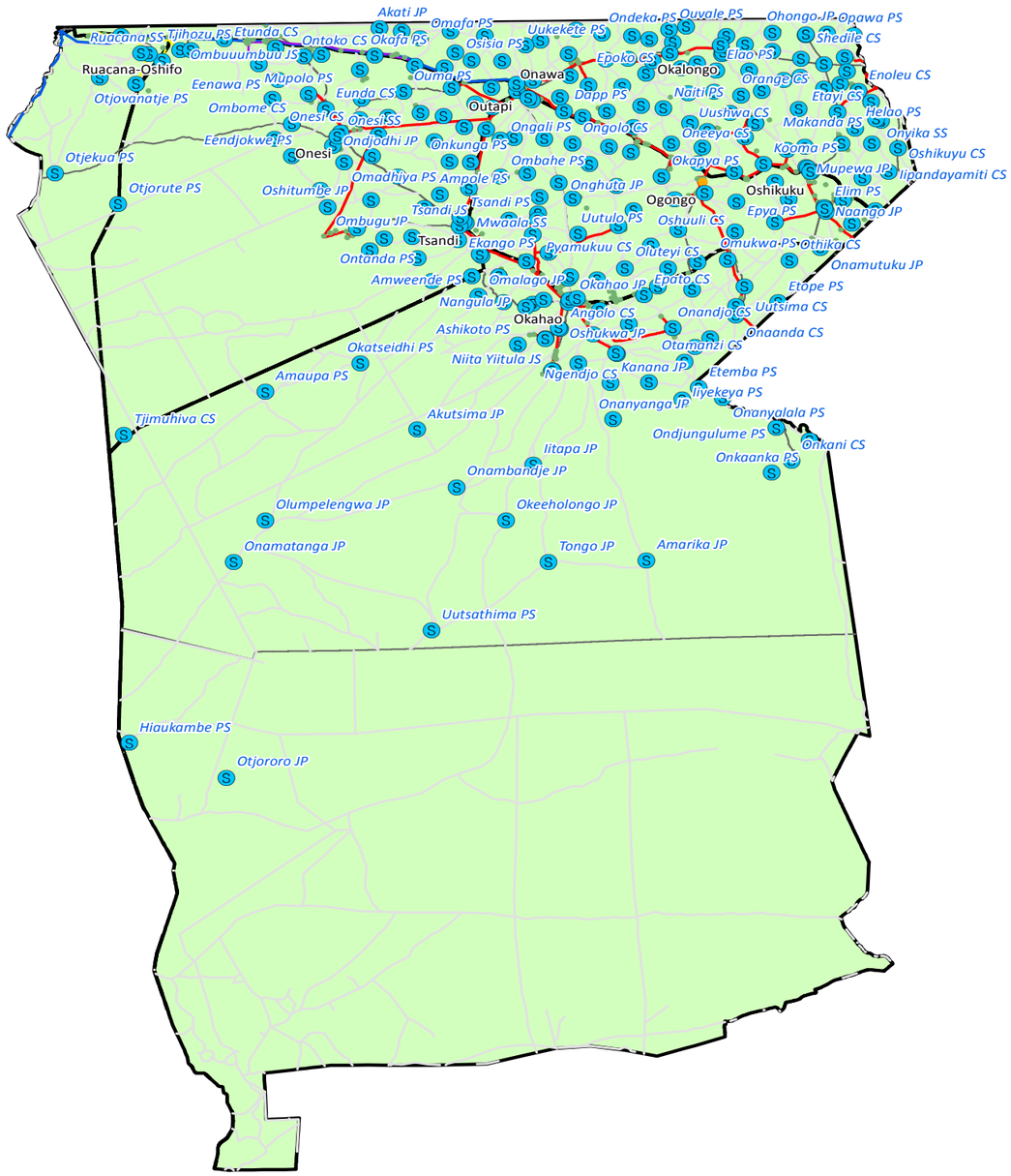
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Omusati Region in 2010.

In 2010, 87.5% of the verified Dwelling Units in Omusati region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.6.2 OMUSATI REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010



The map shows location of schools in relation to the national medium voltage power grid for the Omusati Region in 2010.

In 2010, 62.9% of the schools in Omusati Region were outside of 500m to the national electricity power grid.

Legend

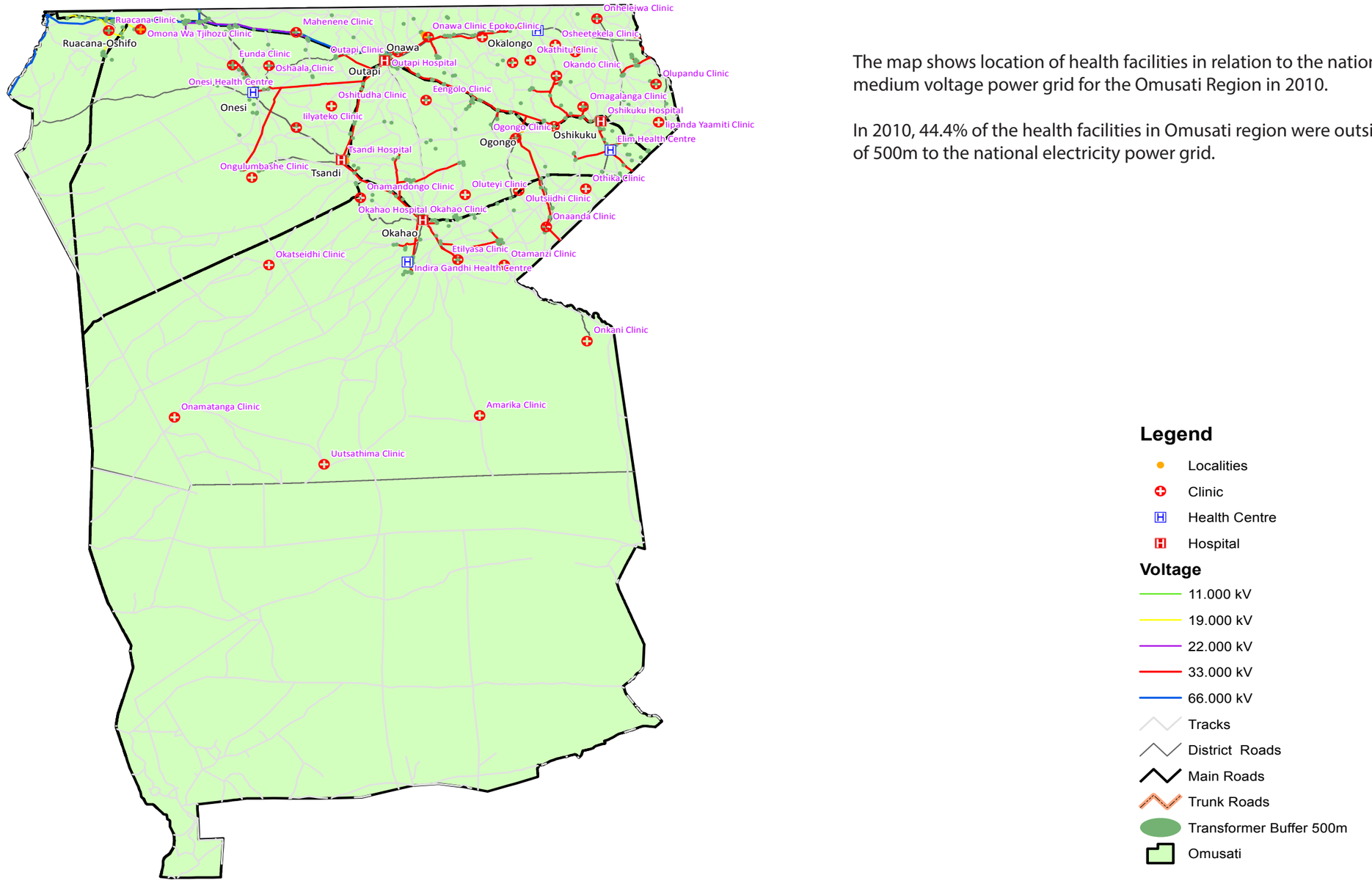
- Localities
- Education Institutions

Voltage

- 11.000 kV
- 19.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Omusati

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.6.3 OMUSATI REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010

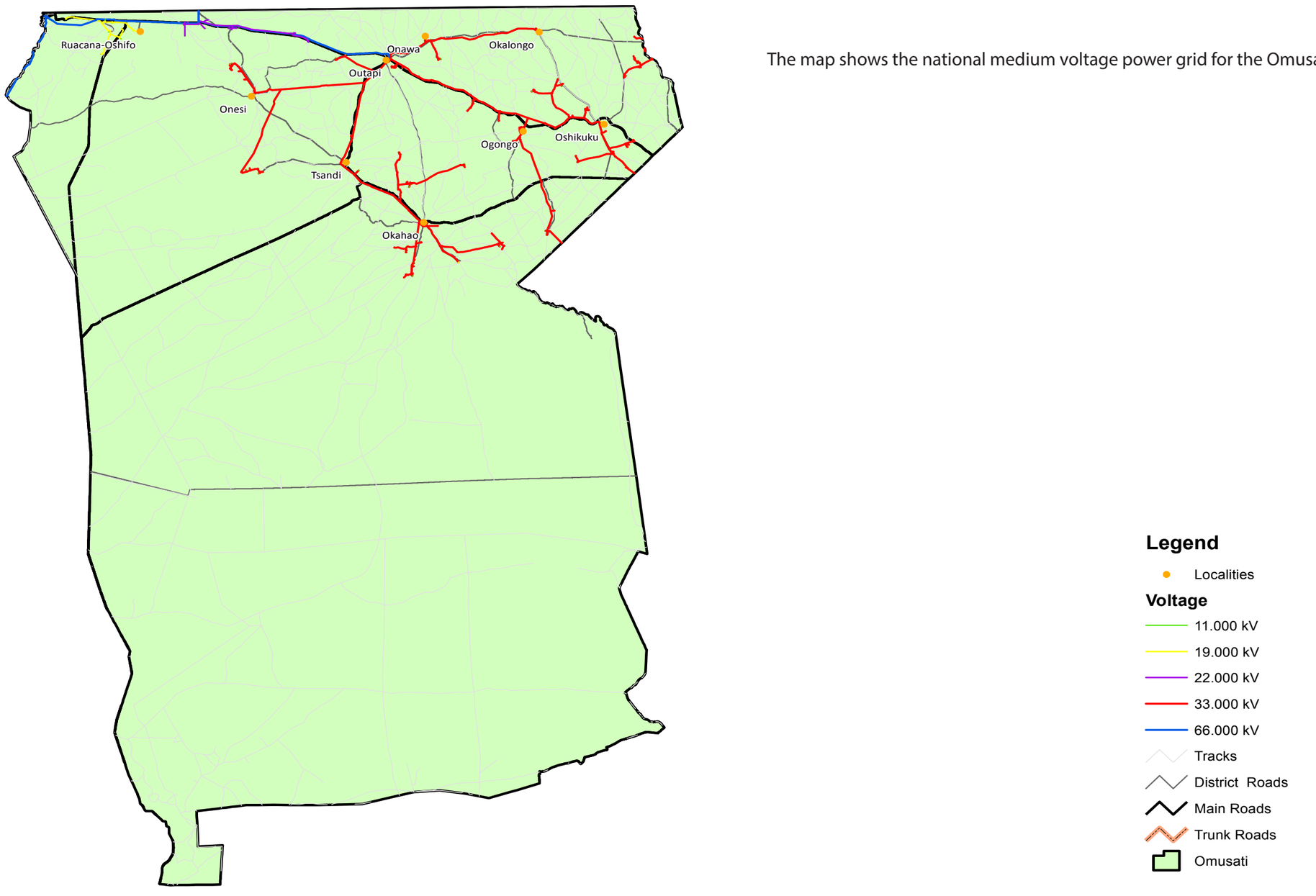


The map shows location of health facilities in relation to the national medium voltage power grid for the Omusati Region in 2010.

In 2010, 44.4% of the health facilities in Omusati region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.6.4 OMUSATI REGION – NATIONAL POWER GRID IN 2010



The map shows the national medium voltage power grid for the Omusati Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

ENERGY

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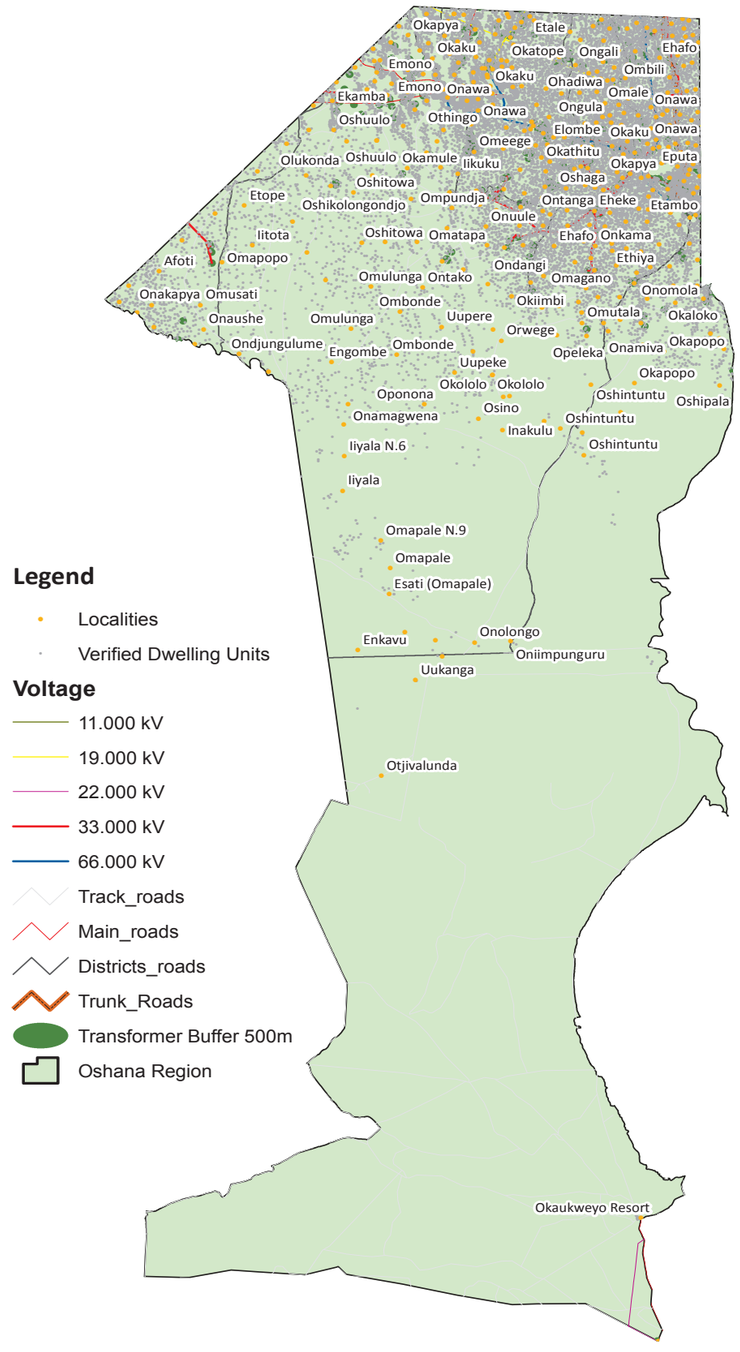
OSHANA

Figure 3.7.1 OSHANA REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Ohangwena Region in 2010.

In 2010 80.1% of the Dwelling Units in Oshana region were outside of 500m to the national electrical power grid.

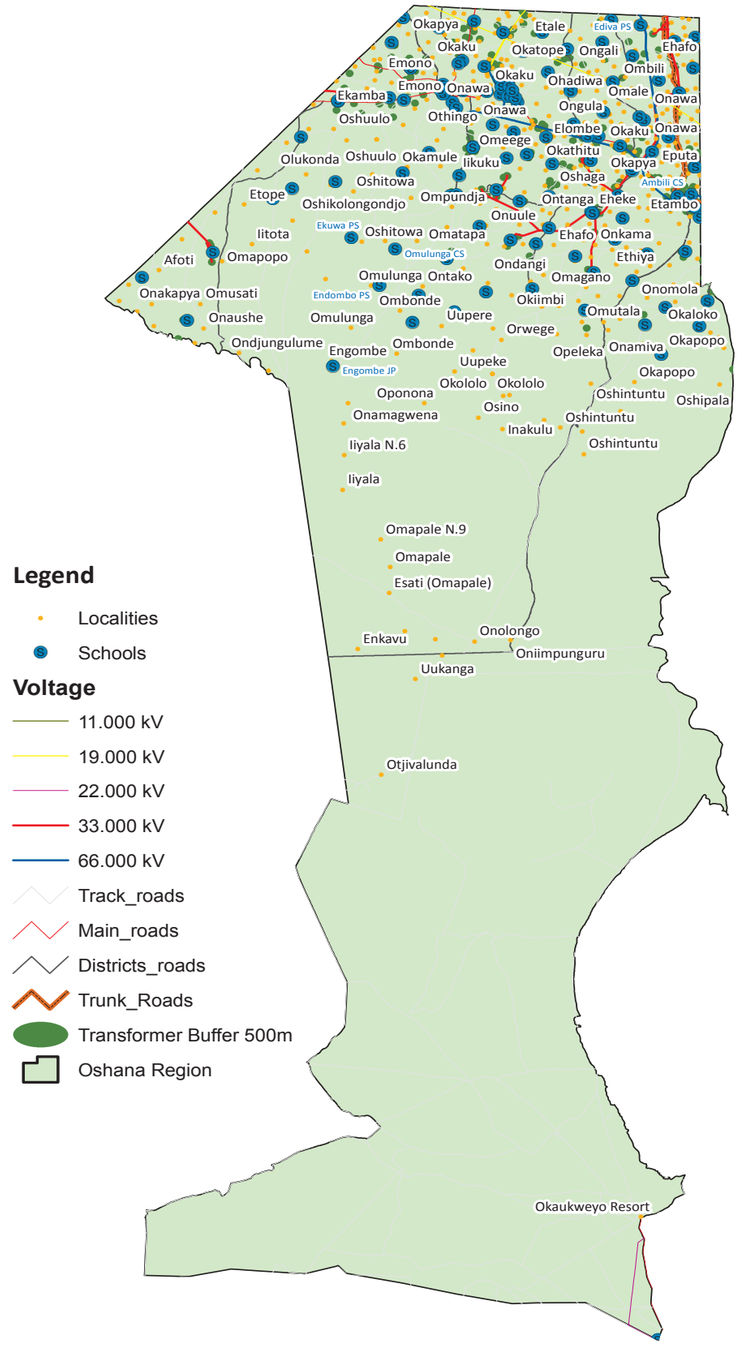


Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.7.2 OSHANA REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010

The map shows location of Schools in relation to the national medium voltage power grid for the Oshana Region in 2010.

In 2010 50.4% of the Schools in Oshana region were outside of 500m to the national electrical power grid.

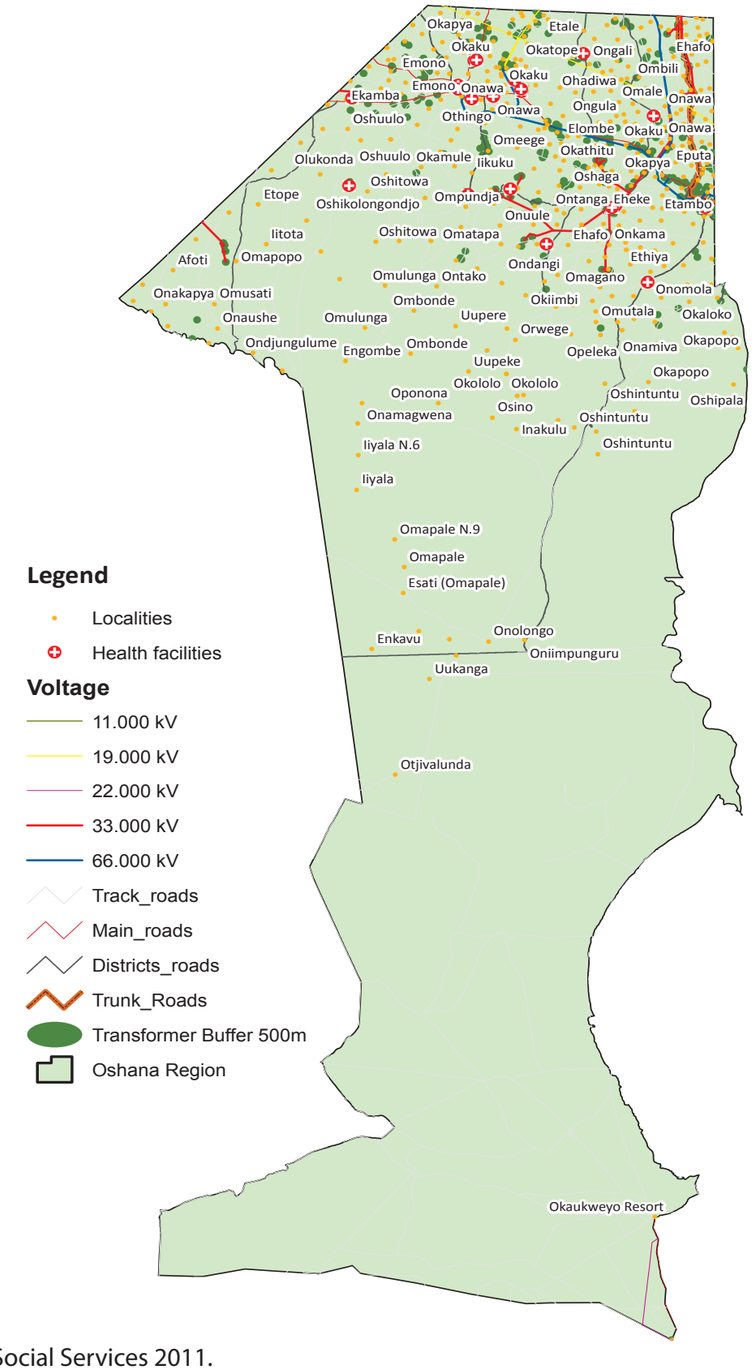


Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.7.3 OSHANA REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010

The map shows location of health facilities in relation to the national medium voltage power grid for the Oshana Region in 2010.

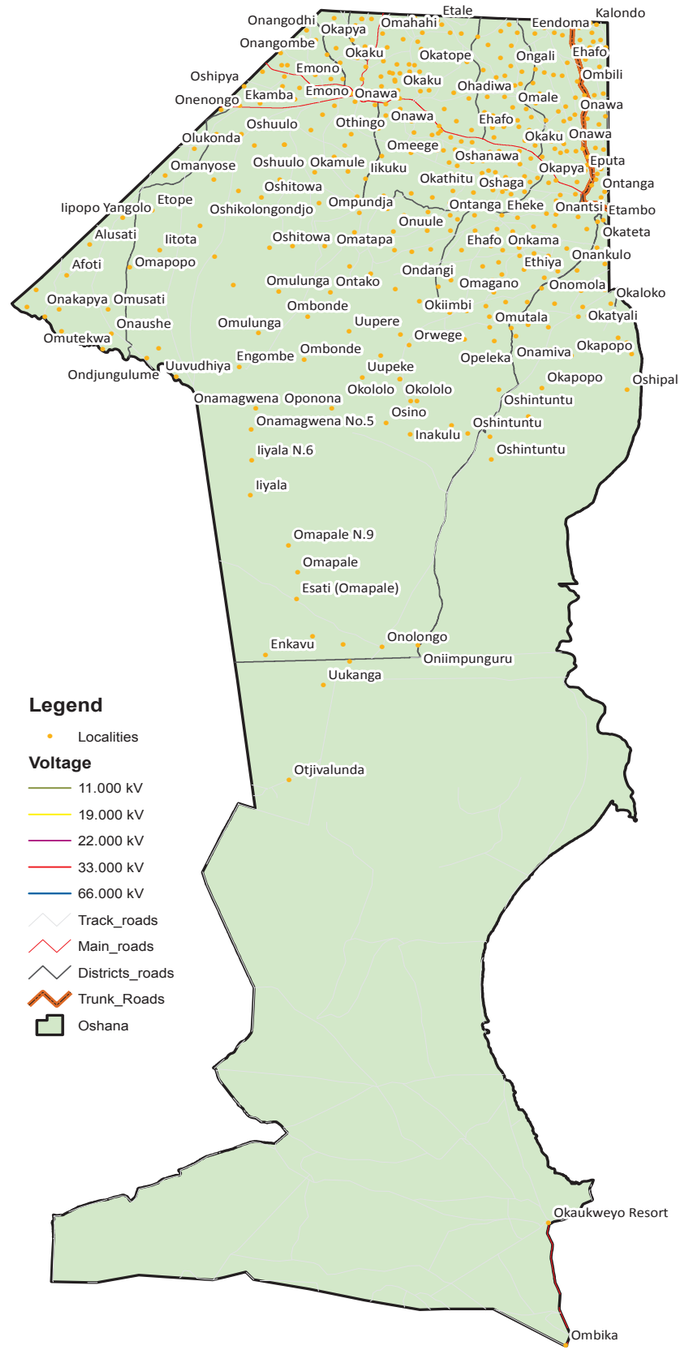
In 2010 40 % of the health facilities in Oshana region were outside of 500m to the national electrical power grid.



Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.7.4 OSHANA REGION – NATIONAL POWER GRID IN 2010

The map shows the national medium voltage power grid for the Oshana Region in 2014.



Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

ENERGY

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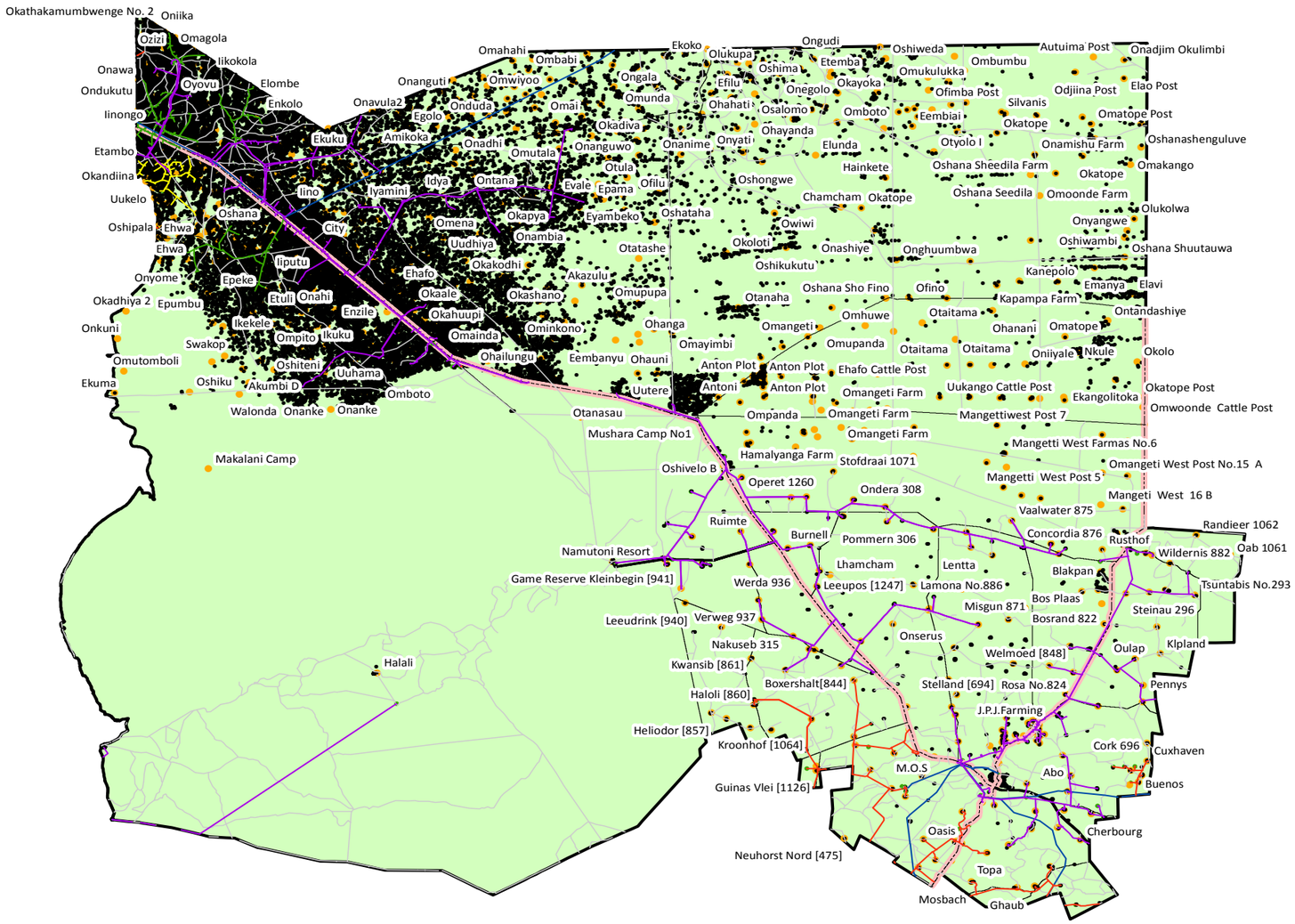
OSHIKOTO

Figure 3.8.1 OSHIKOTO REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



Legend

- Verified DUs
- Localities

Voltage

- 11.000 kV
- 19.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Oshikoto Region

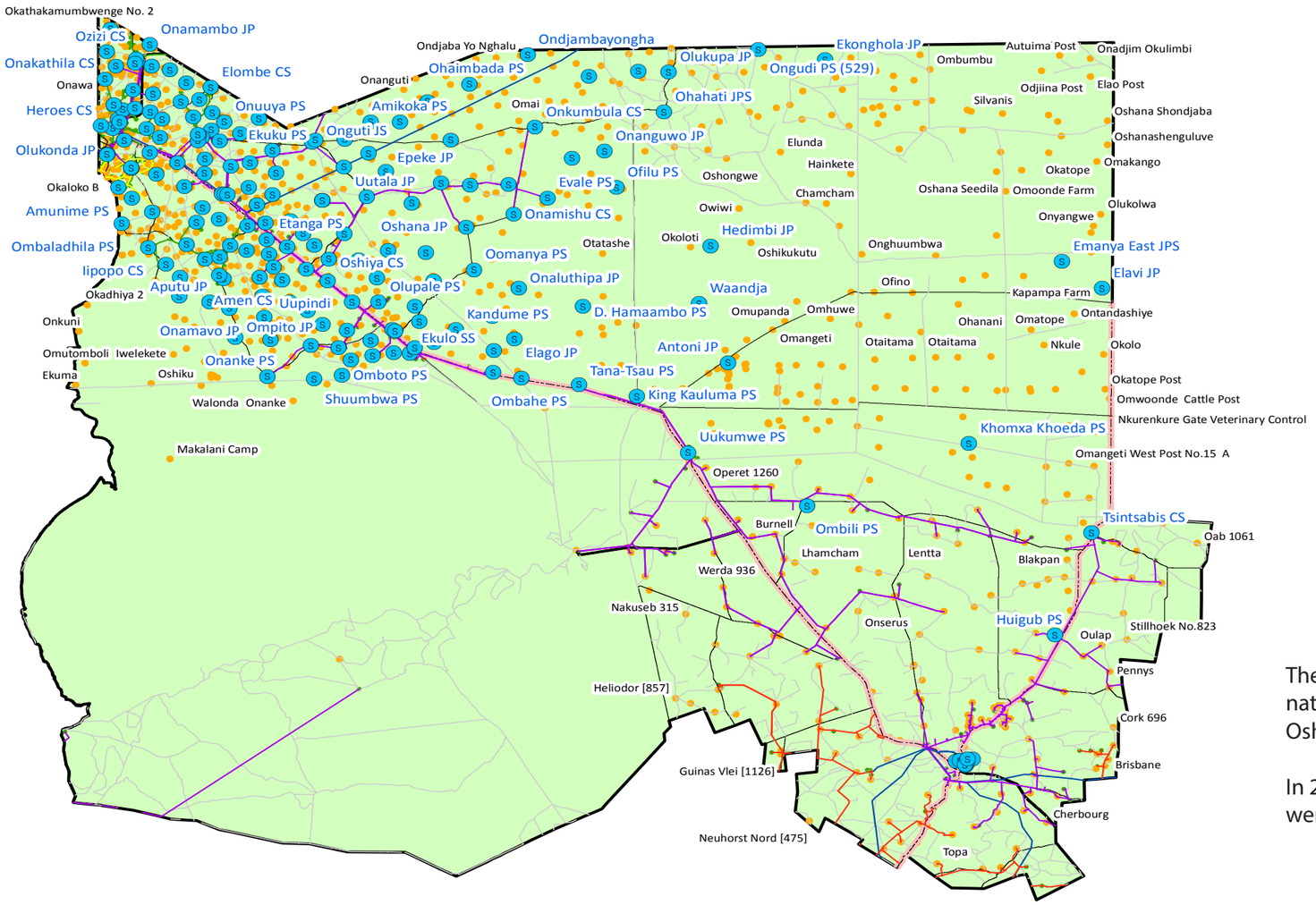
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Oshikoto Region in 2010.

In 2010, 82% of the verified Dwelling Units in Oshikoto region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2013. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.8.2 OSHIKOTO REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010



Legend

- Localities
- Schools

Voltage

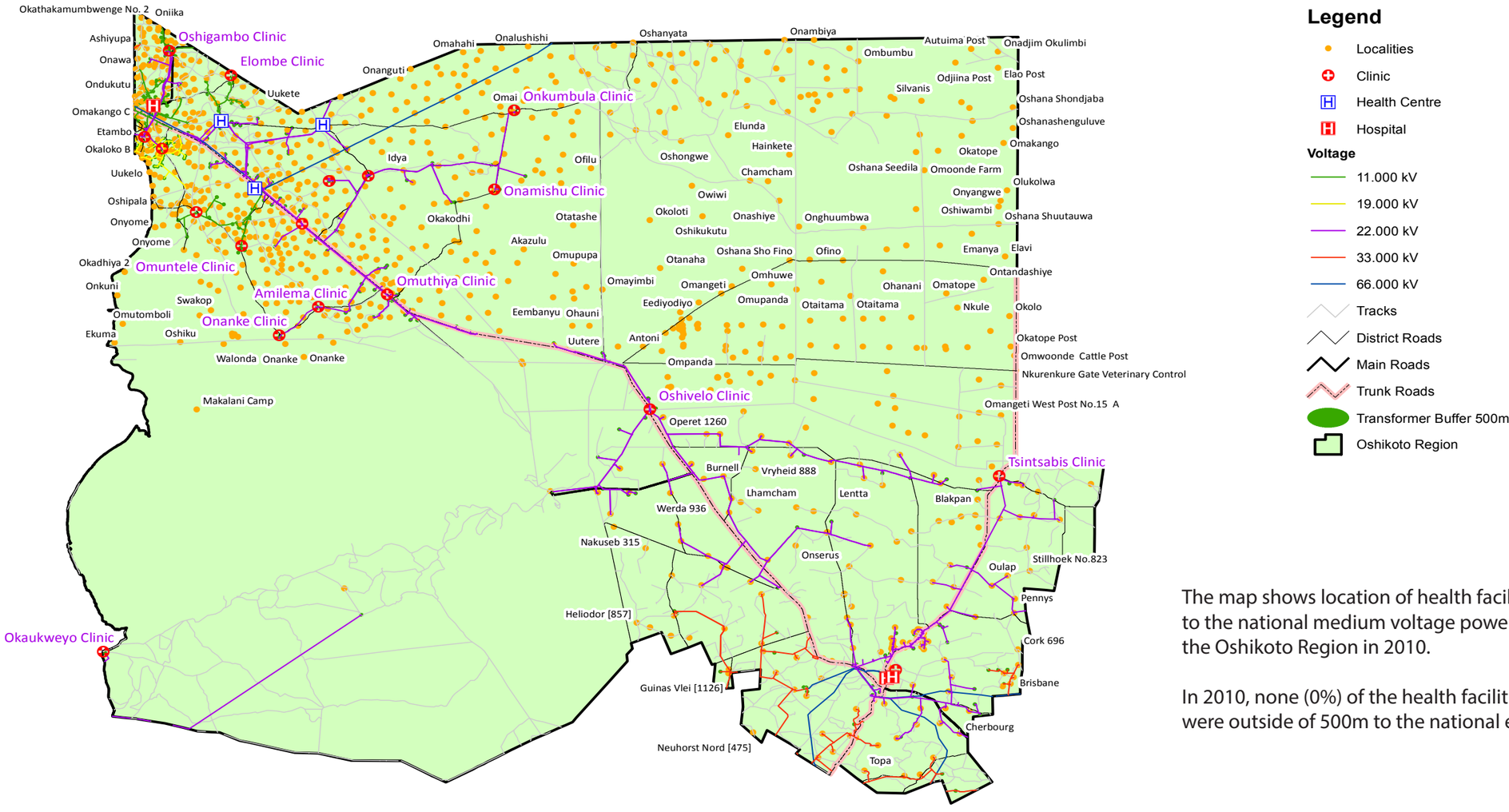
- 11.000 kV
- 19.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Oshikoto Region

The map shows location of schools in relation to the national medium voltage power grid for the Oshikoto Region in 2010.

In 2010, 39.4% of the schools in Oshikoto Region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2013. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.8.3 OSHIKOTO REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010



Legend

- Localities
- Clinic
- Health Centre
- Hospital

Voltage

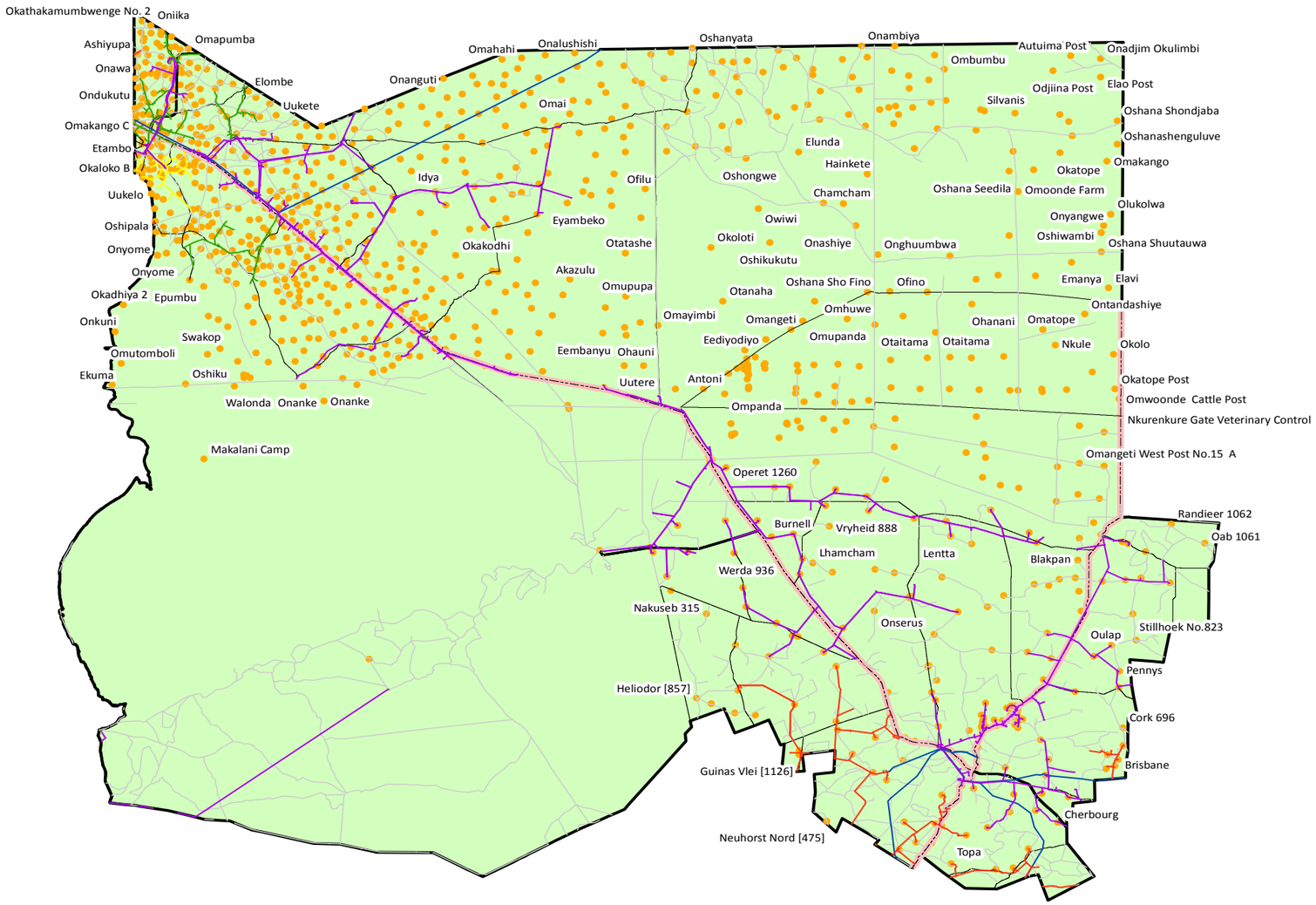
- 11.000 kV
- 19.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Transformer Buffer 500m
- Oshikoto Region

The map shows location of health facilities in relation to the national medium voltage power grid for the Oshikoto Region in 2010.

In 2010, none (0%) of the health facilities in Oshikoto region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2013. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.8.4 OSHIKOTO REGION – NATIONAL POWER GRID IN 2010



Legend

- Localities

Voltage

- 11.000 kV
- 19.000 kV
- 22.000 kV
- 33.000 kV
- 66.000 kV
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Oshikoto Region

The map shows the national medium voltage power grid for the Oshikoto Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2013.

ENERGY
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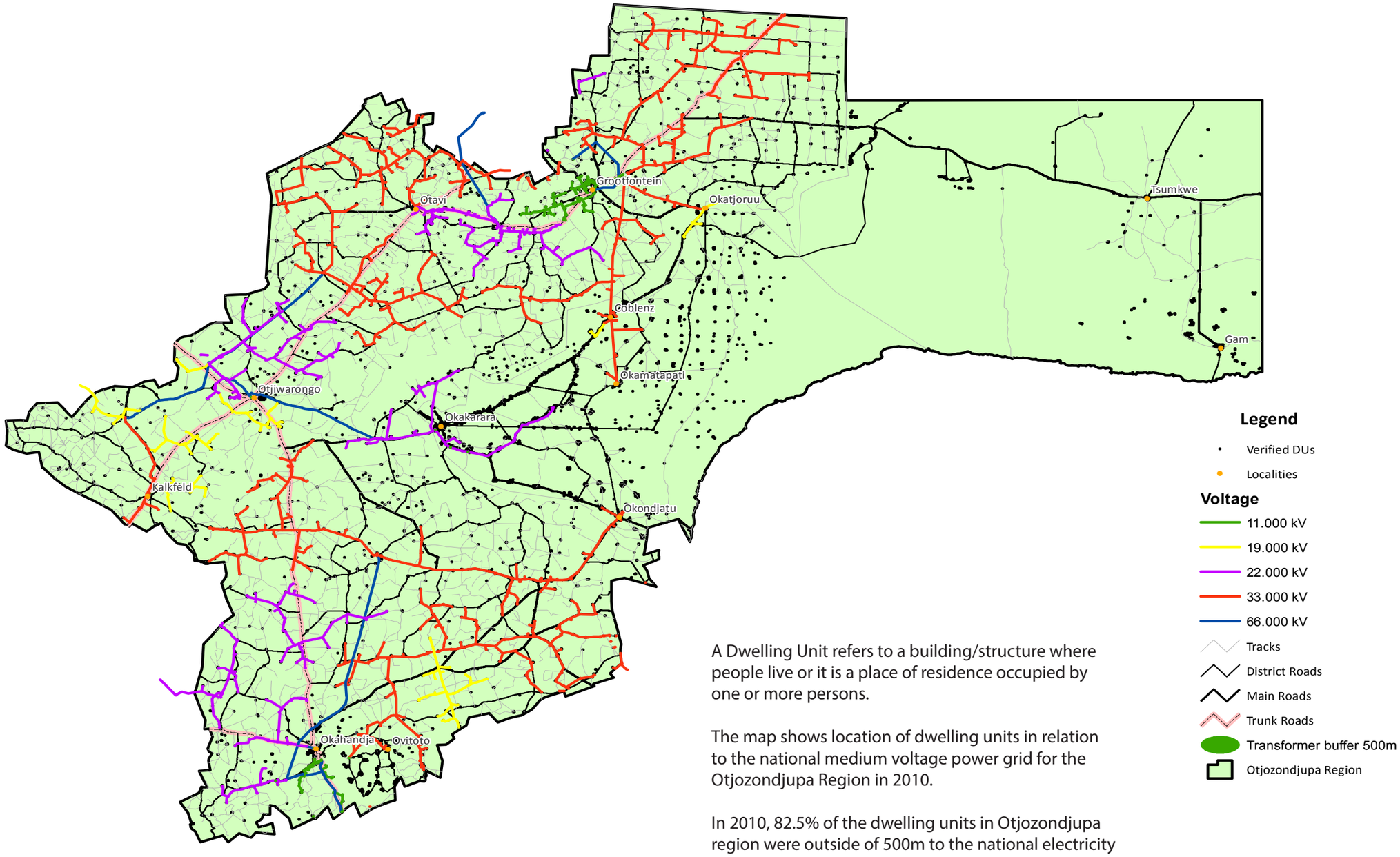
OTJOZONDJUPA

Figure 3.8.1 OTJOZONDJUPA REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



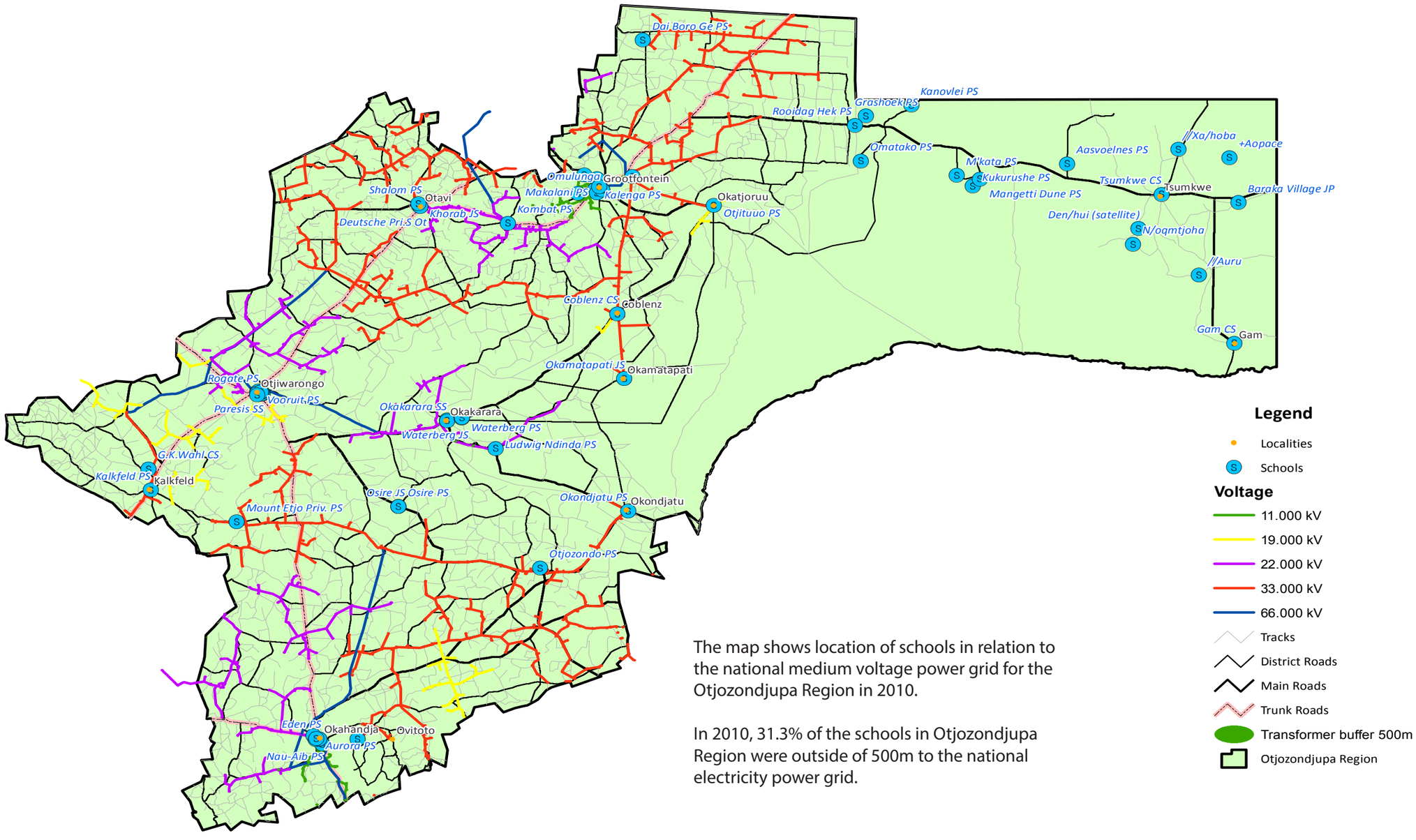
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Otjozondjupa Region in 2010.

In 2010, 82.5% of the dwelling units in Otjozondjupa region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.8.2 OTJOZONDJUPA REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010

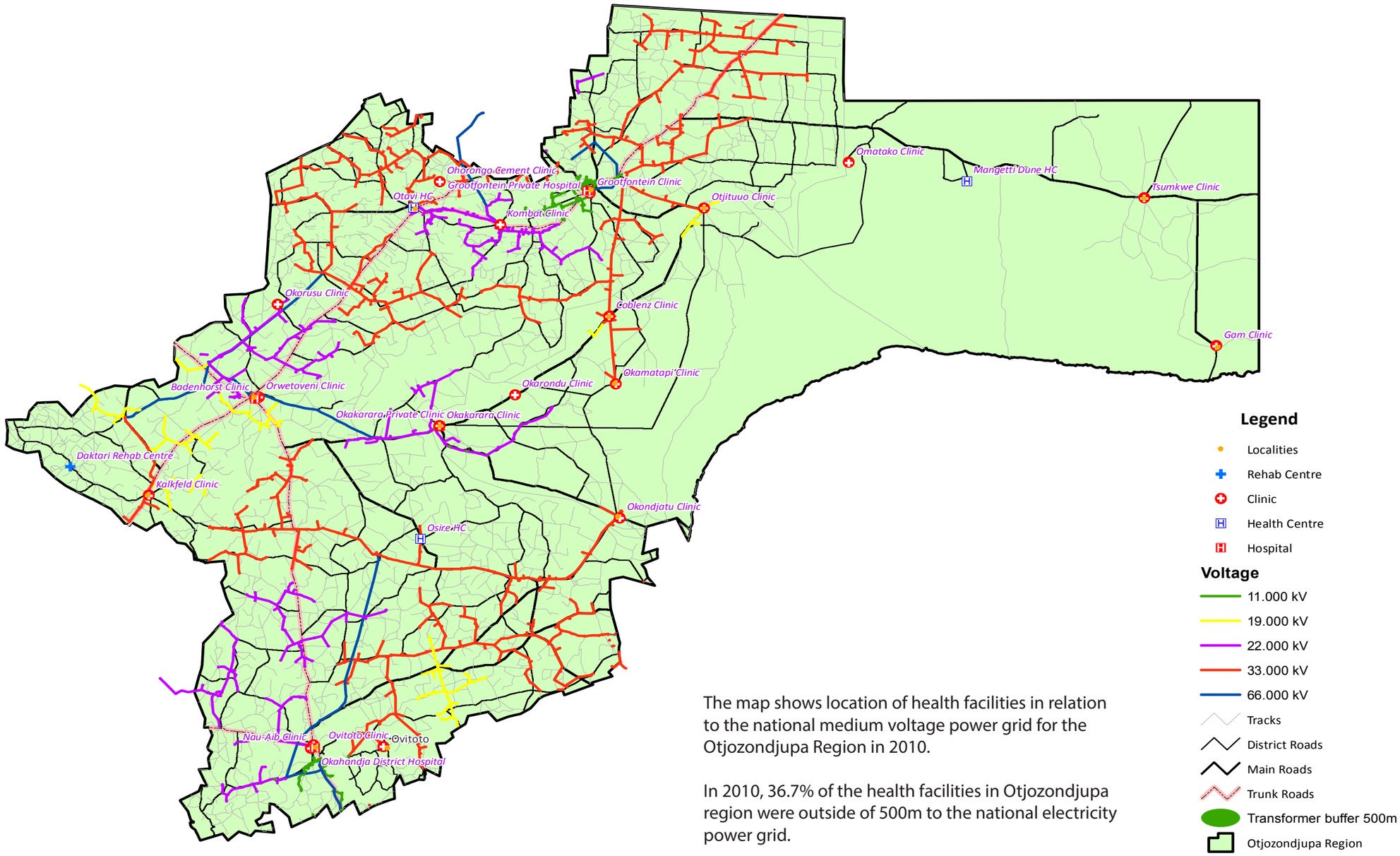


The map shows location of schools in relation to the national medium voltage power grid for the Otjozondjupa Region in 2010.

