Rural addressing in South Africa

by Pierre Rossouw and Keletso Kgope, South African Post Office

The requirement was to provide every household in South Africa with a formal address for provision of all services. This meant more than doubling the number of registered addresses within a limited time, cost effectively. This paper describes how this is being done and how it will be integrated with other addressing structures and new postal systems.

There are about 11-million household addresses in South Africa. More than half of all households do not have a formal address. Most of these are in rural areas and informal settlements. These have been under-serviced in general. Of the addresses serviced by the Post Office, most have been in urban areas. More than half were PO Box addresses, not physical "street" addresses. This was not a satisfactory situation. Previously, the only feasible means of mail delivery for rural areas was via rented PO boxes.

However, this is inconvenient for rural areas. People do not want to travel to a post office or postal point to collect mail. People want mail to be delivered to households, like other street delivery. Also, people need an address for all types of service delivery, not only postal services. Furthermore, these addresses do not satisfy some legislative requirements.

People need a formal address to:
- Have postal, telephone, water, electricity and other services provided
- Provide access for security and emergency services
- Purchase goods and have goods delivered
- Conduct business such as selling produce
- Have a bank account
- Borrow money and conduct financial transactions
- Conform to various legislative requirements such as FICA

There are other benefits of having a formal address:
- It gives people a sense of recognition and ownership
- It facilitates business transactions
- It facilitates emergency service response and security policing functions

Fig. 1: The integrated approach to addressing.

Review of previous work on rural addressing

Several providers of services, organisations such as Eskom, Telkom, Post Office, StatsSA, municipalities and others, began to roll out addresses to informal and rural areas. Each provider developed their own numbering system and method. A situation arose where a household had several different identifiers or numbers on the door, using different methods.

The result was a multiplicity of address identifiers, inconsistency, non-sequential numbering, gaps in the data and general confusion about which was used for what. Occasionally, due to storms, fire, employment, business, social pressures and other reasons, the family would move and would take the door with them in order not to lose the numbers. This was conscientious but the service providers could not find the new house.

This has resulted in disordered multiple addresses and general confusion. Standardisation and integration became highly desirable.

Objectives of the address expansion project

In 2003 the Post Office was given a mandate by its shareholder, the government, to provide formal addresses for all households in all provinces across the country. This in particular meant that it was required to provide delivery to rural areas as well as urban. It was also required that the address be a physical one, and not a box address.

Thus the Post Office started to provide formal addresses that meet all requirements of all service providers, public and private.

It was necessary to increase the number of formal addresses from about 4,5-million to about 11-million. It was required to expand our street delivery addresses by 7-million, 90% of which should be in rural areas. These targets were set and the Address Expansion: Addressing the Previously Unaddressed project was initiated.

Design of concept and the integrated approach

The Address Expansion project was designed and developed to avoid the pitfalls experienced by organisations described above. It was proposed that an inter-governmental task team be established to work together, in consultation with communities. This approach is shown conceptually in Fig. 1.

The results were quite different. It was now possible to deliver services to under-serviced areas. The Post Office started to comply with the mandate and started to populate the address data base. Other economic initiatives followed and other organisations benefited from the approach.

The integrated approach represents a standard, unified way of addressing. The comprehensive addressing and delivery provides several additional benefits.

Fig. 5: Image of rural village with dwelling identification.

Fig. 6: Section of rural village with dwelling identification.

Field data capture

Field data capture is done by the addressing agent. The addressing agent is a member of the community, appointed and employed by the Post Office.

The addressing agent is given a GPS data logging device and a field computer with a GSM communicator by the Post Office to collect data in the field electronically. The addressing agent interviews the house owner. The following data are captured for each household in the village:

- Names of adult residents of the household
- ID book barcode is scanned for verification
- Dependents of the household
- The type of dwelling structure

- Services provided such as water, electricity, telephone number, cell phone number, type of road access, geographic coordinates, date, time
- In densely populated areas, some data control fields are also necessary for satellite data accuracy.

Empty stands and planned future expansion in the village are also captured and allocated.

After field capture of a household or dwelling data, the rest is automatic. The field computer automatically connects via GPRS and sends data to central office. The data are automatically validated. If the position is in an area requiring DGPS for improved accuracy, then this is performed automatically. The data are automatically entered into a national GIS address database. The addressing agent gets paid for the job.

After the entire village data are captured, the addresses are issued to each household. The five or six digit number is put on each house in as permanent place as possible. This is usually accompanied by notable celebration. This reinforces that the address is genuine and formal and works. A "welcome package" is posted to each household address. This urges the villagers to issue their new address to all who they wish to have it. Invariably more celebration follows the welcome packages.