In 2010, 31.3% of the schools in Otjozondjupa Region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.8.3 OTJOZONDJUPA REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010

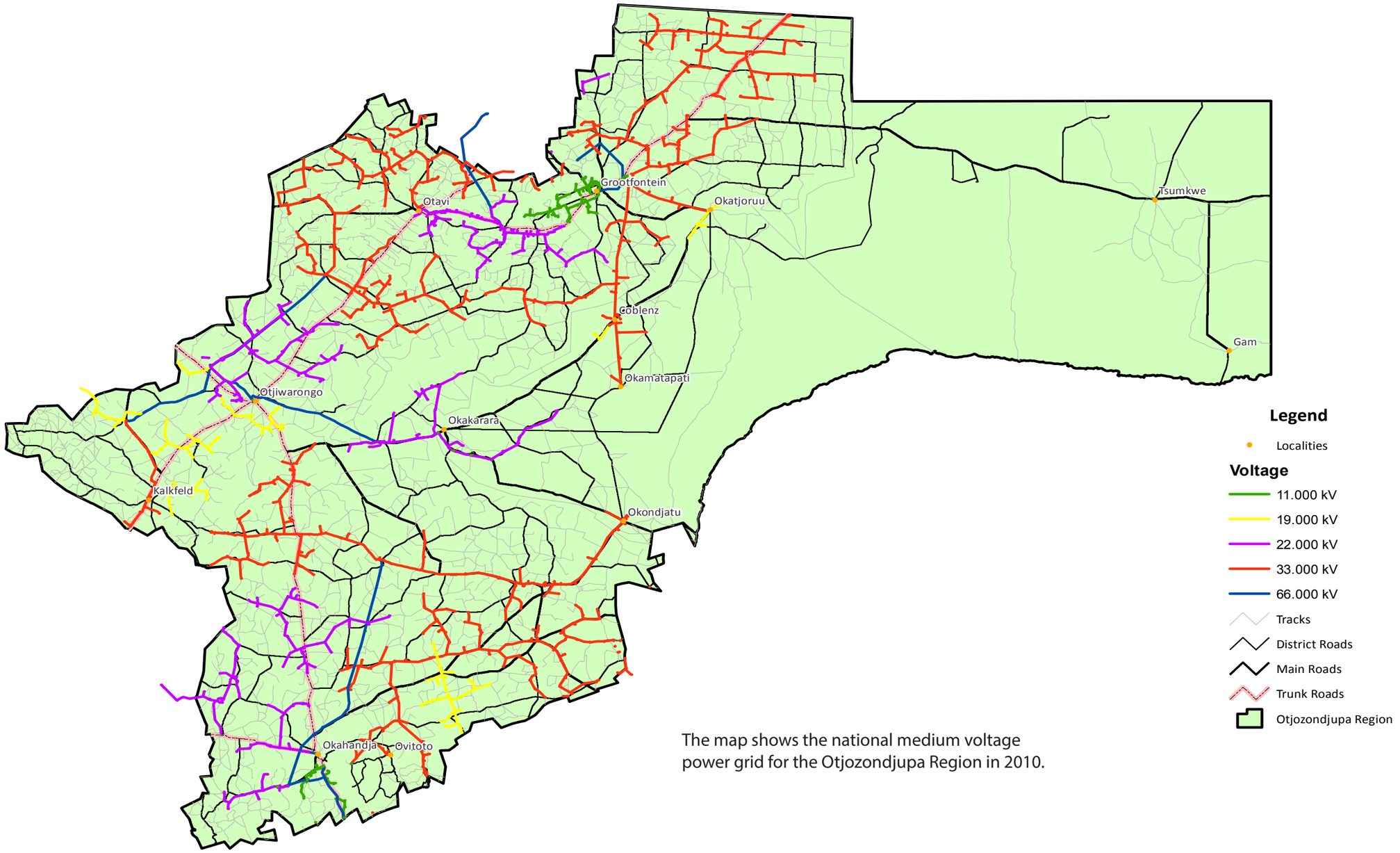


The map shows location of health facilities in relation to the national medium voltage power grid for the Otjozondjupa Region in 2010.

In 2010, 36.7% of the health facilities in Otjozondjupa region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.8.4 OTJOZONDJUPA REGION – NATIONAL POWER GRID IN 2010



The map shows the national medium voltage power grid for the Otjozondjupa Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

ENERGY

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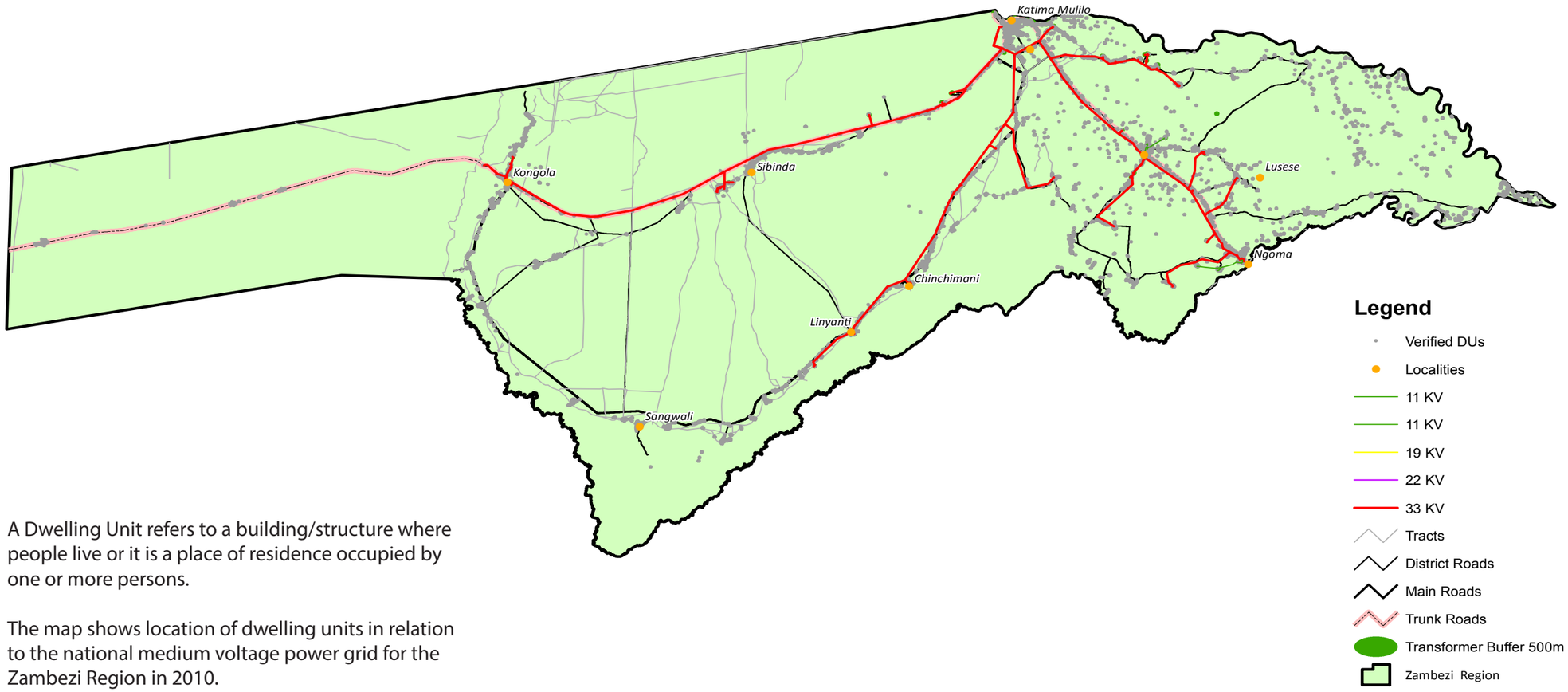
ZAMBEZI

Figure 3.10.1 ZAMBEZI REGION – DWELLING UNITS PROXIMITY TO NATIONAL POWER GRID IN 2010



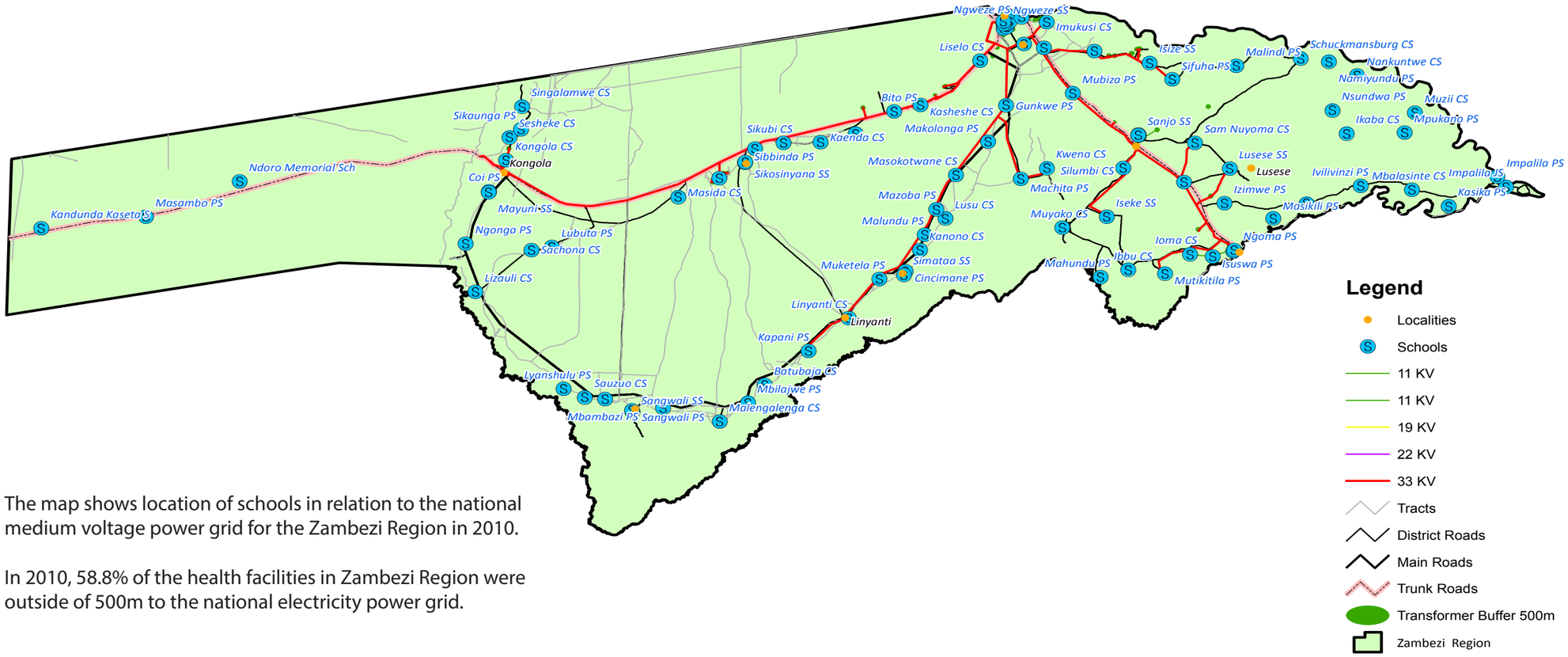
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows location of dwelling units in relation to the national medium voltage power grid for the Zambezi Region in 2010.

In 2010, 60.4% of the health facilities in Zambezi region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.10.2 ZAMBEZI REGION – SCHOOLS PROXIMITY TO NATIONAL POWER GRID IN 2010

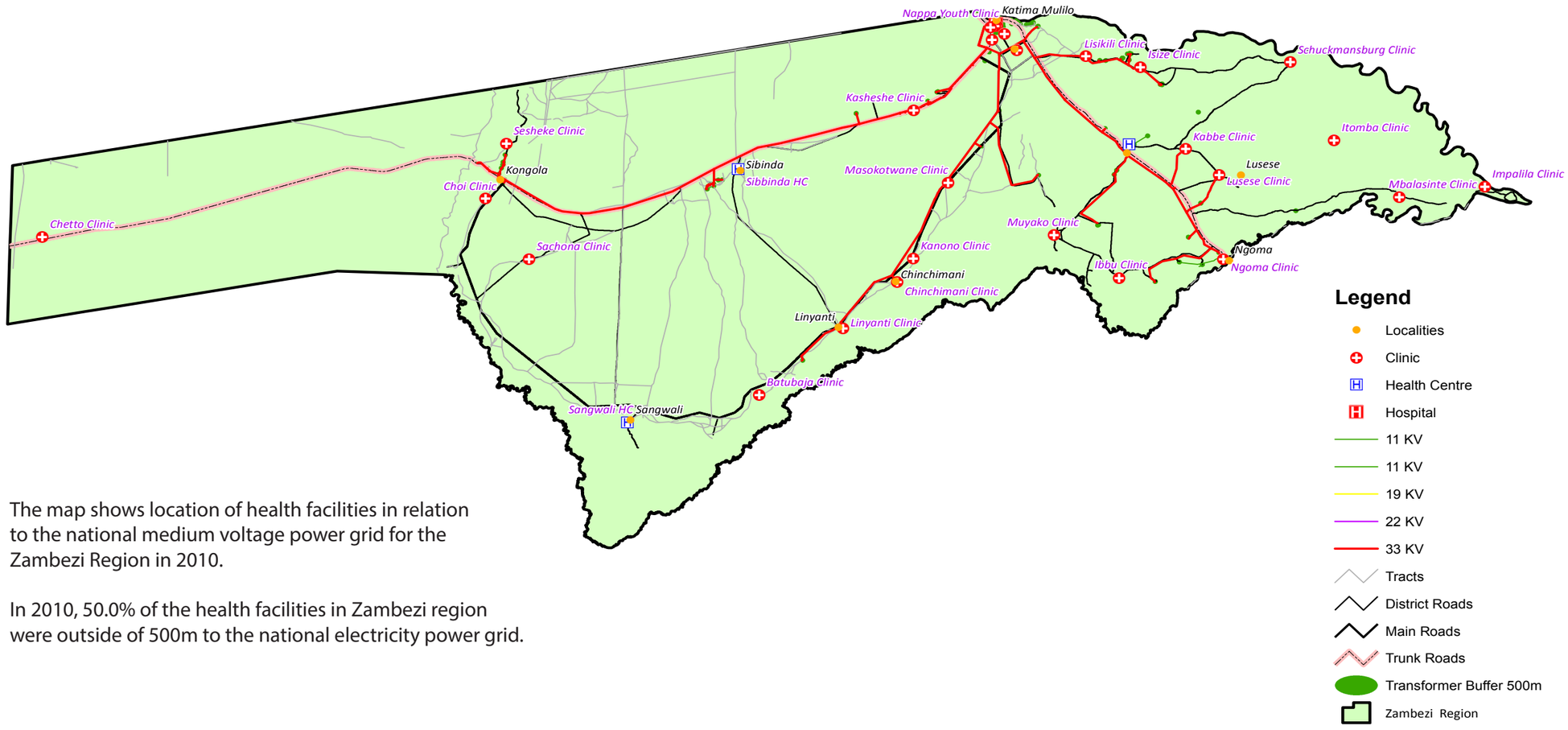


The map shows location of schools in relation to the national medium voltage power grid for the Zambezi Region in 2010.

In 2010, 58.8% of the health facilities in Zambezi Region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2011.

Figure 3.10.3 ZAMBEZI REGION – HEALTH FACILITIES PROXIMITY TO NATIONAL POWER GRID IN 2010

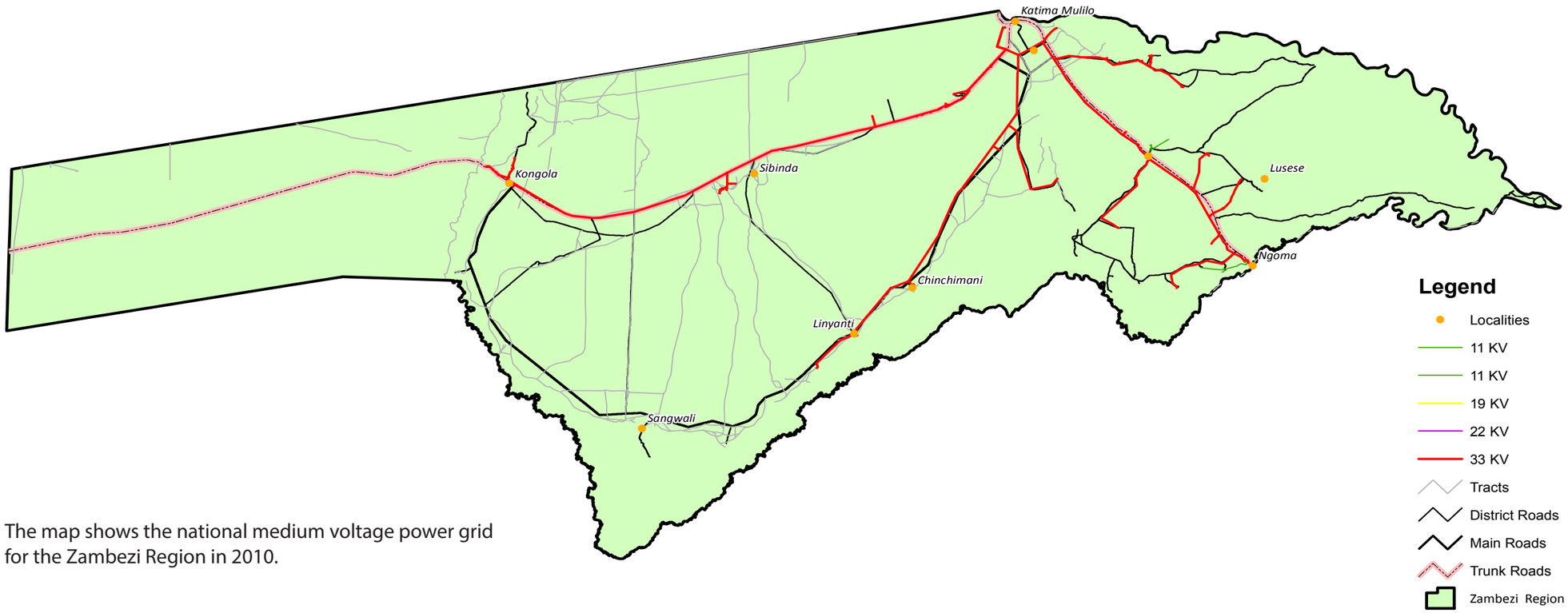


The map shows location of health facilities in relation to the national medium voltage power grid for the Zambezi Region in 2010.

In 2010, 50.0% of the health facilities in Zambezi region were outside of 500m to the national electricity power grid.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.10.4 ZAMBEZI REGION – NATIONAL POWER GRID IN 2010



The map shows the national medium voltage power grid for the Zambezi Region in 2010.

Source: Power Lines, Nampower & NoRED 2010. Roads, Roads Authority 2014.

CHAPTER 4

TRANSPORTATION

TRANSPORTATION
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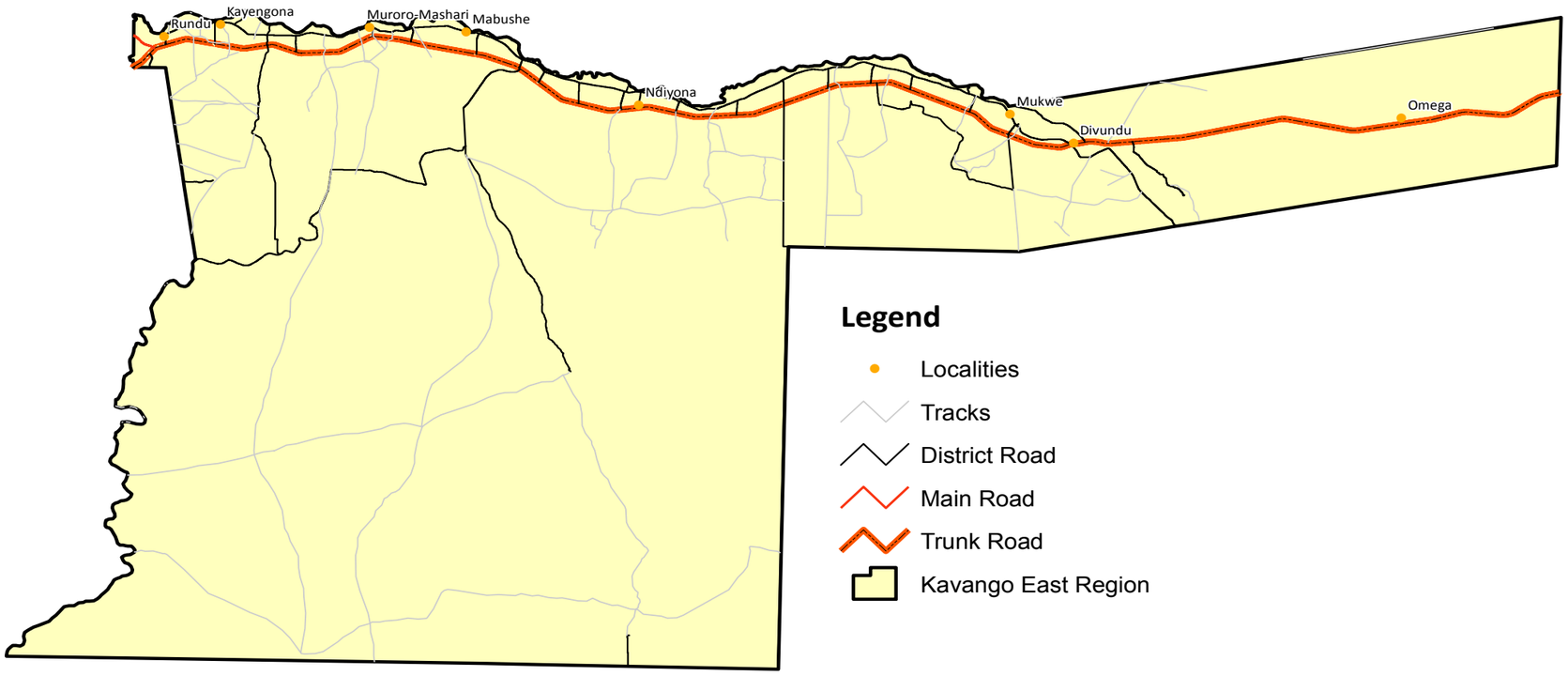
KAVANGO EAST

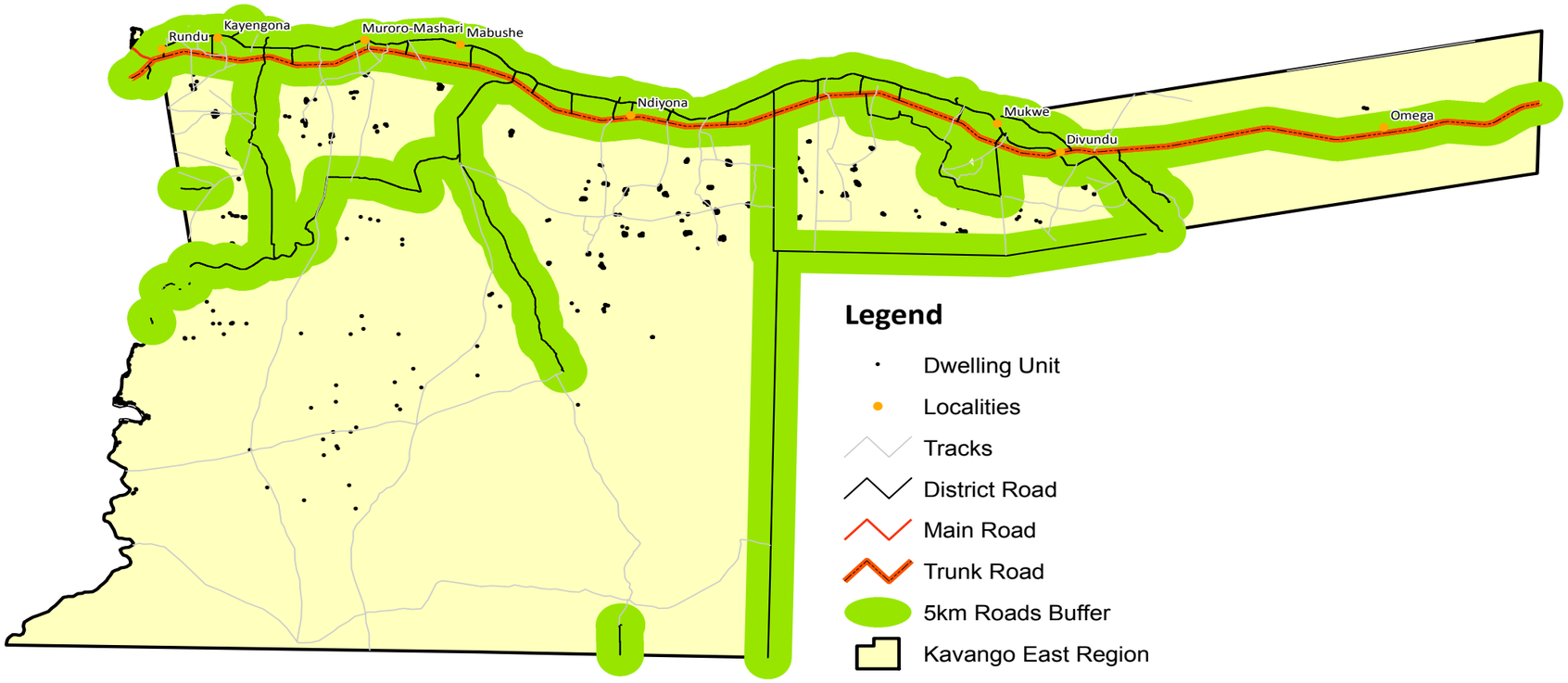
Figure 4.1.1 KAVANGO EAST REGION – REGIONAL ROAD NETWORK IN 2014



The map shows the national road network for the Kavango East Region in 2014.

Source: Roads Authority, 2014

Figure 4.1.2 KAVANGO EAST REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



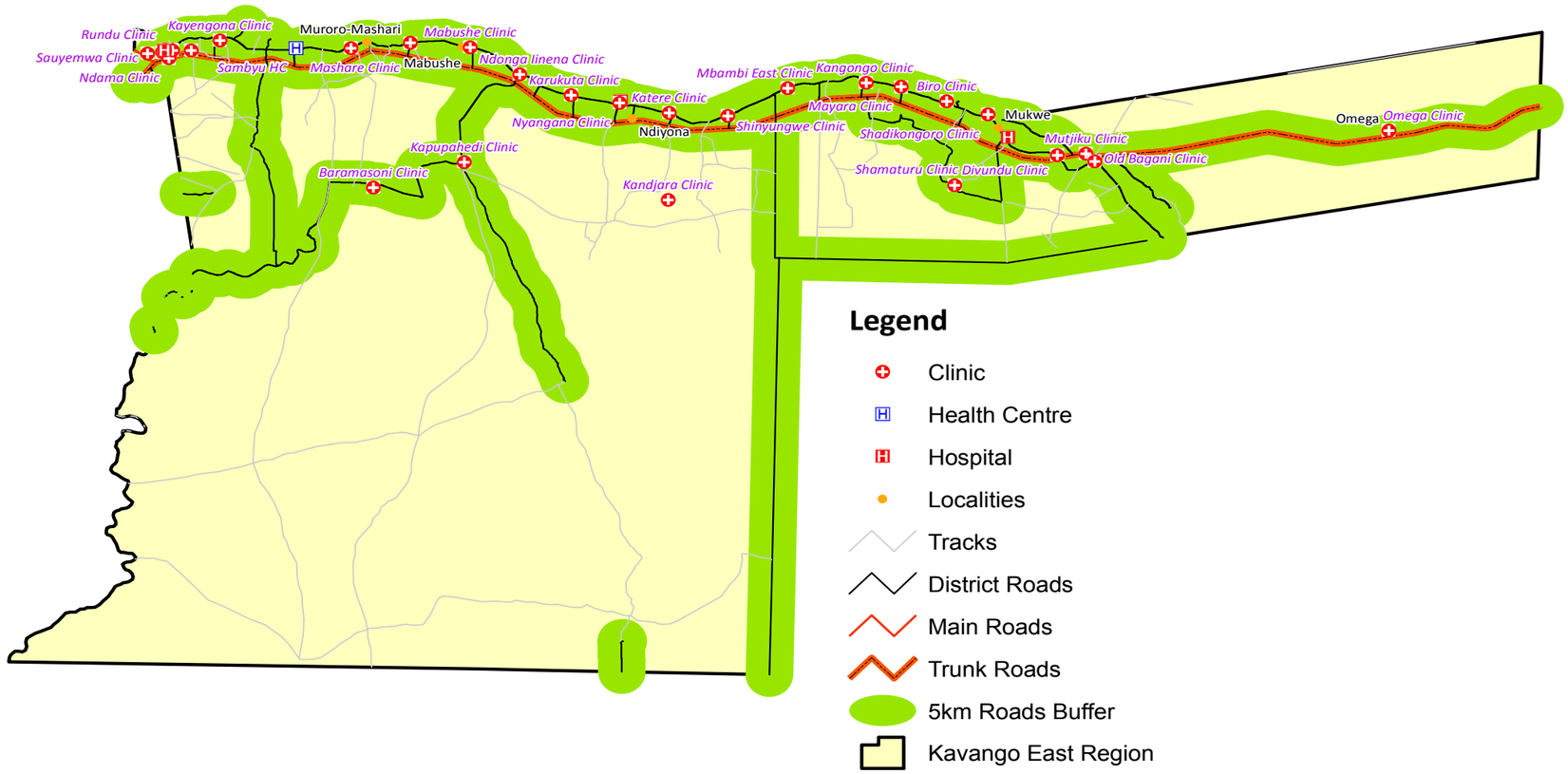
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 4.0% of all verified Dwelling Units in the Kavango East Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 4.1.3 KAVANGO EAST REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

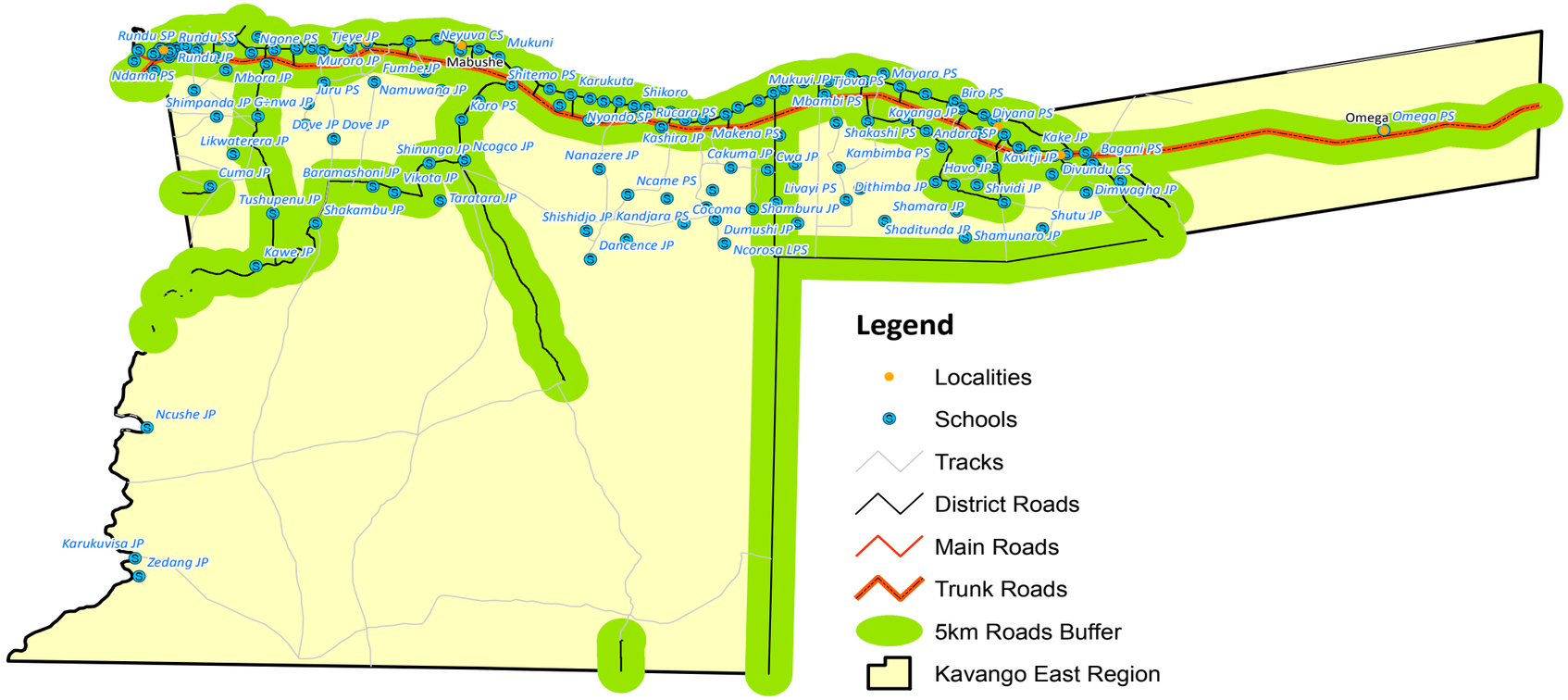


The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they are not official roads during the referenced year.

In 2014, 2.9% of all health facilities in the Kavango East Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.1.4 KAVANGO EAST REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they are not official roads during the referenced year.

In 2014, 20.3% of all Schools– in the Kavango East Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION

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KAVANGO WEST

Figure 4.2.1 KAVANGO WEST REGION – REGIONAL ROAD NETWORK IN 2014

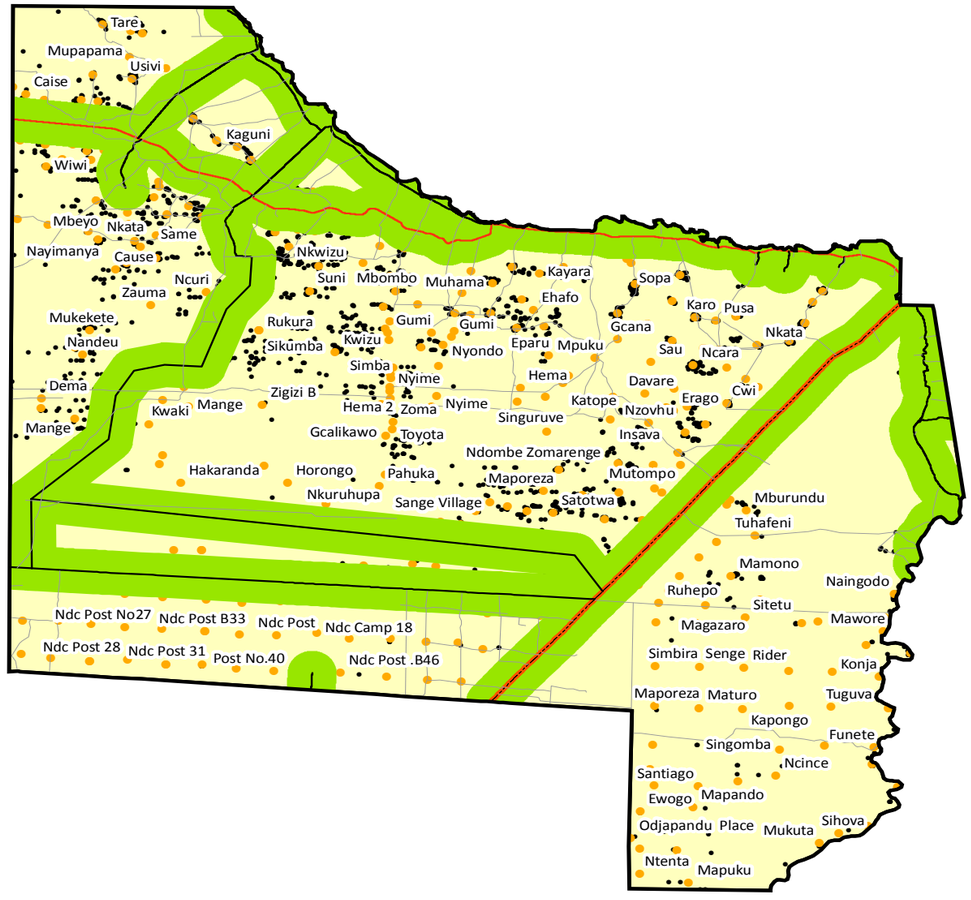
Legend

- Localities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Kavango West Region

The map shows the national road network for the Kavango West Region in 2014.

Source: Roads Authority, 2014

Figure 4.2.2 KAVANGO WEST REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

- Verified Dwelling Units
- Localities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads 5Km Buffer
- Kavango West Region

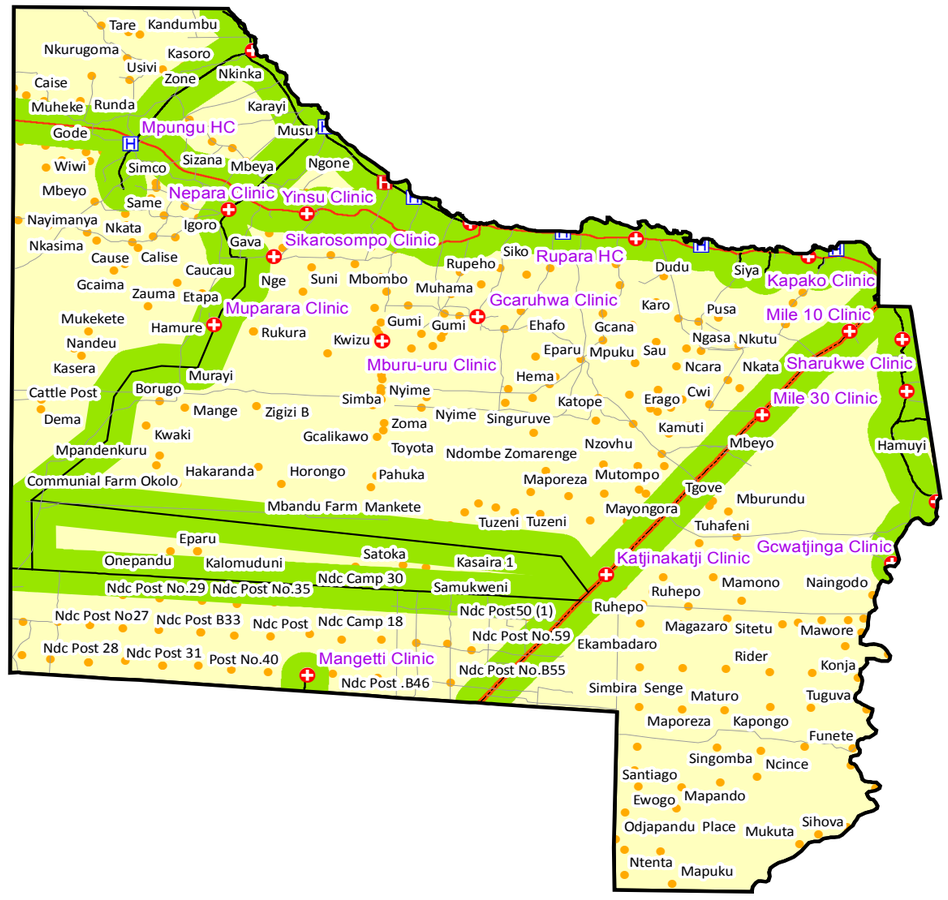
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 22.4% of all verified Dwelling Units in the Kavango West Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 4.2.3 KAVANGO WEST REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

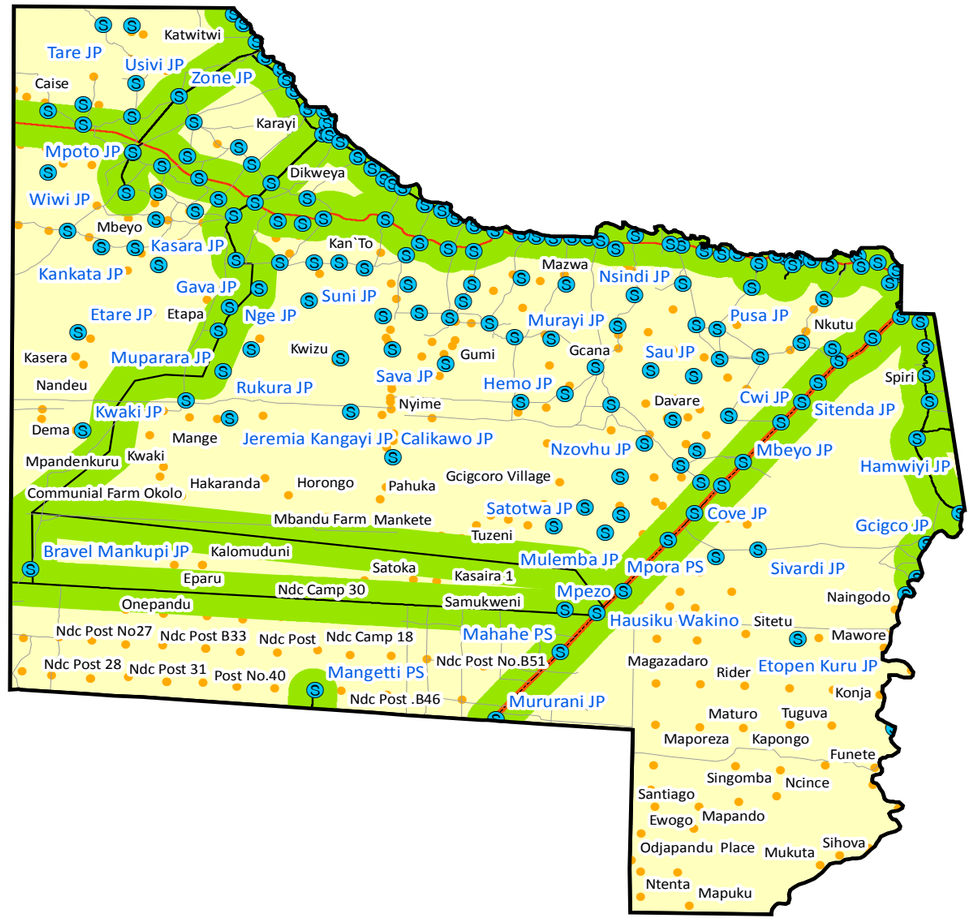
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads 5Km Buffer
- Kavango West Region

The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 11.5% of all health facilities in the Kavango West Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.2.4 KAVANGO WEST REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads 5Km Buffer
- Kavango West Region

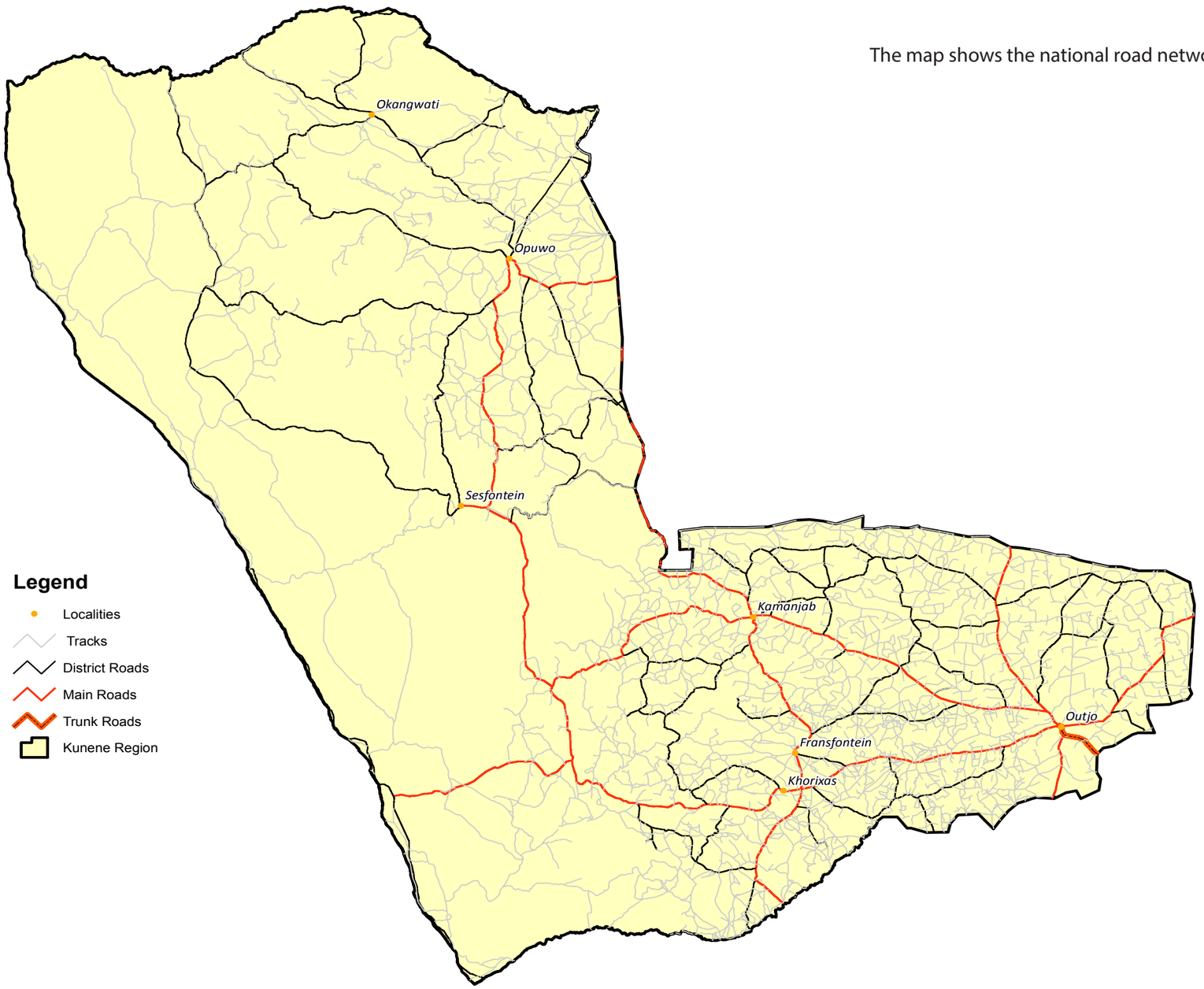
The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 39.1% of all health facilities in the Kavango West Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION - KUNENE

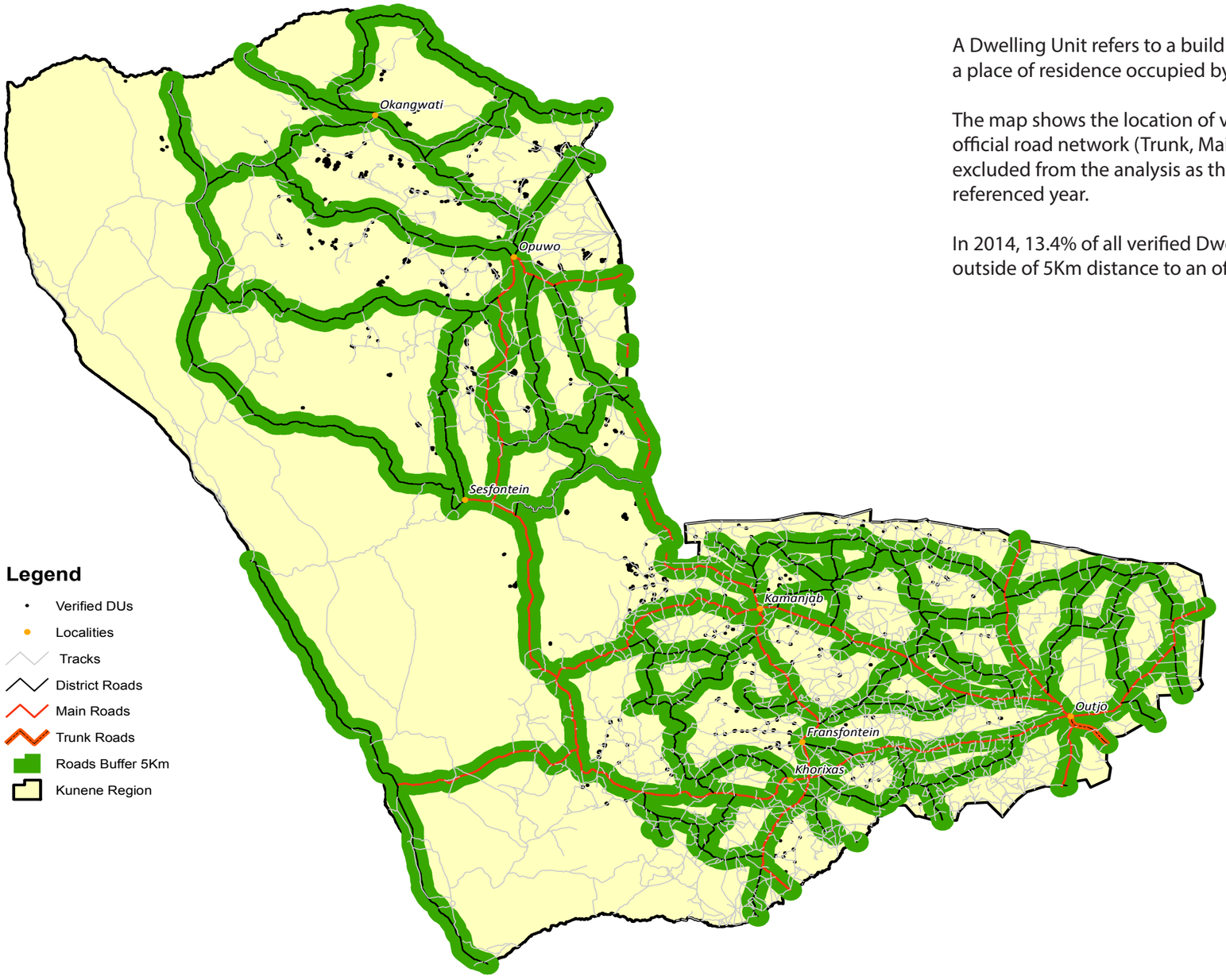
Figure 4.3.1 KUNENE REGION – REGIONAL ROAD NETWORK IN 2014



The map shows the national road network for the Ohangwena Region in 2014.

Source: Roads Authority, 2014

Figure 4.3.2 KUNENE REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 13.4% of all verified Dwelling Units in the Kunene Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

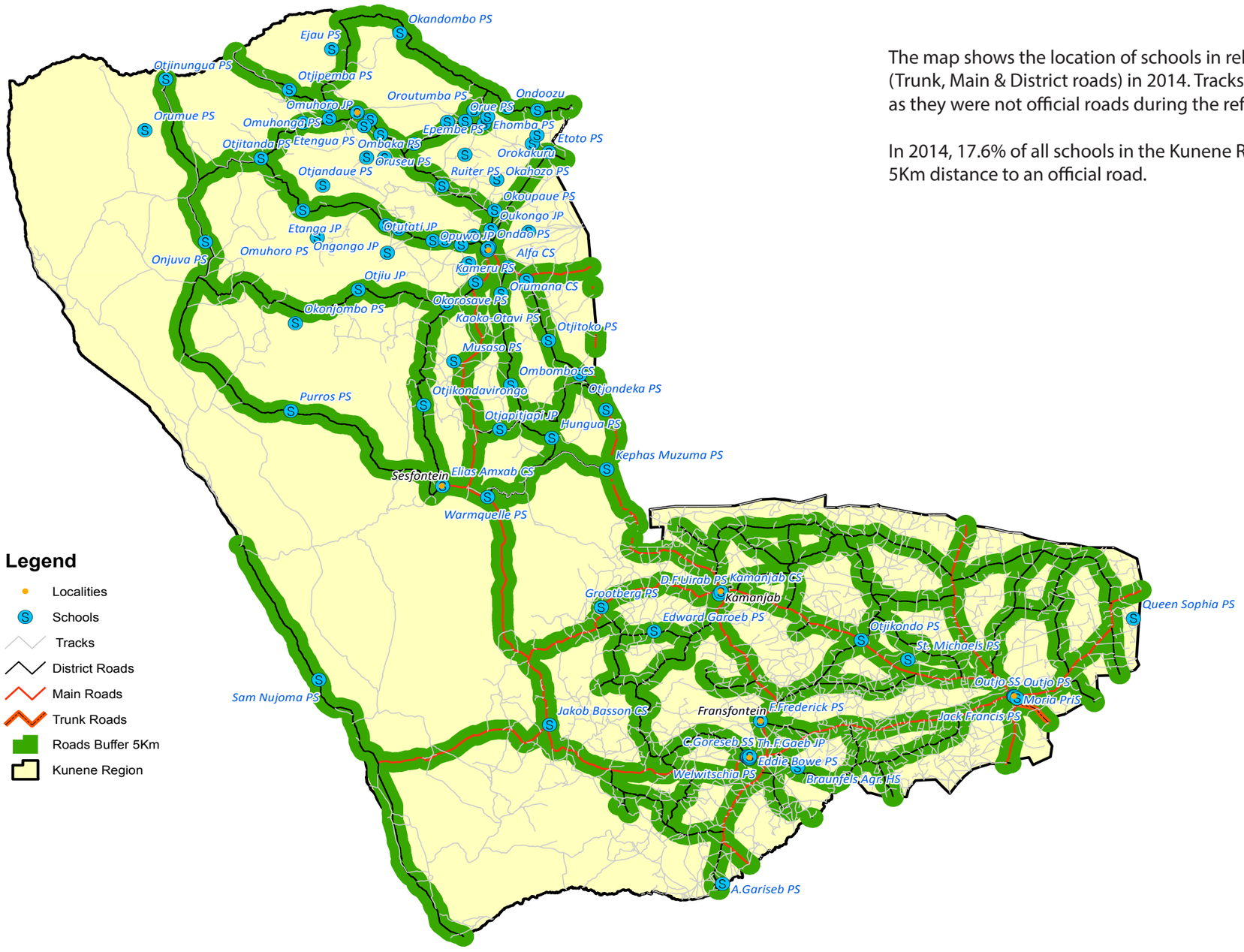
Figure 4.3.3 KUNENE REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 6.9% of all health facilities in the Kunene Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.3.4 KUNENE REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



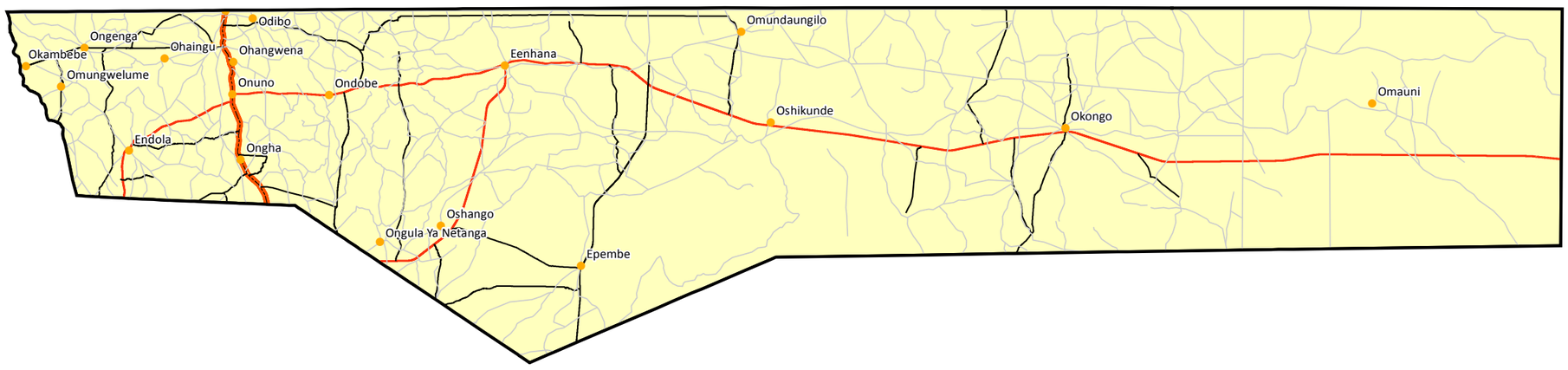
The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 17.6% of all schools in the Kunene Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION
-
OHANGWENA

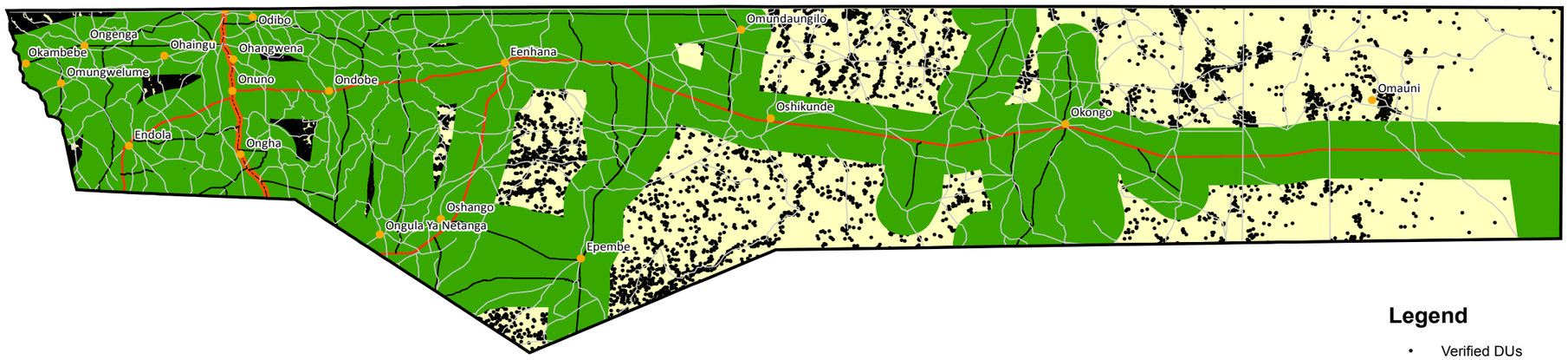
Figure 4.4.1 OHANGWENA REGION – REGIONAL ROAD NETWORK IN 2014



The map shows the national road network for the Ohangwena Region in 2014.