The process does not stop here. The agent remains as the contact point for all postal service delivery in the village and will continue to be employed and be paid a salary for these services. The agent will also facilitate the delivery of other services and goods for public and private providers.

Street delivery pilot project : Mapumulo					
District	Maphumulo		Date of project	September, 28, 04	
Processing centre	Durmail		Area office	Highway	
Area type	Rural area		Frequency		

Office details					Client details			GPS coordinates	
Village (suburb)	Section (street)	House number	Post office	Post code	Name and surname	ID number	Telephone and cell	Longitude	Latitude
01	01	01	Mapumulo	4470	Vusumuzi Luthuli	3511165094080	032-4817762	29 11"667`	31 03"480`
01	01	02	Mapumulo	4470	Khumbulani Luthuli	3708105377084	082-7281610	29 11"736`	31 03"319`
01	01	03	Mapumulo	4470	Phathwa Mchunu	6210065748088	082-4266440	29 11"603`	31 03"442`
01	01	04	Mapumulo	4470	Mbusi Majola	6508145236085	072-6670309	29 11"735`	31 03"258`
01	01	05	Mapumulo	4470	Nkosithini Shandu	4707135497085	072-4504118	29 11"708`	31 03"218`
01	01	06	Mapumulo	4470	Bhekisseni Mbatha	5404015375082	073-0632031	29 11"779`	31 03"245`
01	01	07	Mapumulo	4470	Malusi P Shandu	8102265590089	082-3557585	29 11"429`	31 03"097`
01	01	08	Mapumulo	4470	Hlezi Mthiyane	4410130149088		29 11"828``	31 03"170`
01	01	09	Mapumulo	4470	Majori Shandu	3212290218088		29 11"429`	31 03"059`
01	01	10	Mapumulo	4470	Mbonisiwe Magwaza	1312270073081		29 11"889`	31 03"231
01	01	11	Mapumulo	4470	Sbongile Shandu	6402090347081	083-4712010	29 11"358`	31 03"073`
01	01	12	Mapumulo	4470	Thulile B Zulu	2604170242082		29 11"912`	31 03"170`
01	01	13	Mapumulo	4470	Emily Madlala	4806130584085		29 11"391`	31 02"592`

Table 1: Capture of dwellings data in one village.

Data structures: from capturing to database

The various stages of data development are shown.

Dwelling data capturing

An example of the captured data is shown in Table 1.

Compilation of dwelling data and village data

An example of the compiled dwelling data is shown in Table 2.

An example of the compiled village data is shown in Table 3.

Development of data base functionality and integration

The compiled data are structured into a national database to be integrated into other systems. This is also compatible with the new Postal Addressing and Postcode System. Specific information can be derived from a written rural address. A search/lookup example is shown in Table 4.

Results: implementation progress

The address expansion has been very successful so far. Before the Address Expansion: Rural Addressing project, there were very few formal addresses in rural areas. Since then, formal rural address expansion has been given higher priority.

The periodic targets have consistently been exceeded. For example, in the last financial year, to the end of March 2007, 1,82-million additional addresses were installed, against a target of 1,65-million. This is 173 533 (10,5%) more than target.

Of this 1,82-million total:

● 1,805-million (99,2%) were physical street addresses,

● 1,36-million (74,7%) were in rural areas,

thus supporting the shareholder mandate and customer requirements for service delivery to physical addresses in rural areas.

This brings the number of addresses in the country to over 10-million. Most of the target of 7-million has been achieved. The project continues to be implemented in all provinces of South Africa.

Effects and usage

Rural address allocation has been completed for large portions of the country. This includes location details (registering villages within areas, identifying sections and dwellings in villages), client details (head of each dwelling, contact details) and postal details (post office, route, postcode). This is sufficient for addressing purposes.

Although the project is under way in all provinces, there are some areas which have not yet been completed. In

Province	Eastern Cape	2		Postal region	S	Mthatha	
Municipality	Ntabankulu	231		Postal Route	02	Mount Ayliff	
Main place	Lwandlolubomvu	23105		Post Office	08	Tabankulu	
Sub place	Ntshamanzi	23105062		Postal code		5130	