Source: Roads Authority, 2014

Figure 4.4.2 OHANGWENA REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



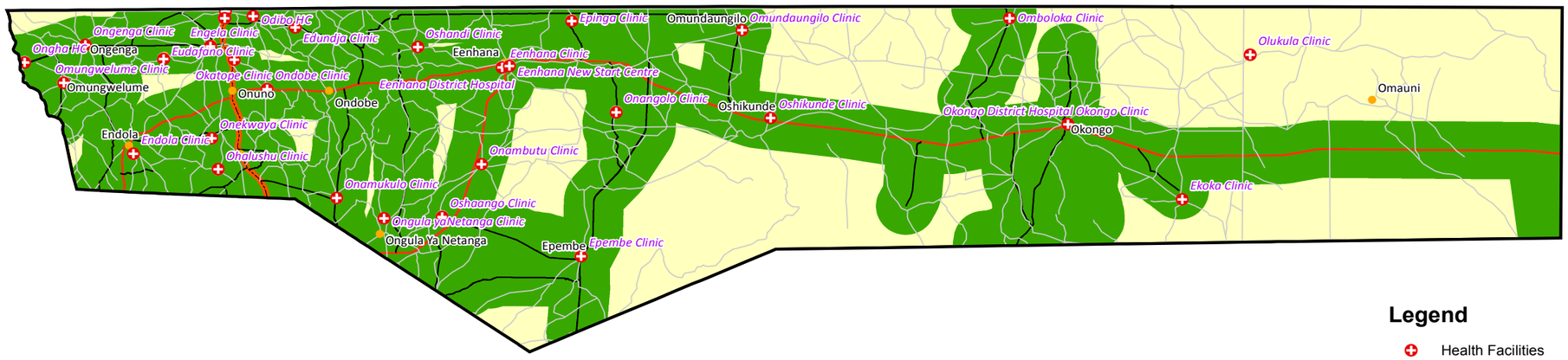
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 12.7% of all verified Dwelling Units in the Ohangwena Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 4.4.3 OHANGWENA REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

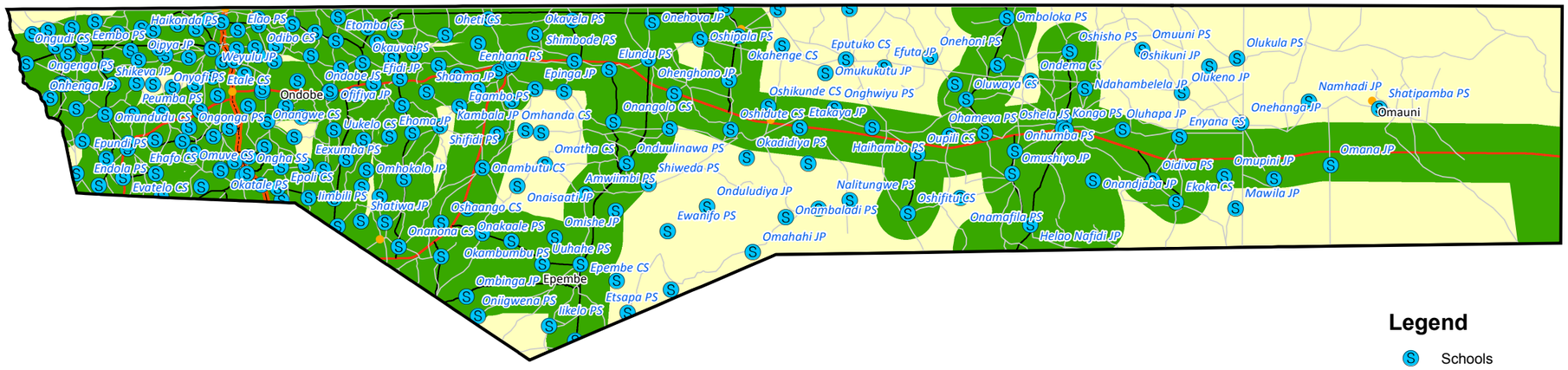


The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they are not official roads during the referenced year.

In 2014, 2.8% of all health facilities in the Ohangwena Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.4.4 OHANGWENA REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they are not official roads during the referenced year.

In 2014, 16.7% of all schools in the Ohangwena Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION - OMAHEKE

Figure 4.5.1 OMAHEKE REGION – REGIONAL ROAD NETWORK IN 2014

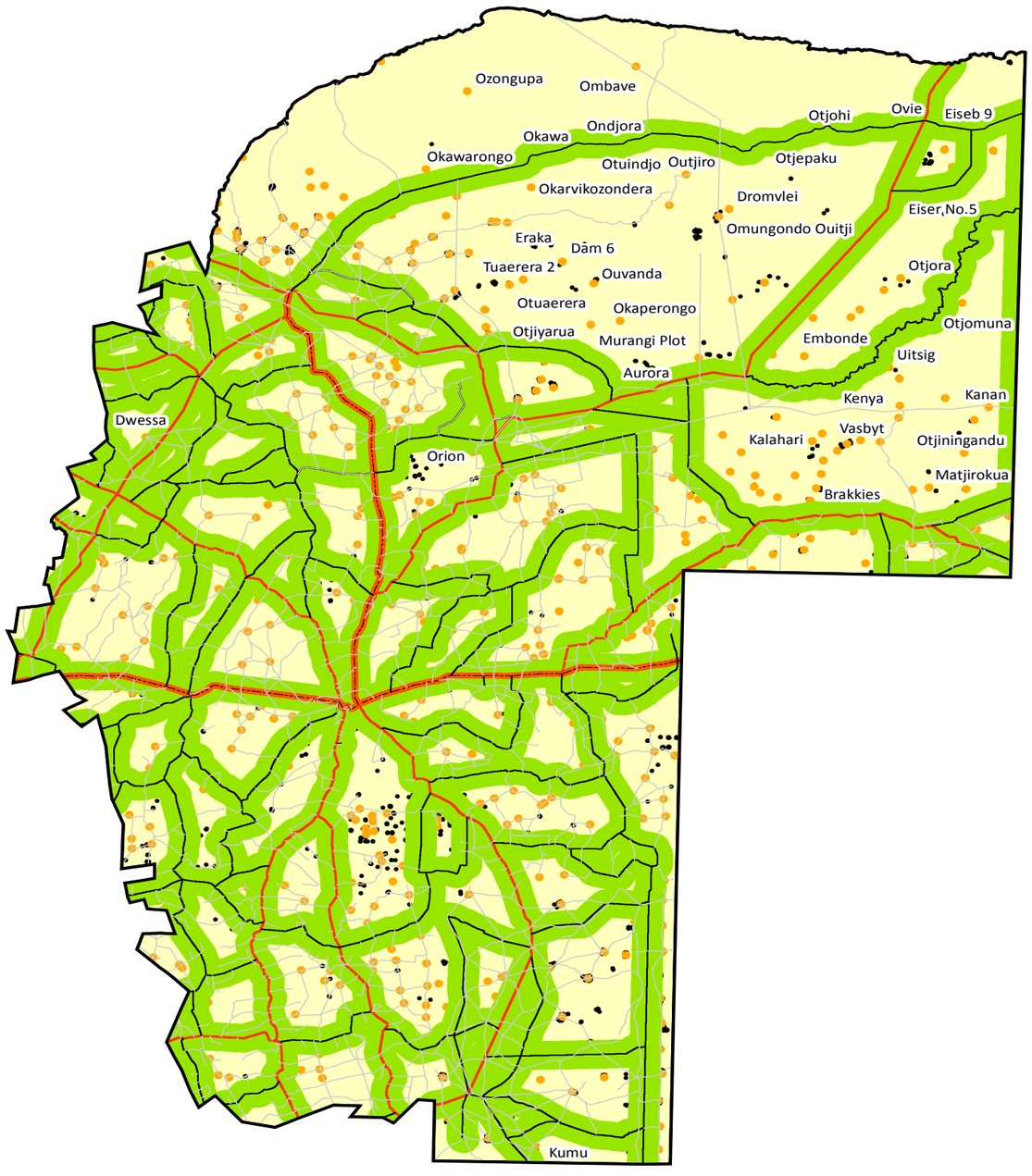
Legend

- Localities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Omaheke Region

The map shows the national road network for the Omaheke Region in 2014.

Source: Roads Authority, 2014

Figure 4.5.2 OMAHEKE REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

- Verified Dwelling Units
- Localities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads 5 Km Buffer
- Omaheke Region

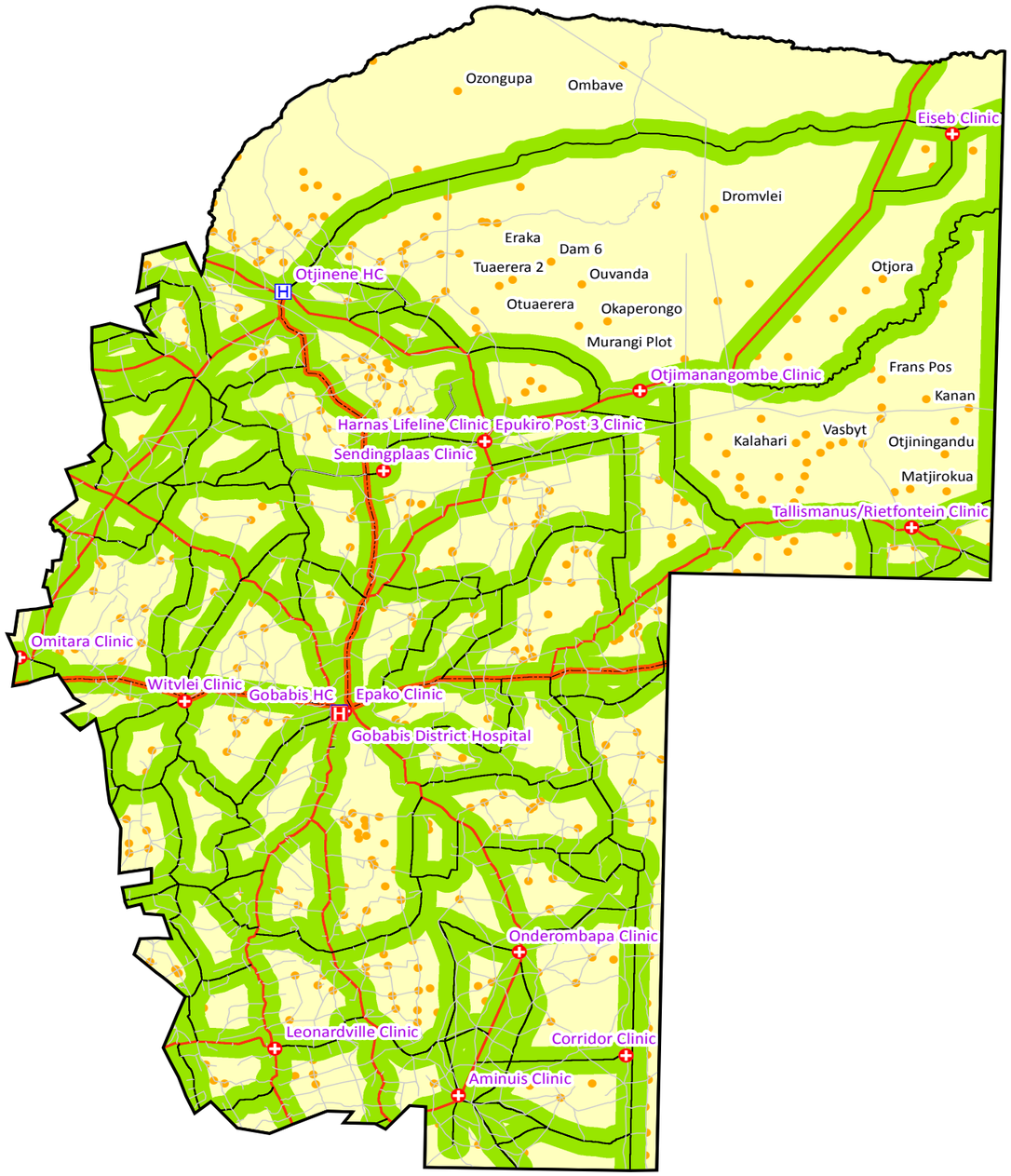
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 15.8% of all verified Dwelling Units in the Omaheke Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 4.5.3 OMAHEKE REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

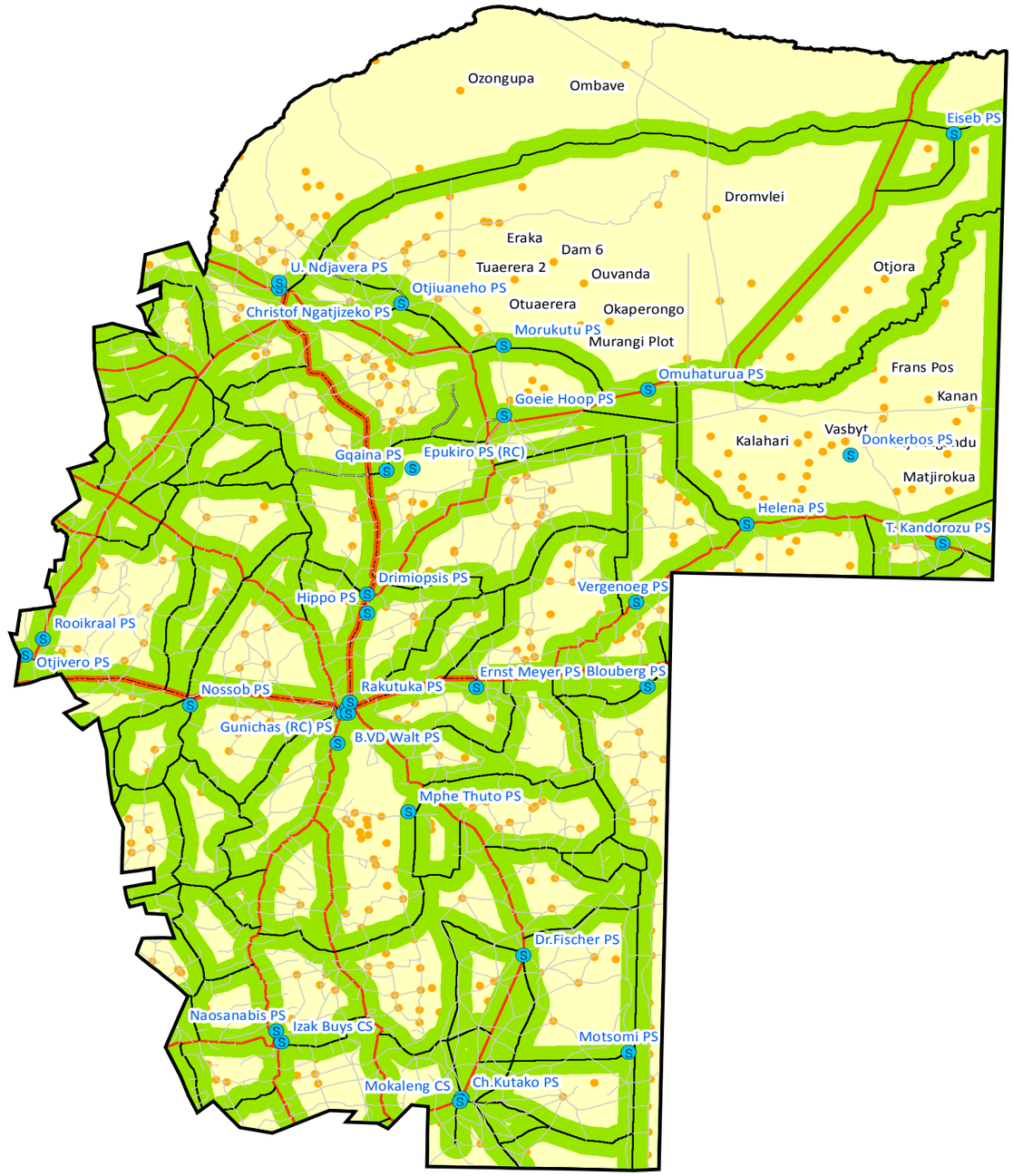


The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014.
Tracks were excluded from the analysis as they wre not official roads during the referenced year.

In 2014, 6.3% of all health facilities in the Omaheke Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.5.4 OMAHEKE REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads 5 Km Buffer
- Omaheke Region

The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014.
Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 9.4% of all schools in the Omaheke Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION

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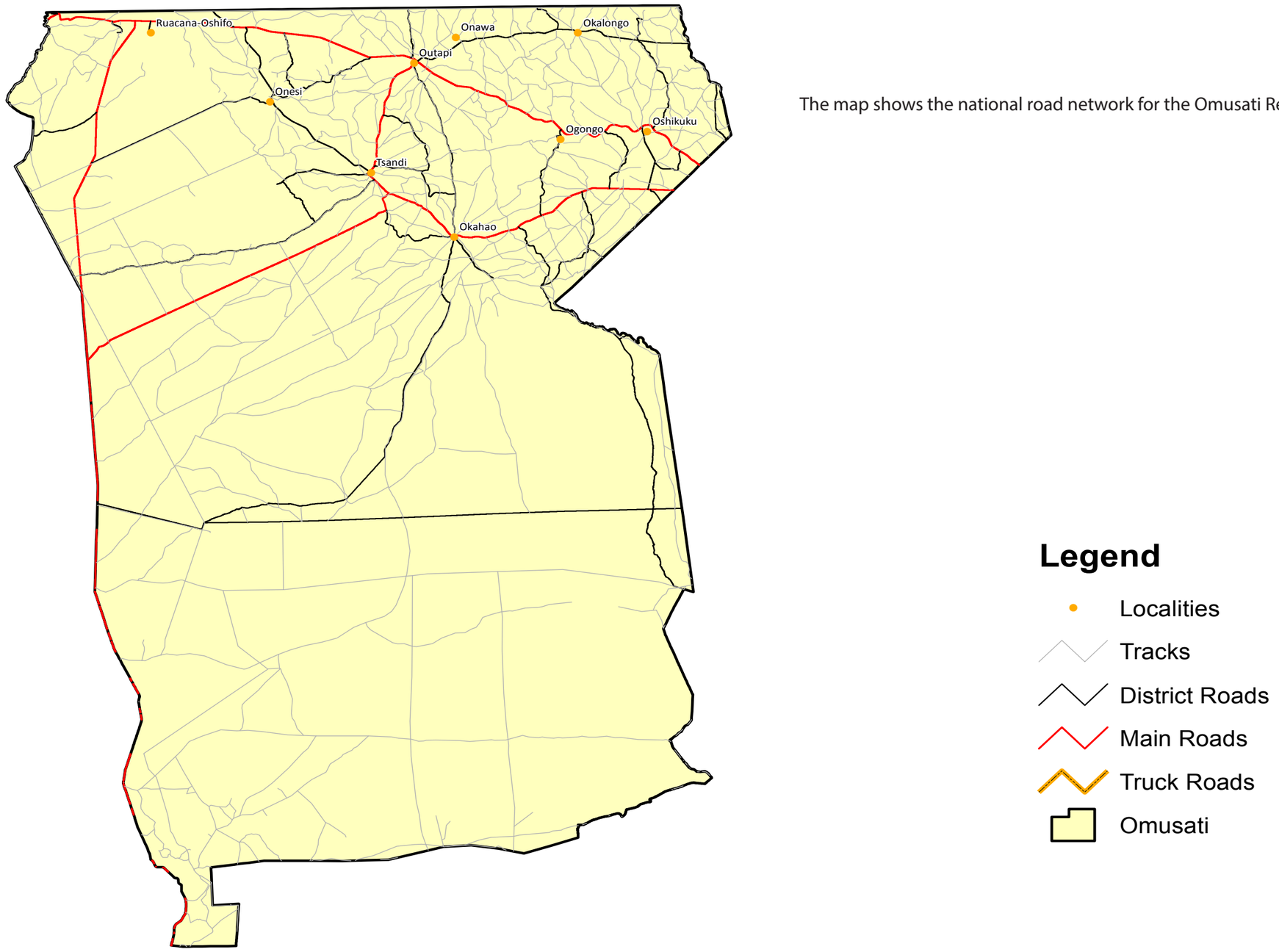
OMUSATI

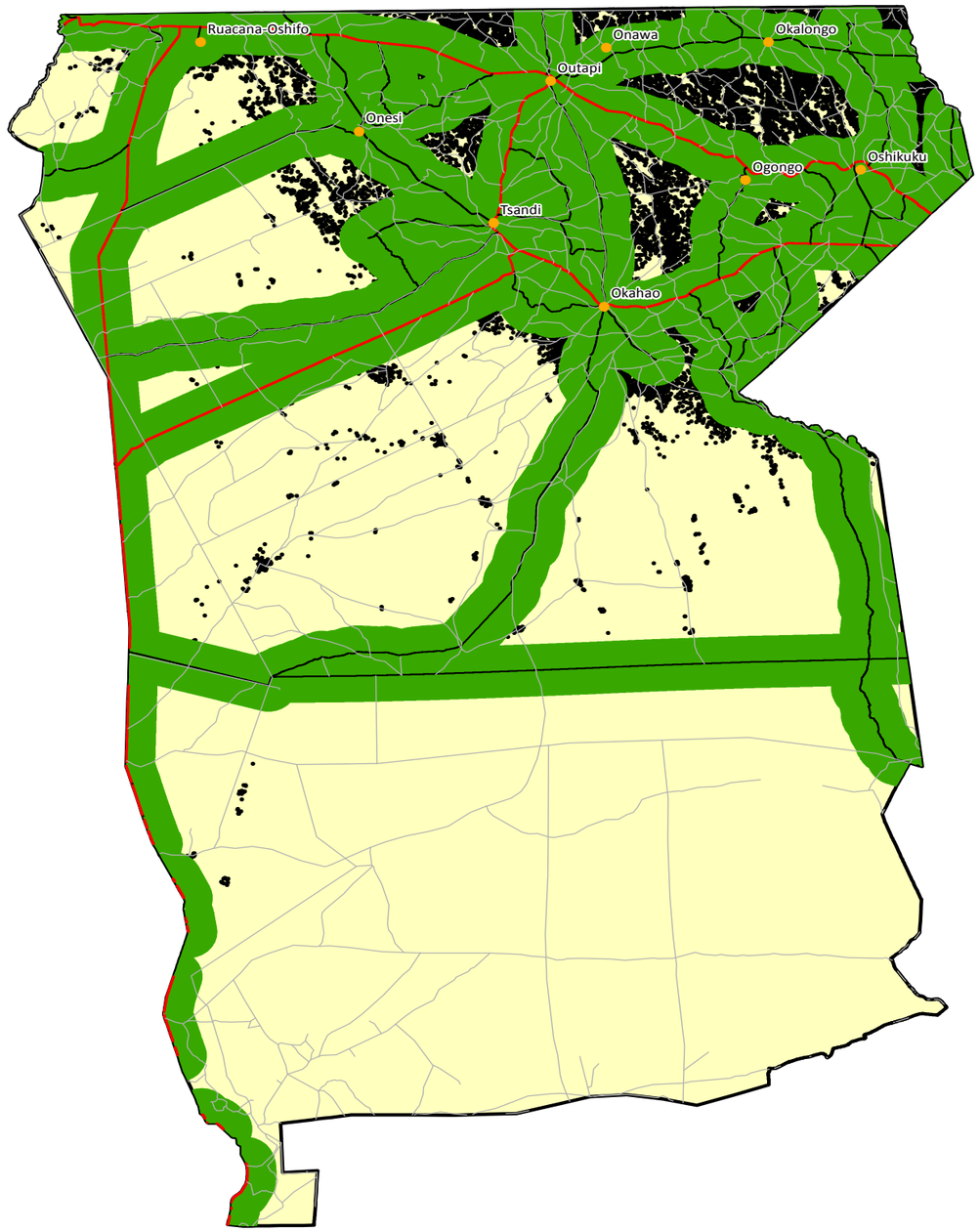
Figure 3.6.1 OMUSATI REGION – REGIONAL ROAD NETWORK IN 2014



The map shows the national road network for the Omusati Region in 2014.

Source: Roads Authority, 2014

Figure 3.6.2 OMUSATI REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

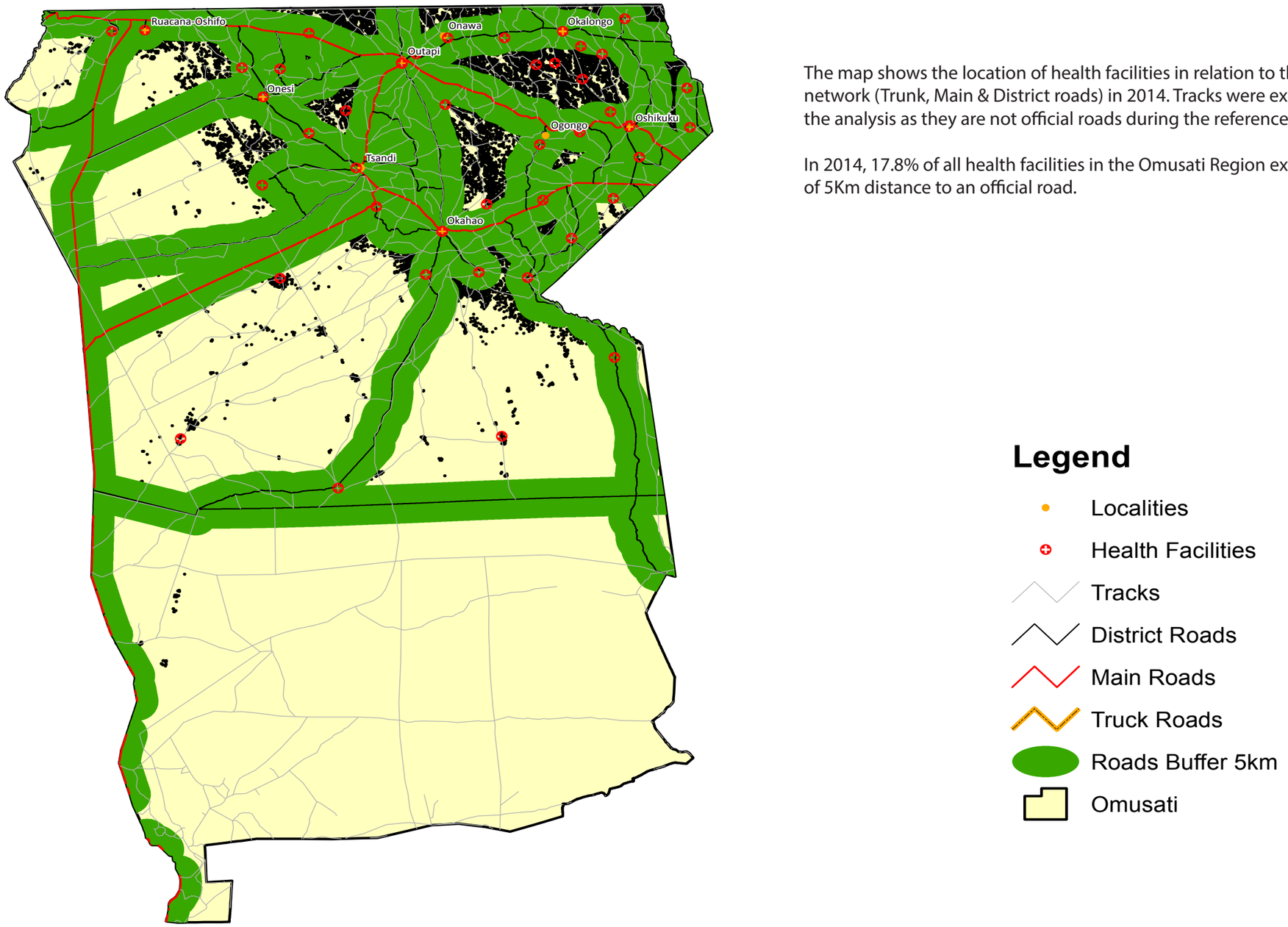
In 2014, 16.9% of all verified Dwelling Units in the Omusati Region existed outside of 5Km distance to an official road.

Legend

- Verified DUs
- Localities
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Roads Buffer 5km
- Omusati

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 3.6.3 OMUSATI REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

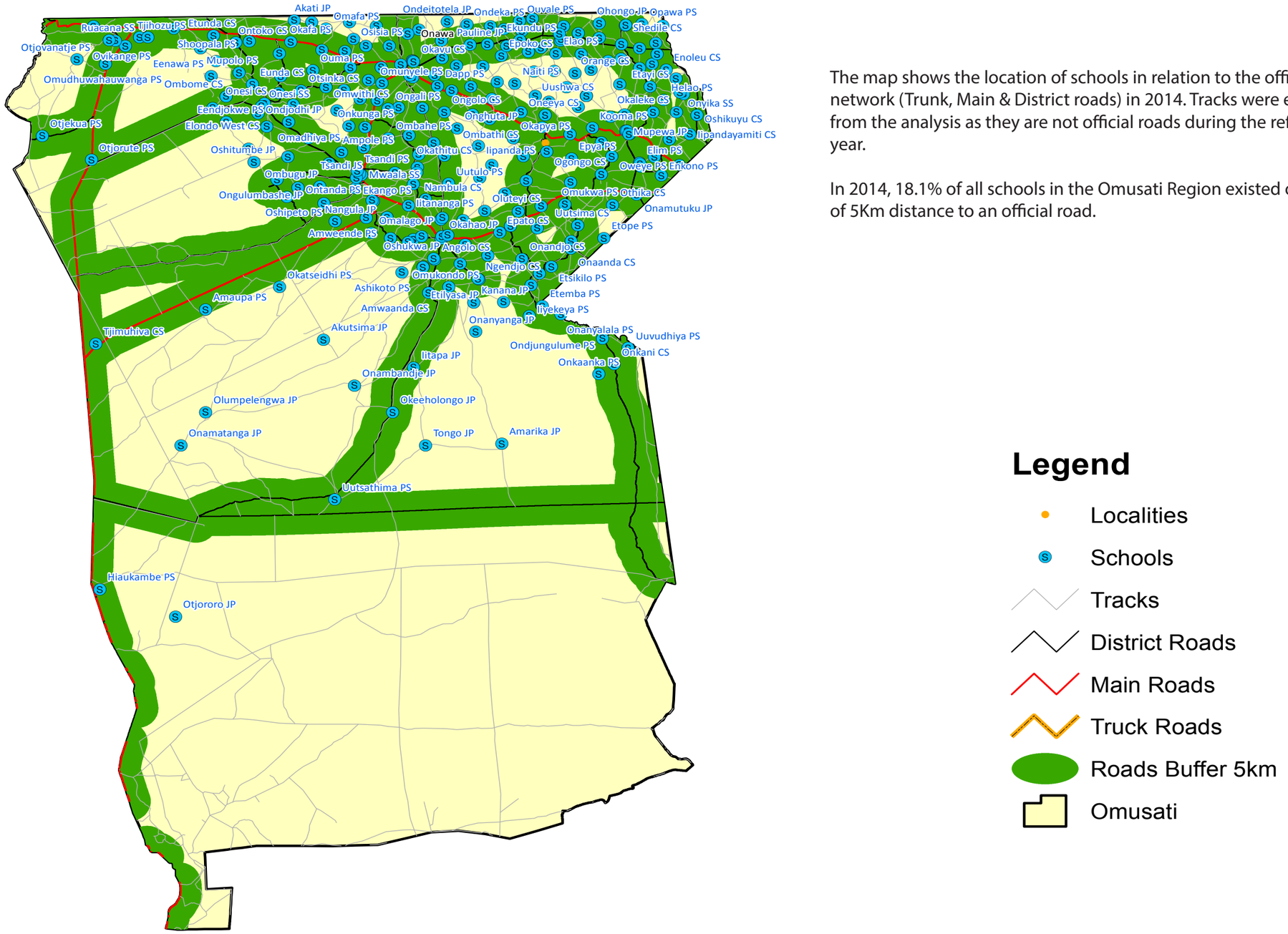


The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they are not official roads during the referenced year.

In 2014, 17.8% of all health facilities in the Omusati Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 3.6.4 OMUSATI REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they are not official roads during the referenced year.

In 2014, 18.1% of all schools in the Omusati Region existed outside of 5Km distance to an official road.

Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Truck Roads
- Roads Buffer 5km
- Omusati

Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION

-

OSHANA

Figure 4.7.1 OSHANA REGION – REGIONAL ROAD NETWORK IN 2014

The map shows the national road network for the Oshana Region in 2014.

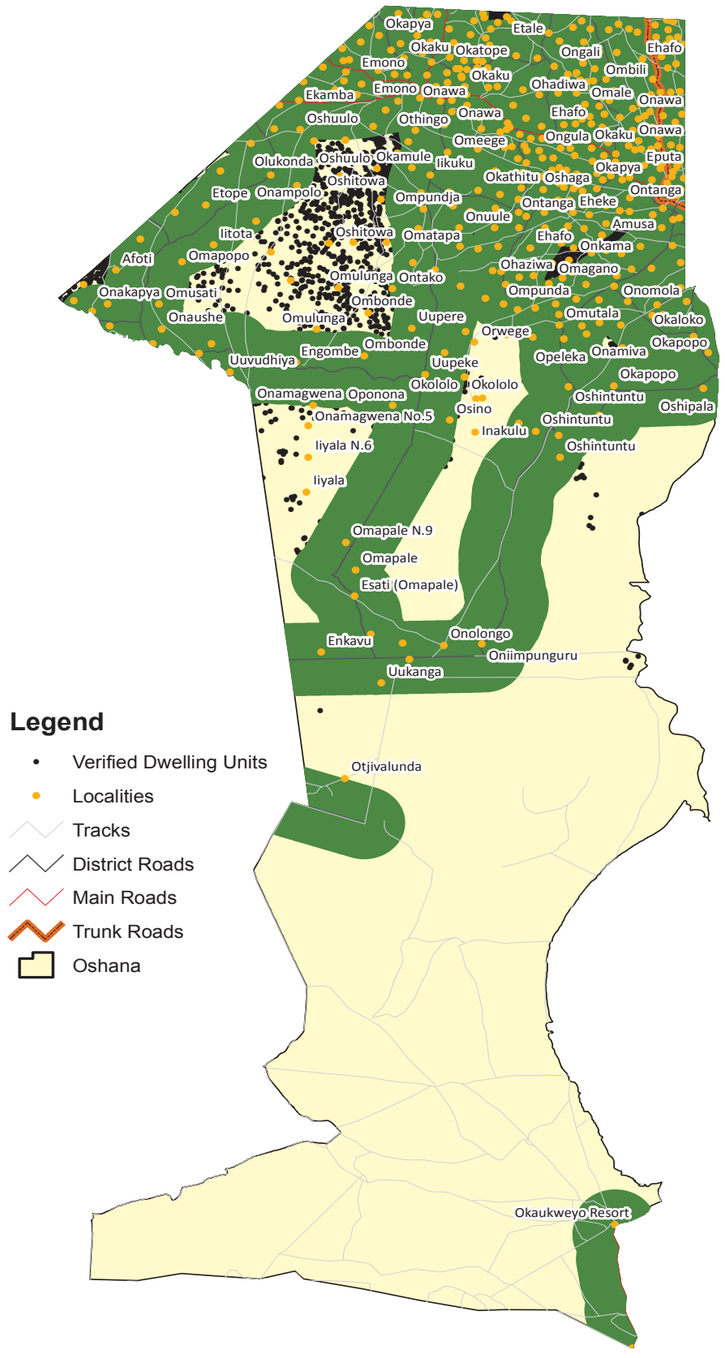
Source: Roads Authority, 2014

Figure 4.7.2 OSHANA REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014 2.9% of all dwelling units in the Oshana Region existed outside of 5Km distance to an official road.

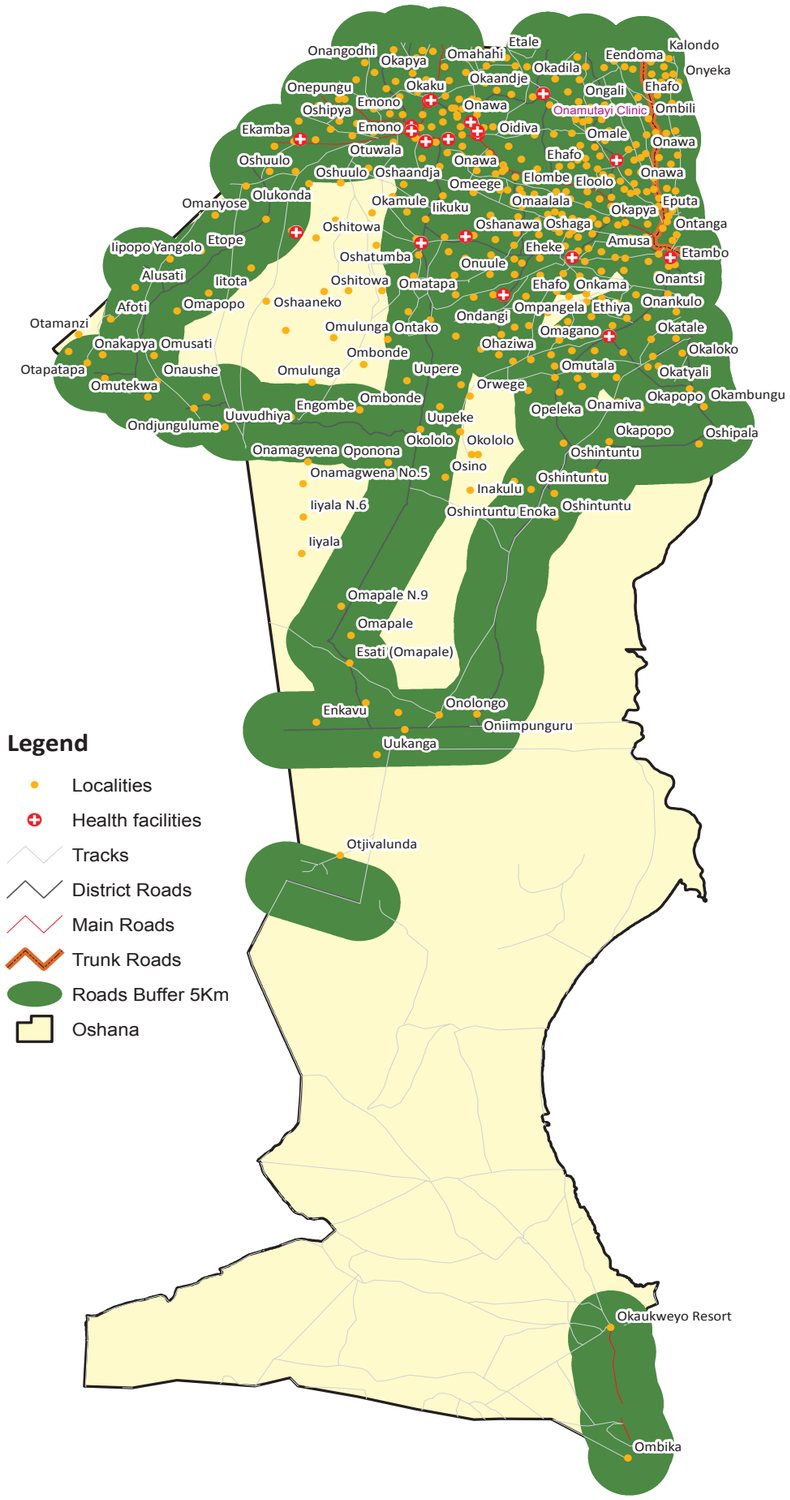


Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 4.7.3 OSHANA REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they are not official roads during the referenced year.

In 2014 0% of all health facilities in the Oshana Region existed outside of 5Km distance to an official road. All Health Facilities are within the 5Km road Buffer.

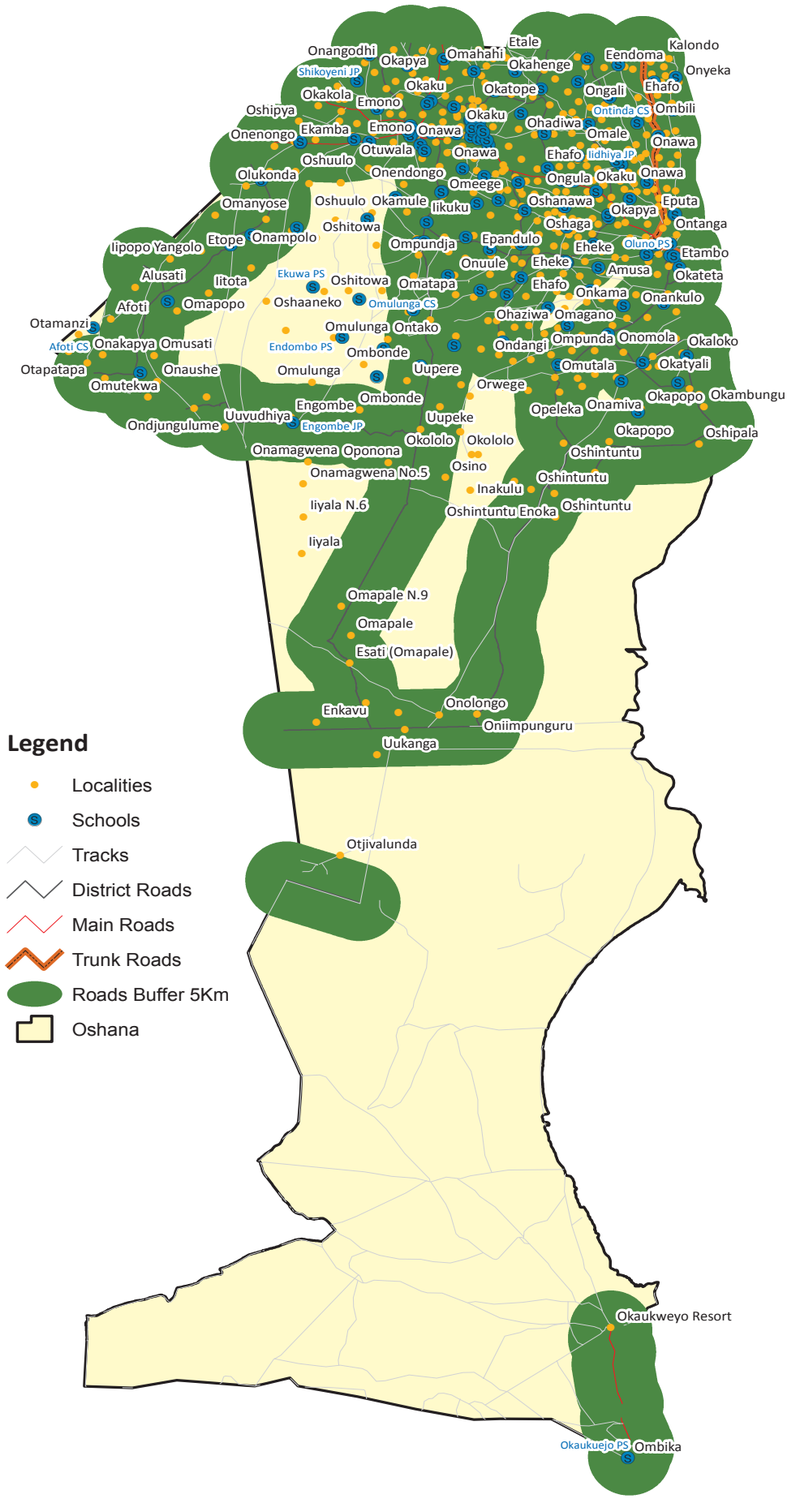


Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.7.4 OSHANA REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they are not official roads during the referenced year.

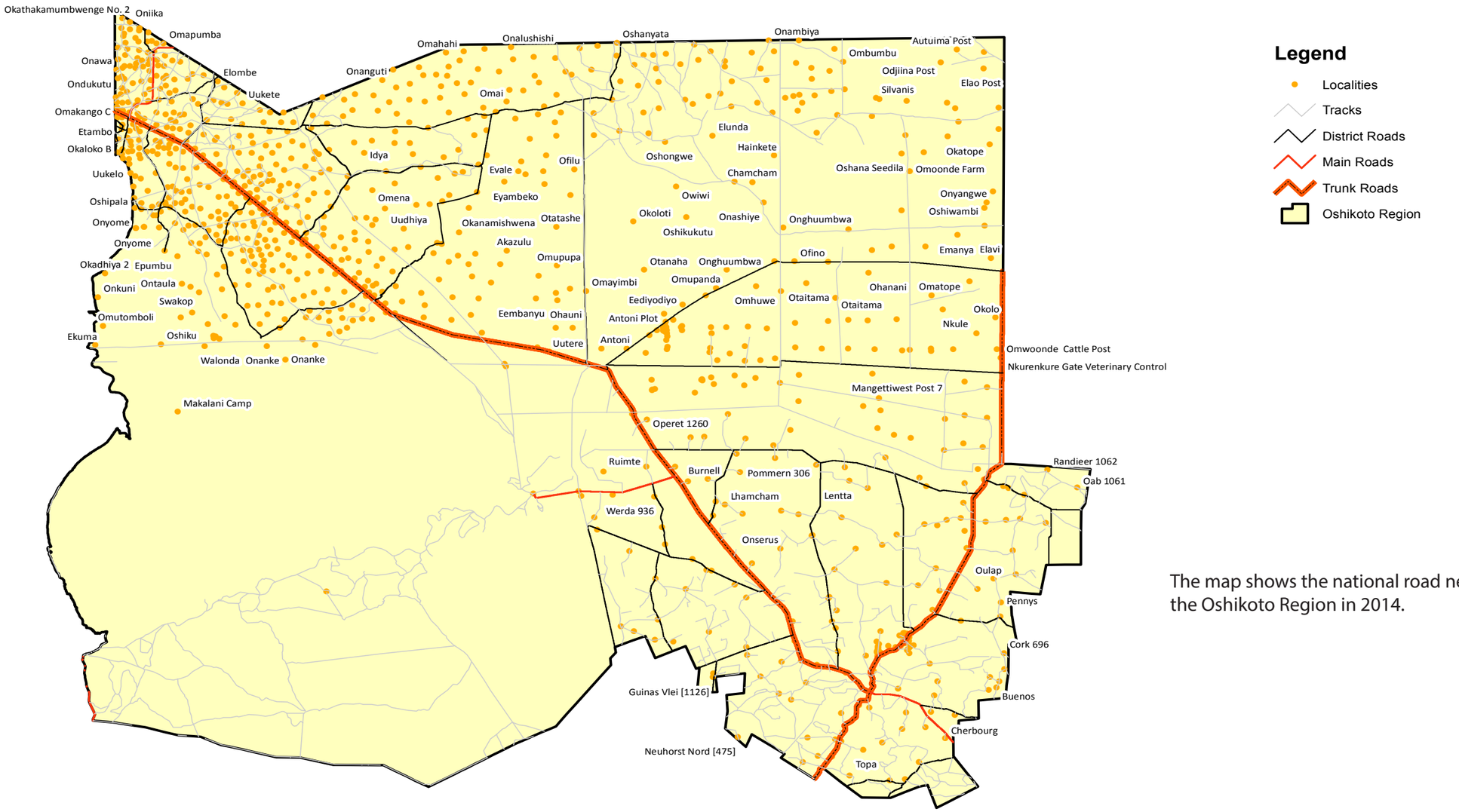
In 2014 5.3% of all Schools in the Oshana Region existed outside of 5Km distance to an official road.



Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION
-
OSHIKOTO

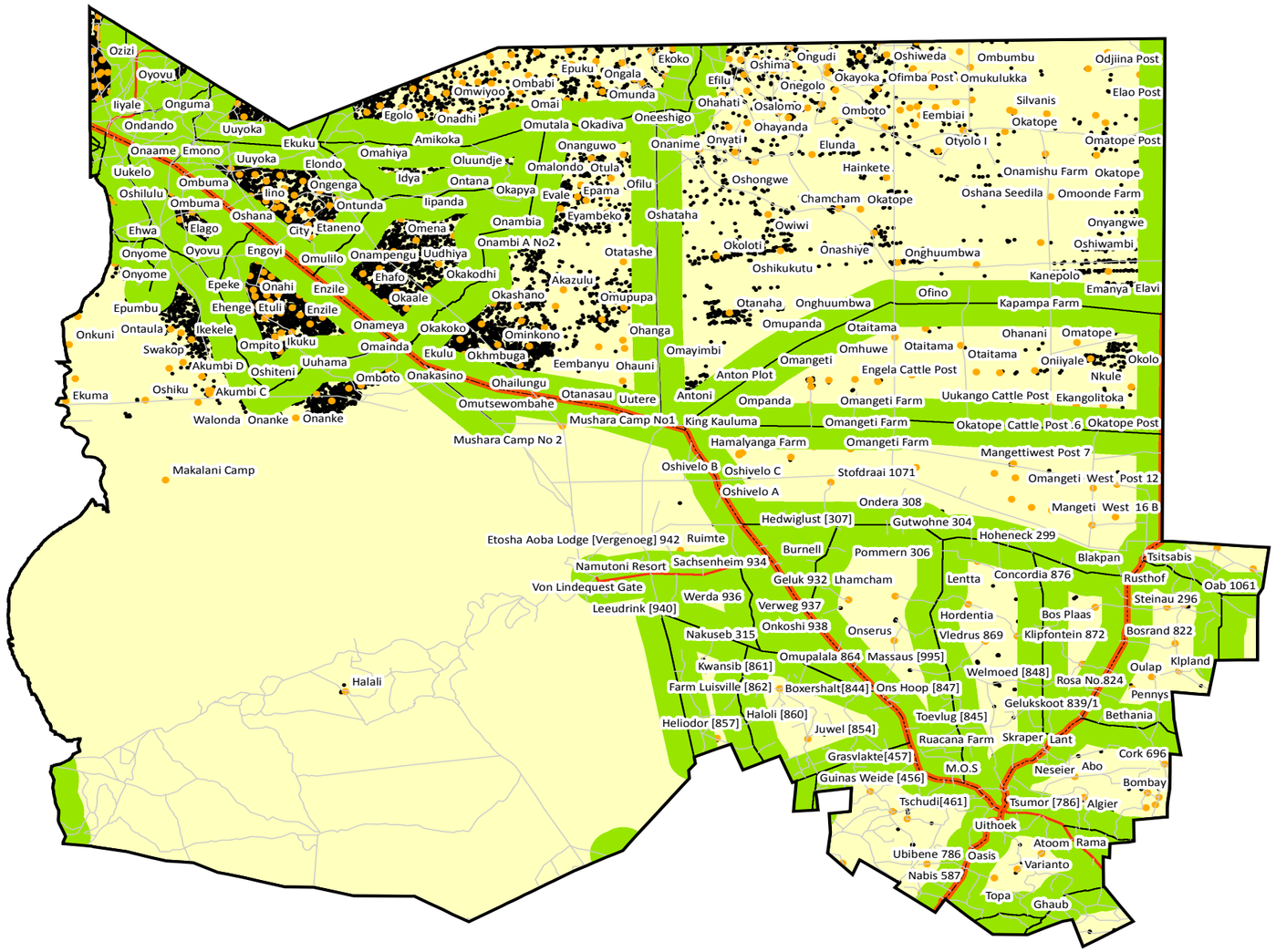
Figure 4.8.1 OSHIKOTO REGION – REGIONAL ROAD NETWORK IN 2014



The map shows the national road network for the Oshikoto Region in 2014.

Source: Roads Authority, 2014

Figure 4.8.2 OSHIKOTO REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

- Verified Dweling Units
- Localities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads 5Km Buffer
- Oshikoto Region

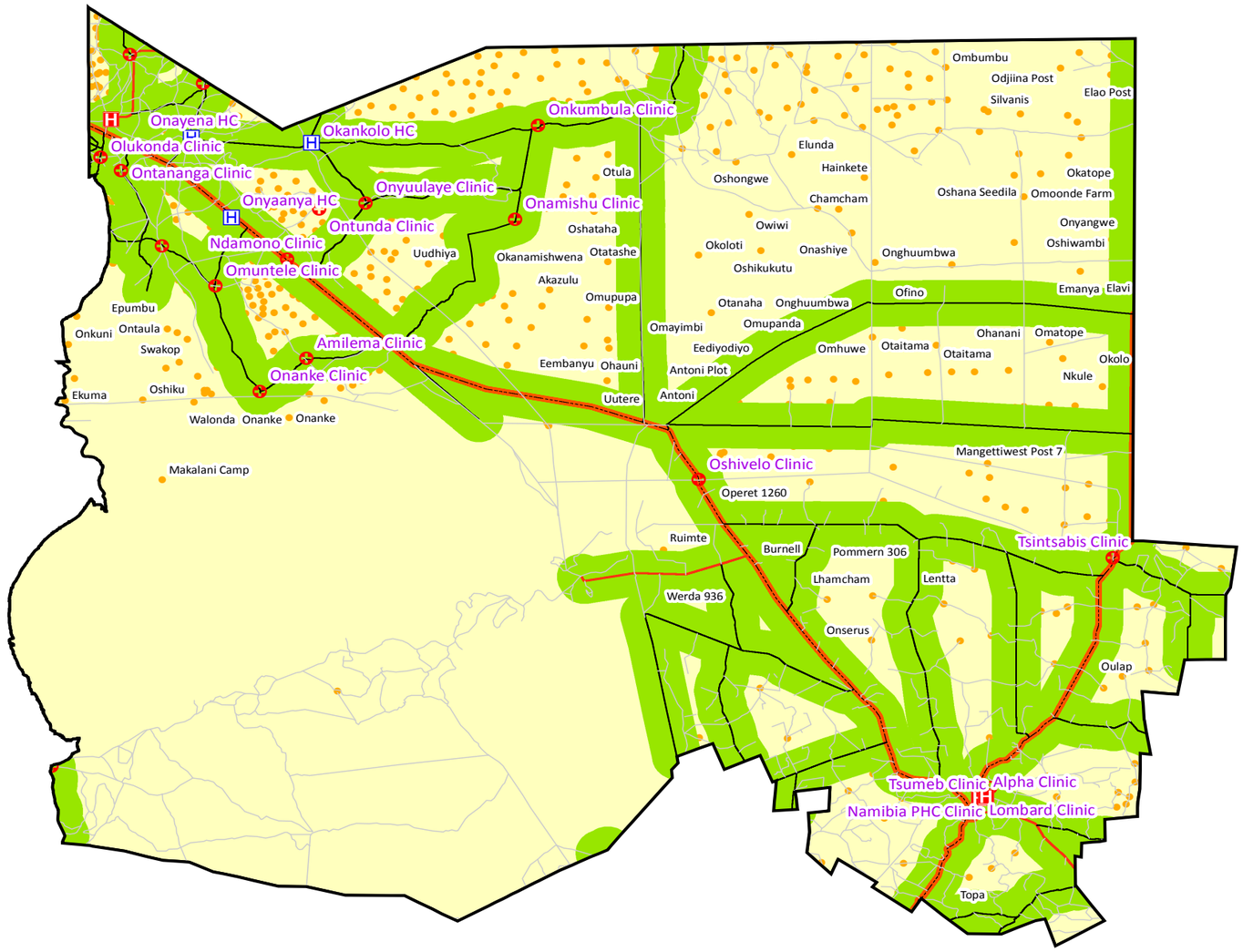
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 22.4% of all verified Dwelling Units in the Oshikoto Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 4.8.3 OSHIKOTO REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

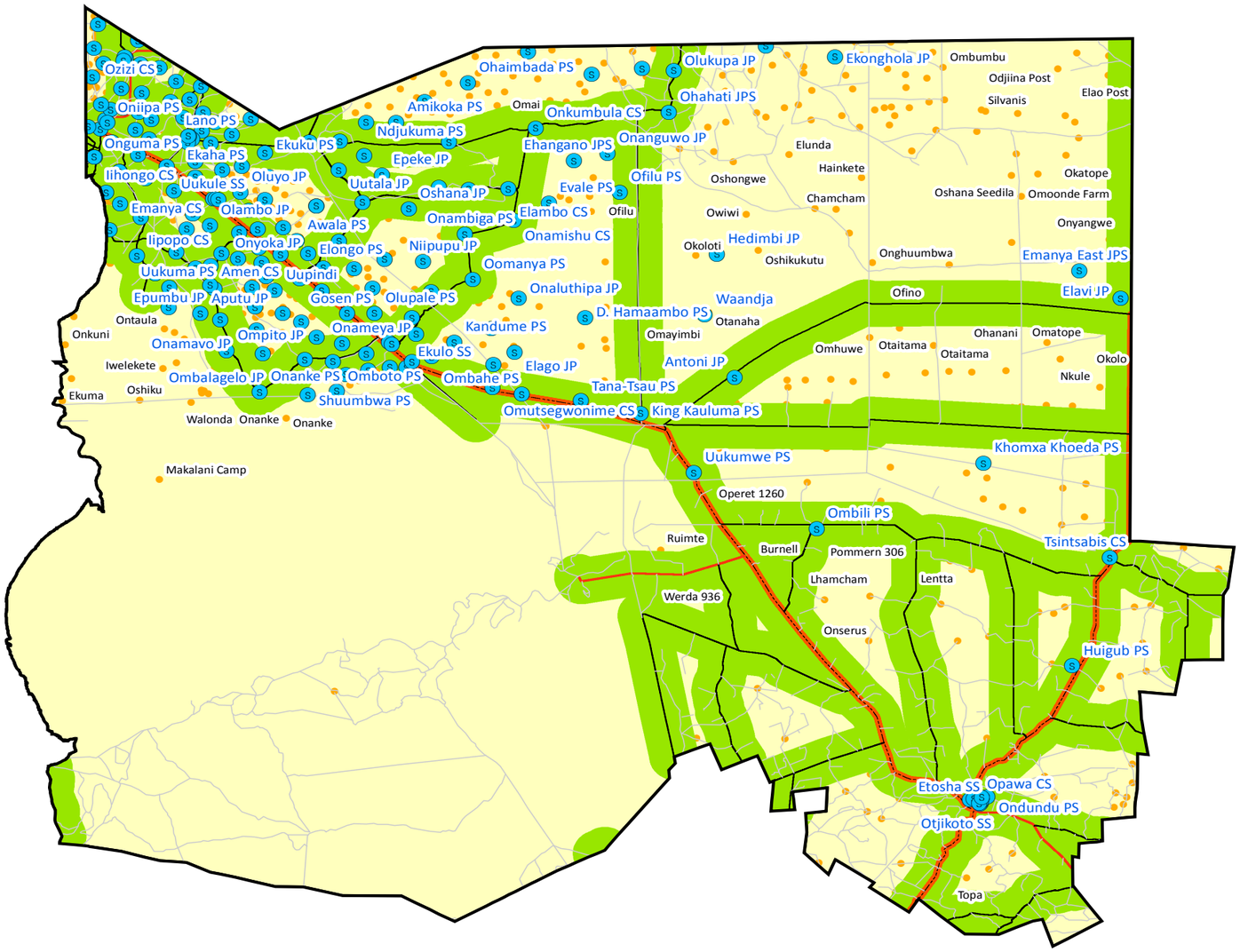
- Localities
- Clinic
- Health Centre
- Hospital
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads 5 Km Buffer
- Oshikoto Region

The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 3.7% of all health facilities in the Oshikoto Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.8.4 OSHIKOTO REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads 5Km Buffer
- Oshikoto Region

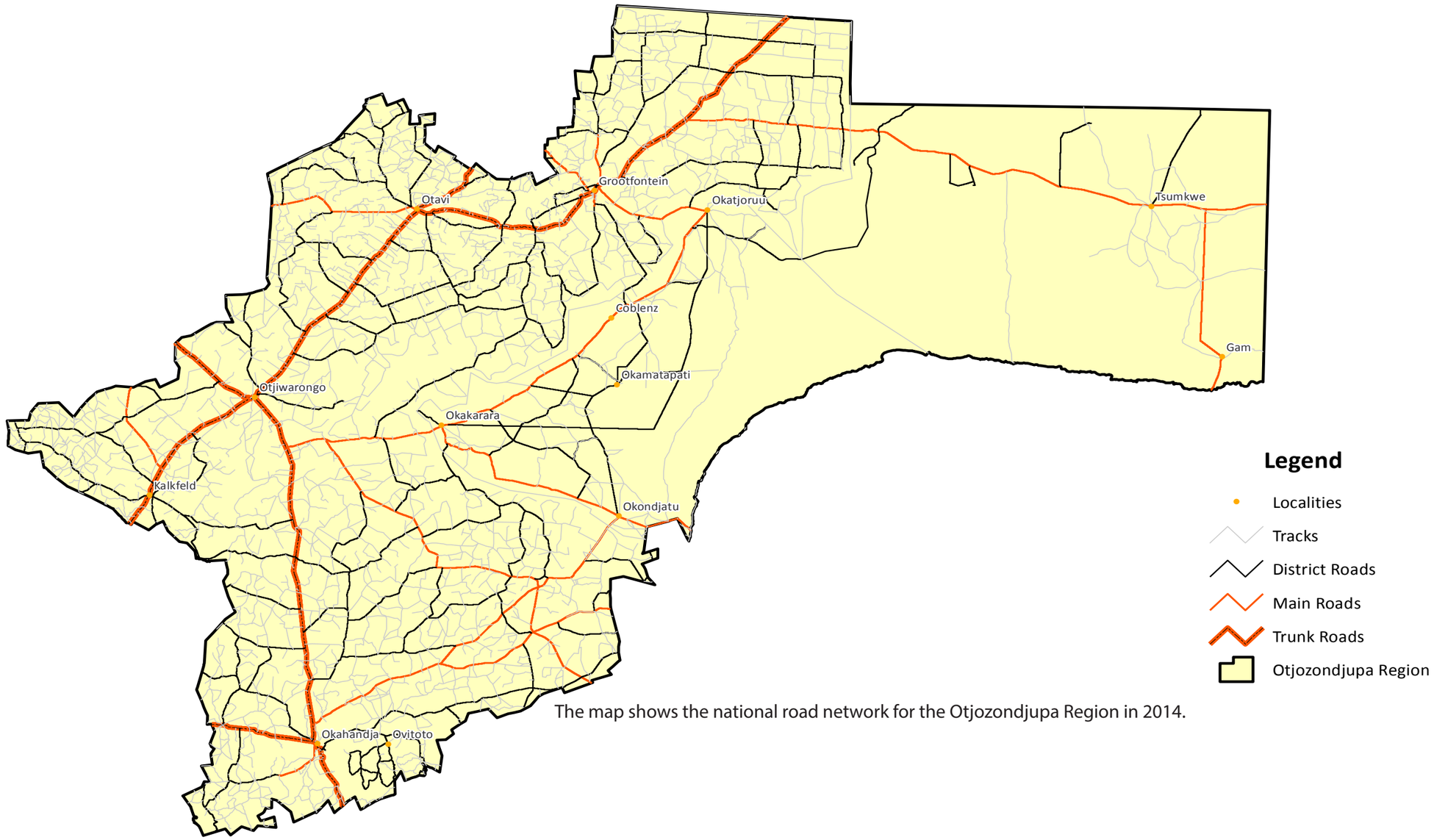
The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 25%of all schools in the Oshikoto Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION - OTJOZONDJUPA

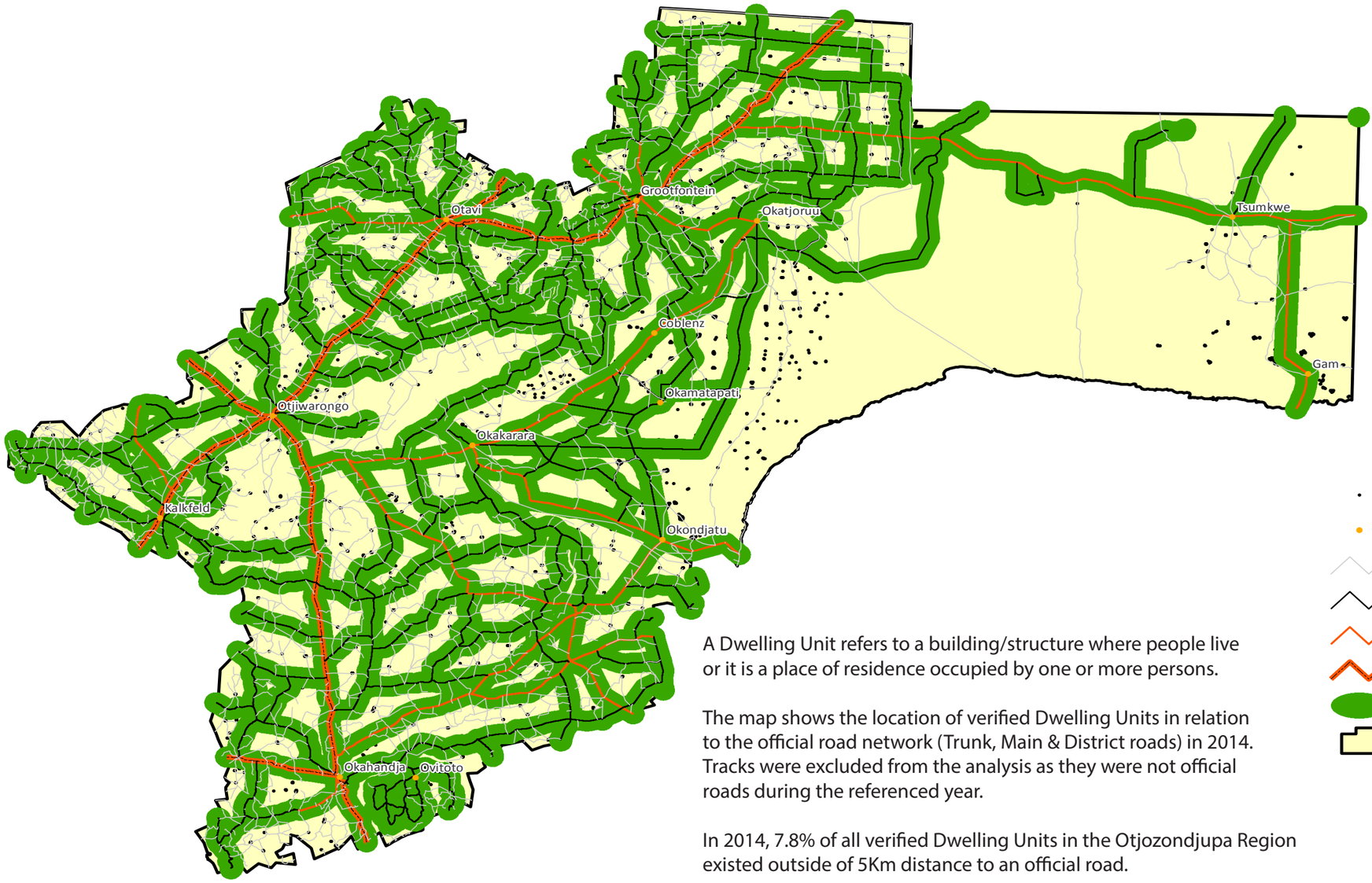
Figure 4.9.1 OTJOZONDUPA REGION – REGIONAL ROAD NETWORK IN 2014



The map shows the national road network for the Otjozondjupa Region in 2014.

Source: Roads Authority, 2014

Figure 4.9.2 OTJOZONDUPA REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

- Verified DUs
- Localities
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads Buffer5km
- Otjozondjupa Region

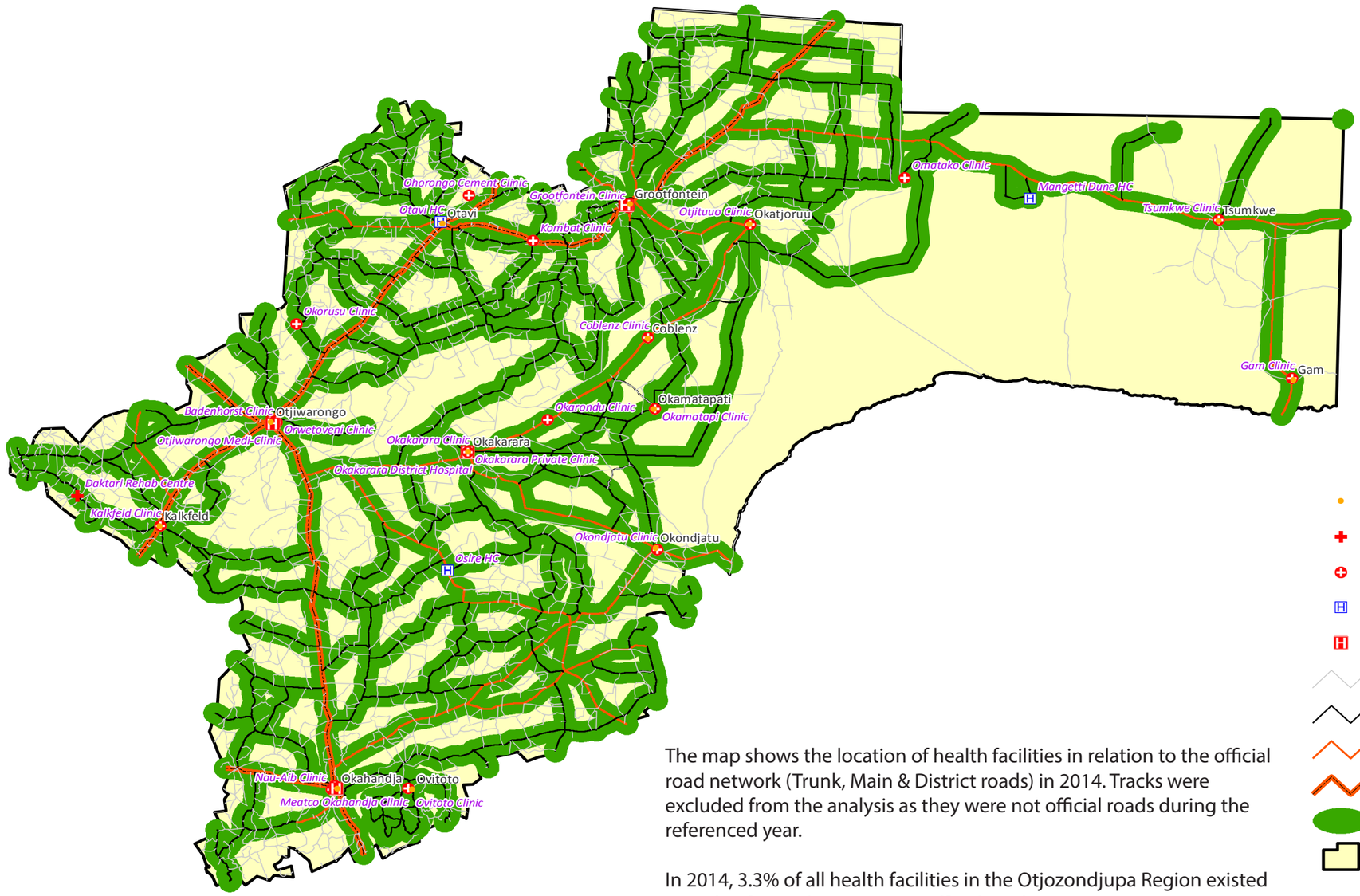
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 7.8% of all verified Dwelling Units in the Otjozondjupa Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 4.9.3 OTJOZONDUPA REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

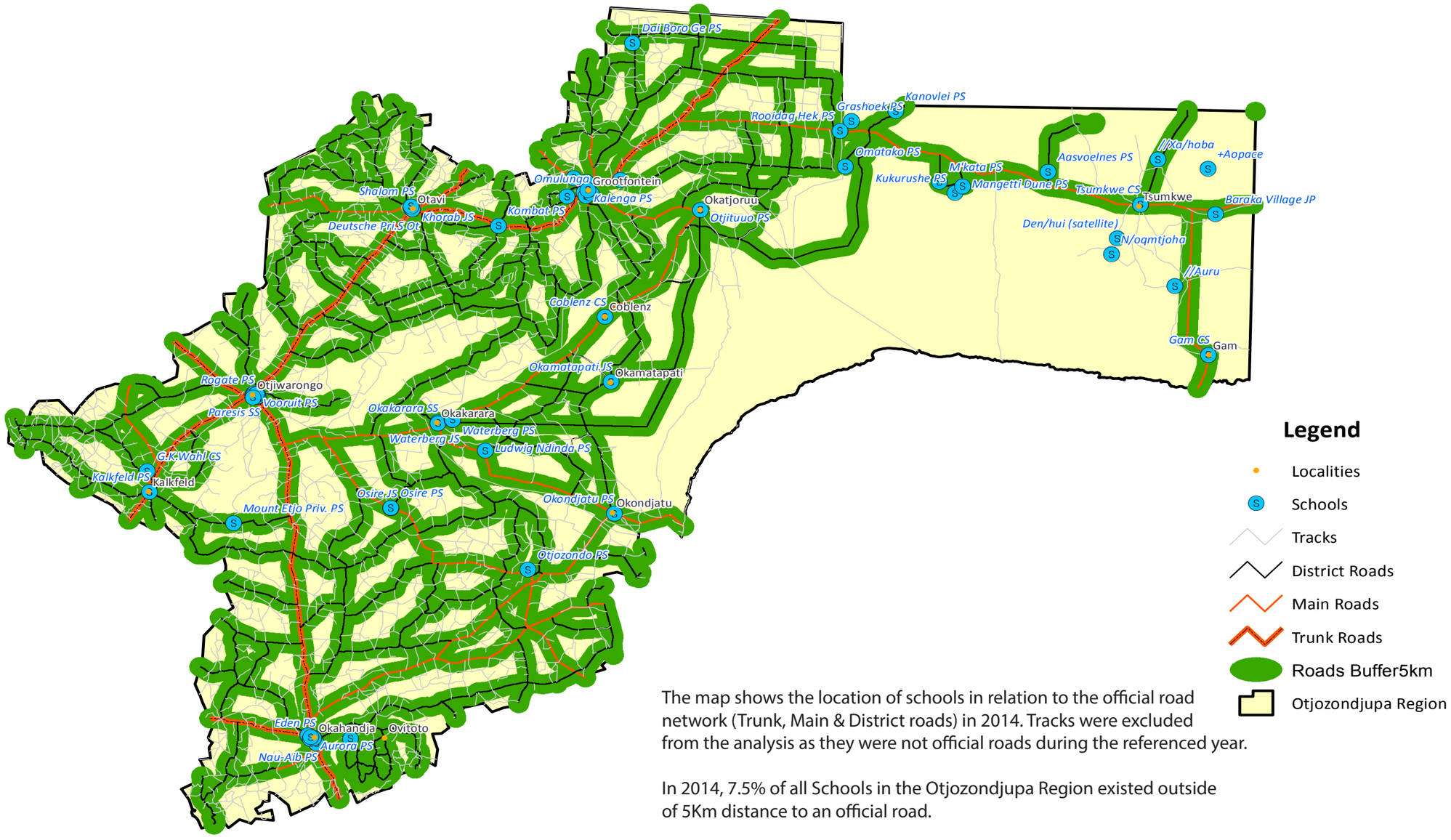


The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 3.3% of all health facilities in the Otjozondjupa Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.9..4 OTJOZONDUPA REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



Legend

- Localities
- Schools
- Tracks
- District Roads
- Main Roads
- Trunk Roads
- Roads Buffer5km
- Otjozondjupa Region

The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 7.5% of all Schools in the Otjozondjupa Region existed outside of 5Km distance to an official road.

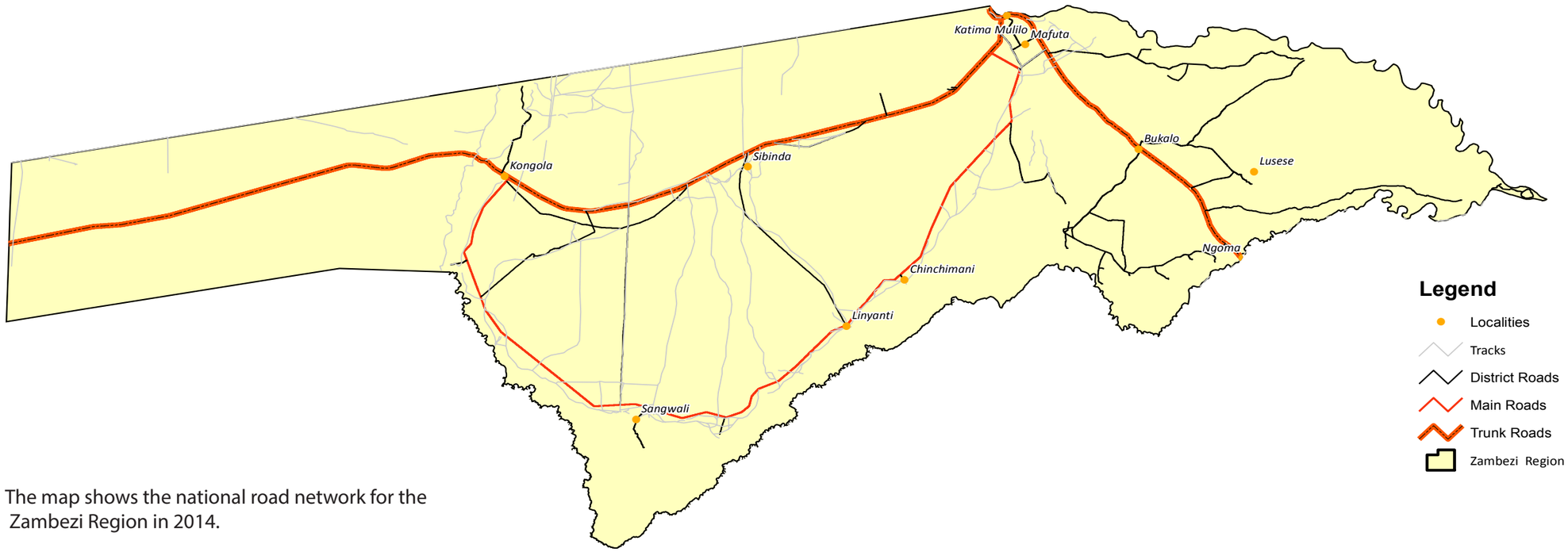
Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

TRANSPORTATION

-

ZAMBEZI

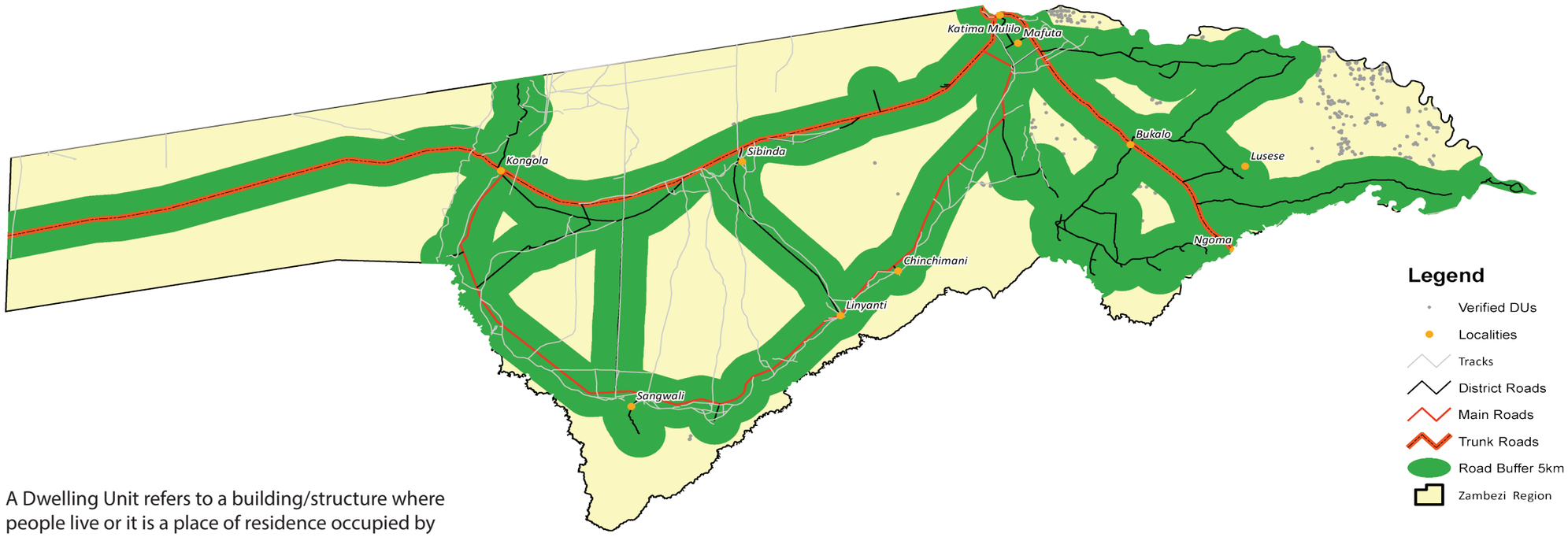
Figure 4.10.1 ZAMBEZI REGION – REGIONAL ROAD NETWORK IN 2014



The map shows the national road network for the Zambezi Region in 2014.

Source: Roads Authority, 2014

Figure 4.10.2 ZAMBEZI REGION – DWELLING UNITS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



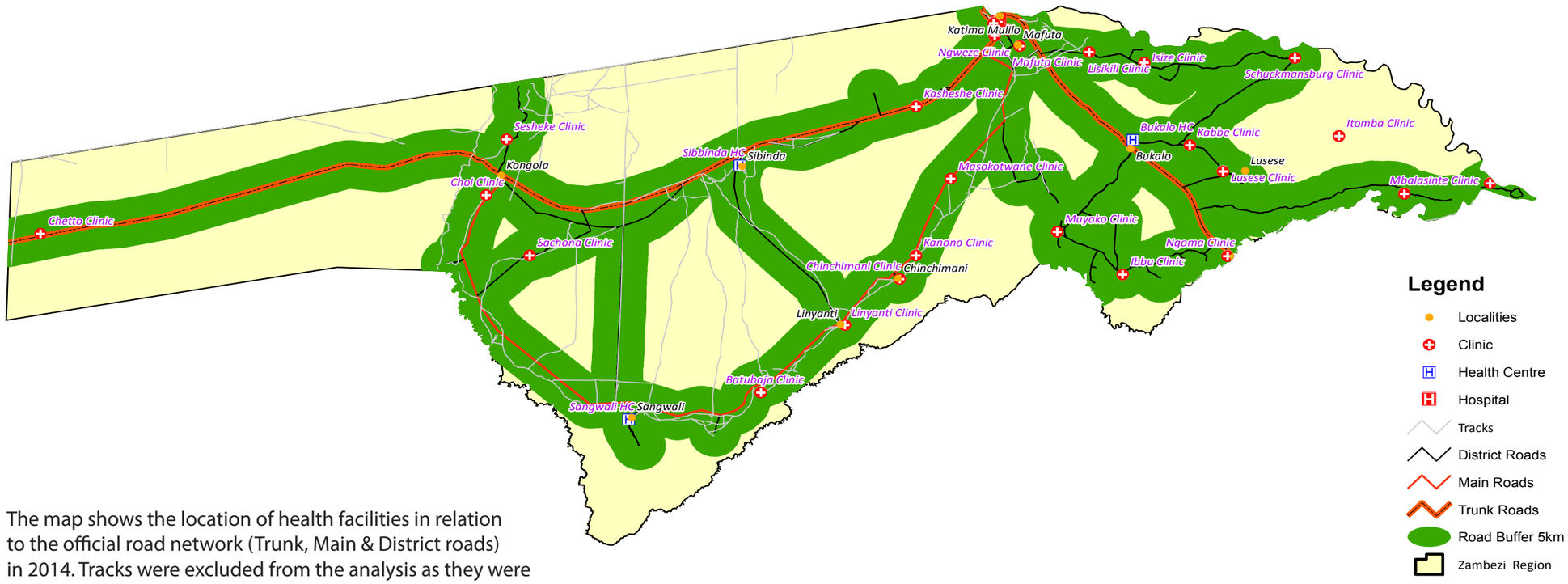
A Dwelling Unit refers to a building/structure where people live or it is a place of residence occupied by one or more persons.

The map shows the location of verified Dwelling Units in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 4.4% of all verified Dwelling Units in the Zambezi Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Dwelling Units, Namibia Statistics Agency 2011.

Figure 4.10.3 ZAMBEZI REGION – HEALTH FACILITIES PROXIMITY TO REGIONAL ROAD NETWORK IN 2014

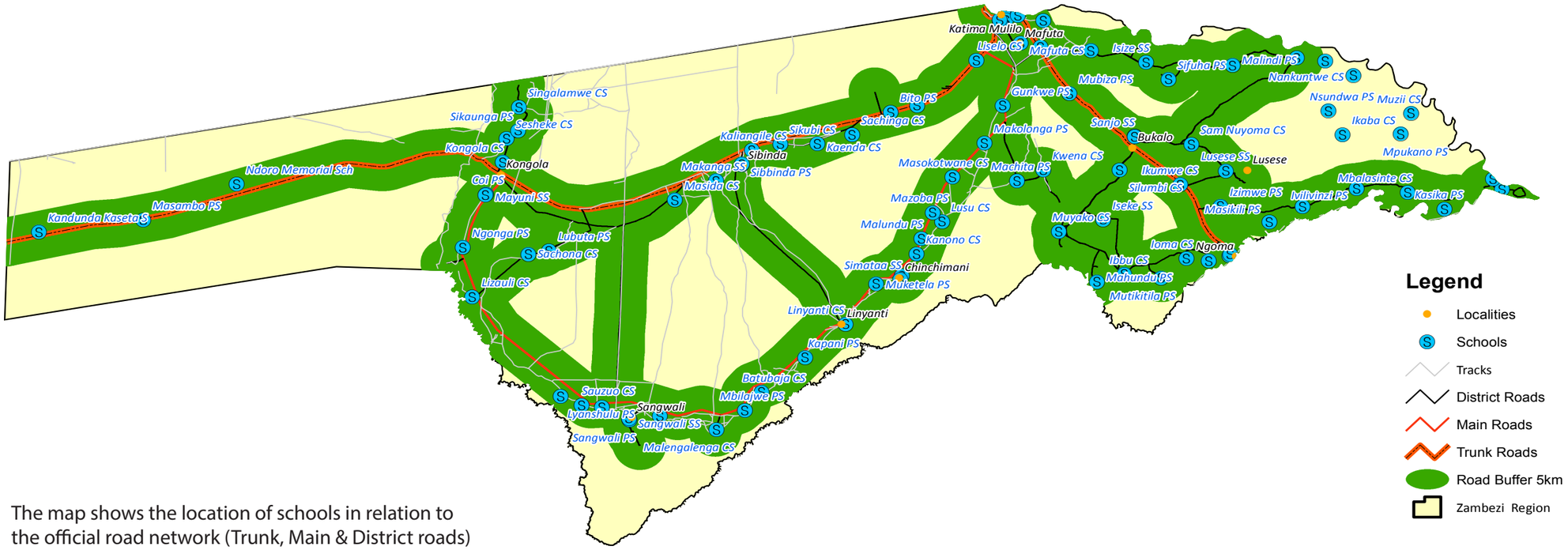


The map shows the location of health facilities in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 3.1% of all health facilities in the Zambezi Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Health Facilities, Ministry of Health and Social Services 2011.

Figure 4.10.4 ZAMBEZI REGION – SCHOOLS PROXIMITY TO REGIONAL ROAD NETWORK IN 2014



The map shows the location of schools in relation to the official road network (Trunk, Main & District roads) in 2014. Tracks were excluded from the analysis as they were not official roads during the referenced year.

In 2014, 6.1% of all health facilities in the Zambezi Region existed outside of 5Km distance to an official road.

Source: Road Network, Roads Authority 2014. Schools, Ministry of Education, Arts & Culture 2007.

REGIONAL HIGHLIGHTS

KAVANGO WEST REGION

- In 2007, there were 179 mapped schools consisting mostly of 167 primary schools and 9 secondary schools.
- Using the mapped schools of 2007, in 2011 only 45.5% of verified dwelling units in Kavango West Region were more than 5 kilometres from a primary school. This showed a 54.5% coverage of the education policy on 5 kilometres walking distance to primary schools.
- Mankete Junior Primary School was the most central school in Kavango West Region.
- 58.9% of dwelling units were within 59.9 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 56.9% of schools were within 62.9 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- The dwellings around Mapuku are the furthest from the nearest school. These dwellings are located 57.7 kilometers from the nearest school which is Tam-Tam Junior Primary, although they might have been served by a neighbouring region.
- In 2011, there were 19 clinics, 6 health center and 1 mapped hospital in Kavango West Region.
- About 72.4% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 27.6% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 109.5˚ (East-West) angle while the directional distribution of health facilities is at 108.3˚ (East-West). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Kavango West Region is not distributed linearly along trunk, main and district roads. Statistics shows that 80.5% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 9.5% are located within 5 kilometers of a national road.

KUNENE REGION

- In 2007, there were 91 mapped schools consisting mostly of 64 primary schools, 14 junior primary schools and 6 secondary schools.
- Using the mapped schools of 2007, in 2011 only 36.9% of verified dwelling units in Kunene Region were more than 5 kilometres from a primary school. This showed a 63.1% coverage of the education policy on 5 kilometres walking distance to primary schools.
- Outati Junior Primary School was the most central school in Kunene Region.
- 58.8% of dwelling units were within 142.5 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 67.0% of schools were within 149.8 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- The dwellings around Moire Bay are the furthest from the nearest school. These dwellings are located 71.3 kilometers from the nearest school which is Purros primary school.
- In 2011, there were 22 clinics, 3 health center, 3 hospitals and 1 voluntary counselling and testing center in Kunene Region.
- About 41.0% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 59.0% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region follows exactly the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 143.2˚ (South East-North West) angle while the directional distribution of health facilities is at 144.4˚ (South East-North West). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Kunene Region is not distributed linearly along trunk, main and district roads. Statistics shows that 13.4% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 86.6% are located within 5 kilometers of a national road.

OHANGWENA REGION

- In 2007, there were 234 mapped schools consisting mostly of 95 primary schools, 58 junior primary schools and 66 secondary schools.
- Using the mapped schools of 2007, in 2011 only 4.4% of verified dwelling units in Ohangwena Region were more than 5 kilometres from a primary school. This showed a 95.6% coverage of the education policy on 5 kilometres walking distance to primary schools.
- Shaama Junior Primary School was the most central school in Ohangwena Region.
- 77.1% of dwelling units were within 53 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 67.9% of schools were within 57 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- The dwellings around Ojiina cattle post are the furthest from the nearest school. These dwellings are located 36.3 kilometers from the nearest school which is Shatipamba primary school.
- In 2011, there were 28 clinics, 2 health center, 3 hospitals and 3 voluntary counselling and testing center in Ohangwena Region.
- About 19.5% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 80.5% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 92.8˚ (East-West) angle while the directional distribution of health facilities is at 92.5˚ (East-West). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Ohangwena Region is not distributed linearly along trunk, main and district roads. Statistics shows that 12.7% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 87.3% are located within 5 kilometers of a national road.

OMAHEKE REGION

- In 2007, there were 48 mapped schools consisting mostly of 29 primary schools, 6 secondary schools and 2 combined schools.
- Using the mapped schools of 2007, in 2011 only 51.9% of verified dwelling units in Omaheke Region were more than 5 kilometres from a primary school. This showed a 48.1% coverage of the education policy on 5 kilometres walking distance to primary schools.
- Gobabis Afrikaans Private School was the most central school in Omaheke Region.
- 56.8% of dwelling units were within 112.4 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 54.7% of schools were within 113.3 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- The dwellings around Ombave are the furthest from the nearest school. These dwellings are located 104.4 kilometers from the nearest school which is Morukutu primary school.
- In 2011, there were 15 clinics, 2 health center and 1 hospital in Omaheke Region.
- About 48.2% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 51.8% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region slightly follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 7.1˚ (North-South) angle while the directional distribution of health facilities is at 26.5˚ (North-South). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Omaheke Region is not distributed linearly along trunk, main and district roads. Statistics shows that 15.8% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 84.2% are located within 5 kilometers of a national road.

OMUSATI REGION

- In 2007, there were 270 mapped schools consisting mostly of 116 primary schools, 48 junior primary schools, 85 combined schools and 11 secondary schools.
- Using the mapped schools of 2007, in 2011 only 3% of verified dwelling units in Omusati Region were more than 5 kilometres from a primary school. This showed a 97% coverage of the education policy on 5 kilometres walking distance to primary schools.
- Ongolo Combined School was the most central school in Omusati Region.
- 35.1% of dwelling units were within 41 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 34.1% of schools were within 43.6 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- The dwellings around Ohanjuna are the furthest from the nearest school. These dwellings are located 27.5 kilometers from the nearest school which located in Otjororo.
- In 2011, there were 42 clinics, 8 health center, and 4 hospitals in Omusati Region.
- About 11.0% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 89% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 91.6˚ (East- West) angle while the directional distribution of health facilities is at 82.2˚ (East- West). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Omusati Region is not distributed linearly along trunk, main and district roads. Statistics shows that 16.9% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 83.1% are located within 5 kilometers of a national road.

OSHANA REGION

- In 2007, there were 128 mapped schools consisting mostly of 37 primary schools, 27 junior primary schools and 50 combined schools.
- Using the mapped schools of 2007, in 2011 only 1.9% of verified dwelling units in Oshana Region were more than 5 kilometres from a primary school. This showed a 98.1% coverage of the education policy on 5 kilometres walking distance to primary schools.
- 67.7% of dwelling units were within 18.6 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 87% of schools were within 24 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- The dwellings around Otjivalunda post are the furthest from the nearest school. These dwellings are located 58.1 kilometers from the nearest school which is Engombe primary school.
- In 2011, there were 11 clinics, 6 health center, 2 hospitals and 1 mortuary in Oshana Region.
- About 6.7% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 93.3% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 110.2˚ (South East-North West) angle while the directional distribution of health facilities is at 117.8˚ (South East-North West). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Oshana Region is not distributed linearly along trunk, main and district roads. Statistics shows that 2.9% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 97.1% are located within 5 kilometers of a national road.

OSHIKOTO REGION

- In 2007, there were 188 mapped schools consisting mostly of 90 primary schools, 46 junior primary schools and 44 combined schools.
- Using the mapped schools of 2007, in 2011 only 13.5% of verified dwelling units in Oshikoto Region were more than 5 kilometres from a primary school. This showed a 86.5% coverage of the education policy on 5 kilometres walking distance to primary schools.
- Onyoka Junior Primary School was the most central school in Oshikoto Region.
- 75.4% of dwelling units were within 76.2 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 81.9% of schools were within 62.7 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- In 2011, there were 21 clinics, 3 health center and 3 hospitals in Oshikoto Region.
- About 28.7% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 71.3% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 125.6˚ (South East-North West) angle while the directional distribution of health facilities is at 127.9˚ (South East-North West). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Oshikoto Region is not distributed linearly along trunk, main and district roads. Statistics shows that 22.4% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 77.6% are located within 5 kilometers of a national road.

OTJOZONDJUPA REGION

- In 2007, there were 61 mapped schools consisting mostly of 45 primary schools, 4 junior primary schools and 7 secondary schools.
- Using the mapped schools of 2007, in 2011 only 34.8% of verified dwelling units in OtjozondjupaRegion were more than 5 kilometres from a primary school. This showed a 65.2% coverage of the education policy on 5 kilometres walking distance to primary schools.
- Okakarara Primary School was the most central school in OtjozondjupaRegion.
- 66.5% of dwelling units were within 137.4 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 61.2% of schools were within 176.3 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- The dwellings around Otjitazu are the furthest from the nearest school. These dwellings are located 86.9 kilometers from the nearest school which is Coblenz Combined School.
- In 2011, there were 20 clinics, 3 health center, 6 hospitals and 1 rehabilitation center in OtjozondjupaRegion.
- About 30.8% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 69.2% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region slightly follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 45.2˚ (South West-North East) angle while the directional distribution of health facilities is at 64.4˚ (South West-North East). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of OtjozondjupaRegion is not distributed linearly along trunk, main and district roads. Statistics shows that 7.8% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 91.2% are located within 5 kilometers of a national road.

ZAMBEZI REGION

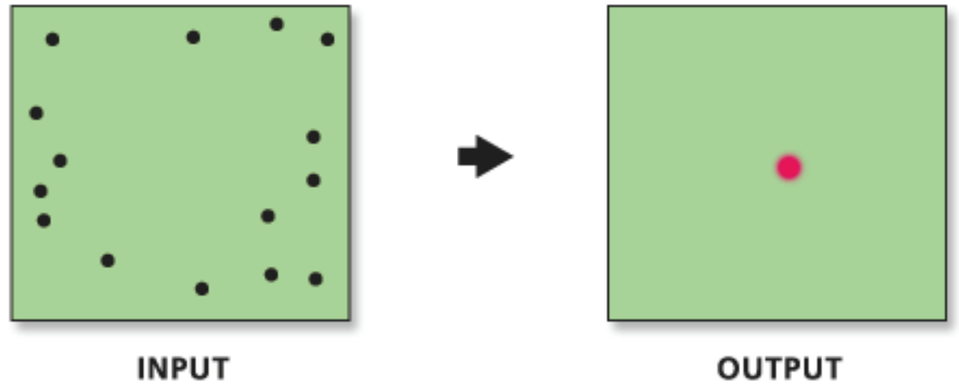
- In 2007, there were 97 mapped schools consisting mostly of 45 primary schools, 36 combined schools and 13 secondary schools.
- Using the mapped schools of 2007, in 2011 only 11.2% of verified dwelling units in Zambezi Region were more than 5 kilometres from a primary school. This showed a 88.8% coverage of the education policy on 5 kilometres walking distance to primary schools.
- Makolonga Primary School was the most central school in Zambezi Region.
- 72.2% of dwelling units were within 51.3 kilometre radius from the mean center of the distribution of all verified dwellings in 2011. Only 674.9% of schools were within 64.7 kilometre radius from the mean center in 2007. As expected, schools are more dispersed than dwelling units.
- The dwellings around Nukwa Village are the furthest from the nearest school. These dwellings are located 12.2 kilometers from the nearest school which is Masida Combined school.
- In 2011, there were 27 clinics, 4 health center and 1 hospital in Zambezi Region.
- About 12.8% of all the verified dwelling units in the region were more than 10 kilometers from the nearest health facility. In other words, 87.2% of dwelling structures were located within a 10 kilometre walking distance to a health facility in the region.
- In terms of health planning, it shows that the placement of health facilities in the region follows the directional distribution of the people. Spatial statistics shows that the directional distribution of dwelling units is at 79.8˚ (East-West) angle while the directional distribution of health facilities is at 80˚ (East-West). This shows that the placement of health facilities follows the population pattern on the ground.
- In terms of transportation, spatial statistics calculated shows that the population of Zambezi Region is not distributed linearly along trunk, main and district roads. Statistics shows that 4.4% of dwelling units existed more than 5 kilometers from an existing national road. Thus only 95.6% are located within 5 kilometers of a national road.

MEAN CENTER

The Mean Center is given as:

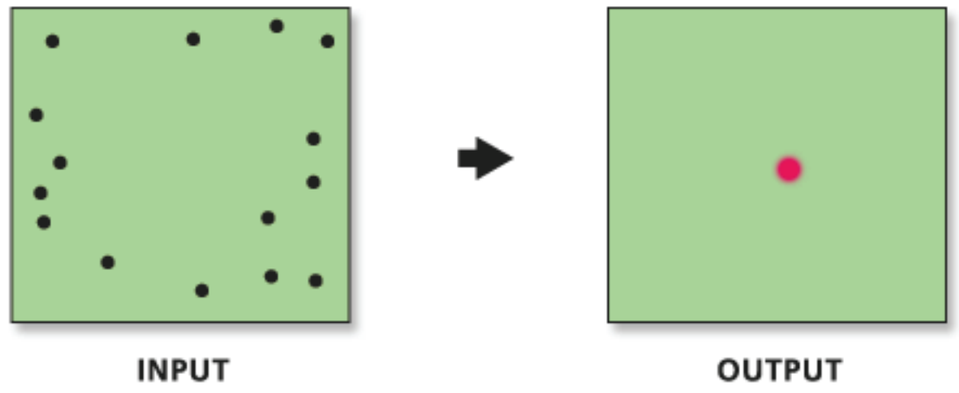
$$\bar{X} = \frac{\sum_{i=1}^{n} x_i}{n} \quad , \quad \bar{Y} = \frac{\sum_{i=1}^{n} y_i}{n} \qquad (1)$$

where x_i and y_i are the coordinates for feature i, and n is equal to the total number of features.



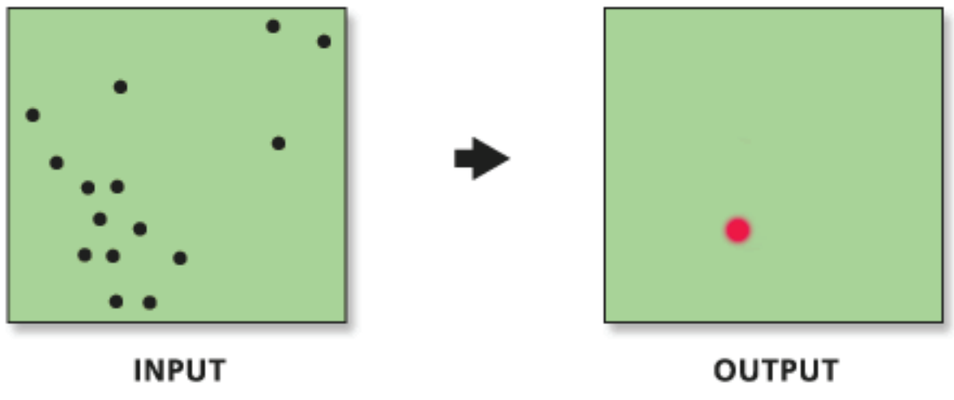
MEDIAN CENTER

$$d_i^t = \sqrt{(X_i - X^t)^2 + (Y_i - Y^t)^2}$$



CENTRAL FEATURE

The Central Feature tool identifies the most centrally located feature in a point, line, or polygon input feature class. Distances from each feature centroid to every other feature centroid in the dataset are calculated and summed. Then the feature associated with the shortest accumulative distance to all other features is selected and copied to a newly created output feature class.

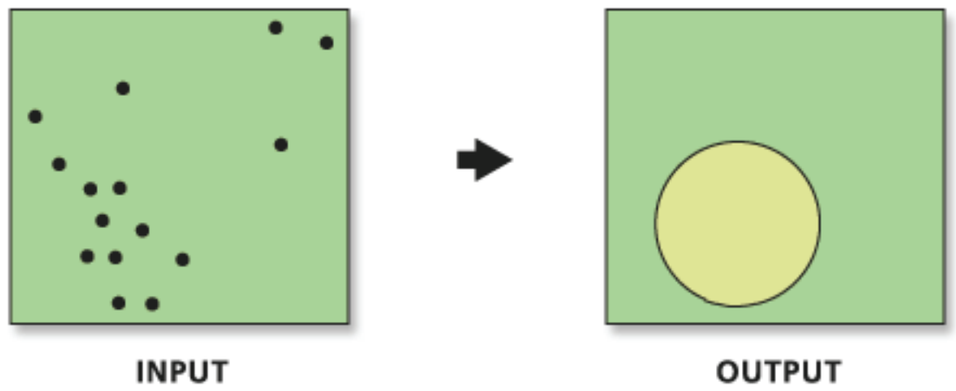


STANDARD DISTANCE

The Standard Distance is given as:

$$SD = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{X})^2}{n} + \frac{\sum_{i=1}^{n}(y_i - \bar{Y})^2}{n}} \qquad (1)$$

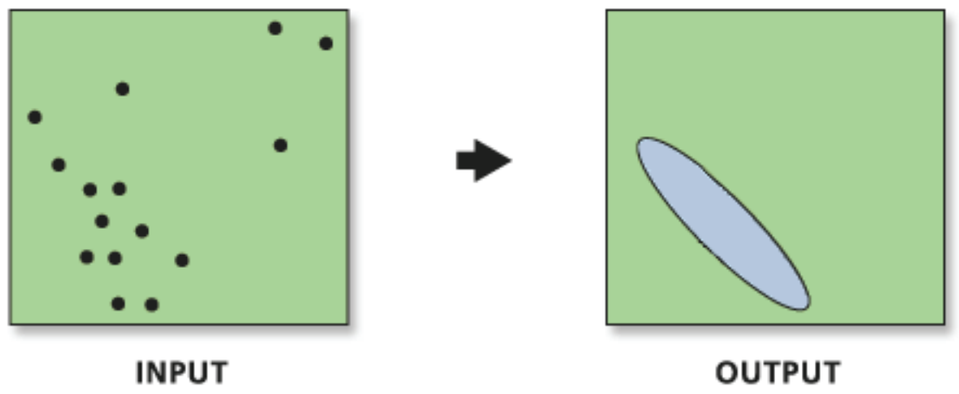
where x_i and y_i are the coordinates for feature i, $\{\bar{X},\ \bar{Y}\}$ represents the Mean Center for the features, and n is equal to the total number of features.



DIRECTIONAL DISTRIBUTION

The Standard Deviational Ellipse is given as:

$$\boldsymbol{SDE_x} = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{X})^2}{n}} \qquad (1)$$

$$\boldsymbol{SDE_y} = \sqrt{\frac{\sum_{i=1}^{n}(y_i - \bar{Y})^2}{n}}$$

where x_i and y_i are the coordinates for feature i, $\{\bar{X},\ \bar{Y}\}$ represents the Mean Center for the features, and n is equal to the total number of features.