No.	Occupier	Village	Ward	Town	Post code	Code	Comments	Lat	Lon
120102	Qegwana Madeyi	Ntshamanzi	5	Ntabankulu	5130	01 Complete		-30,8807	29,1677
120107	Dukuza Sandile	Ntshamanzi	5	Ntabankulu	5130	01 Complete		-30,8819	29,1691
120122	Wisil Church	Ntshamanzi	5	Ntabankulu	5130	05 New number		-30,8835	29,1705
120124	Ntshamanzi S P S	Ntshamanzi	5	Ntabankulu	5130	03 No not Disp	School	-30,8831	29,1699
120126	Manxa Mluleki	Ntshamanzi	5	Ntabankulu	5130	05 New number		-30,8813	29,1680
120307	Tikani Ndodana	Ntshamanzi	5	Ntabankulu	5130	01 Complete		-30,8813	29,1711
120314	Mgqibelo Joselina	Ntshamanzi	5	Ntabankulu	5130	03 No not disp		-30,8834	29,1734
120504	Lindwa Cecilia	Ntshamanzi	5	Ntabankulu	5130	01 Complete		-30,8854	29,1674
120509	Lonji Mafaku	Ntshamanzi	5	Ntabankulu	5130	01 Complete		-30,8841	29,1683
120513	Lonji Mpahla	Ntshamanzi	5	Ntabankulu	5130	01 Complete		-30,8839	29,1674

Table 2: Compilation of dwellings data for a village.

Expansion of delivery services			KwaZulu Natal		Year 2006/2007		
Province	News district municipality	New municipality name	Old municipality name	Areas/ villages	Subplace code	Post code	Delivery points
KZN	Umzinyathi	Endumeni	Dundee	Dundee	51901004	3000	30000
KZN	Umzinyathi	Nqutu	Nqutu	Nqutu	52010000	3135	2864
KZN	Umzinyathi	Msinga	Pomeroy	Pomeroy	52214001	3020	28600
KZN	Umzinyathi	Umvoti	Greytown	Greytown	52305001	3250	52000
KZN	Umkhanyakude	Umhlabuyalingana	Emangusi	Emangusi	53807003	3886	16200
KZN	Umkhanyakude	Jozini	Mkuze	Mkuze	53305	3965	5600
KZN	Umkhanyakude	Umzinene	Hluhluwe	Hluhluwe	53042	3960	10156
KZN	Umkhanyakude	Hlabisa	Somkele	Somkele	53502	3937	4860
KZN	Umkhanyakude	uMhlathuze	Inyala	Inyala	53803004	3880	8295
KZN	Umkhanyakude	Mtubatuba	Mtubatuba	Mtubatuba	53612000	3935	8295
KZN	Umkhanyakude	KZDMA27	St Lucia Park	St Lucia Park	53609	3936	2369

Table 3: Compilation of village data.

Rural informal address search	Example 1	
The Written Address:	110203 Feni	
	Peddie	
	5640	
The following can be derived from the written address:		
Village, section and dwelling	11 02 03	
Placename (= village)	Feni	
Post Office	Peddie	
Postcode	5640	
The following can be derived From the GIS system: Lookup placename FENI		
SubPlacename	Feni	21503005
MainPlacename	Bhele	21503
Municipality	Ngqushwa	215
Province	ECape	2
The following can be derived from the postal system: lookup postcode 5640		
Postcode	5640	
Post office	Peddie	
Mail centre	East London	
Region	Eastern Cape	

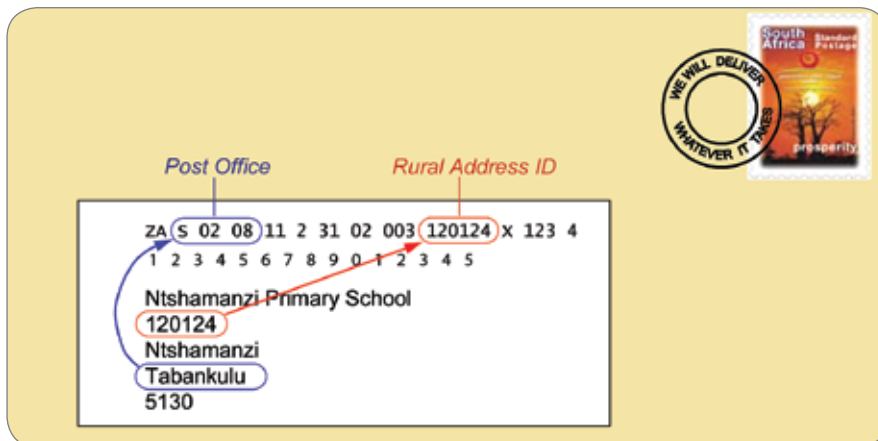Table 4: Derivation from a written rural address.

Fig. 7: Rural address as part of the new addressing system.

some areas where addresses have been allocated, geographic coordinates have not yet captured for all addresses. This is often due to logistical constraints, equipment availability and skilled resources limitations.

It is anticipated that a number of national, local government and para-government organisations will partner with the Post Office in co-operative agreements to complete the work. It is also anticipated that many private and public organisations that would use the rural system as part of normal addressing functions may also wish to invest in this work.

The Rural Addressing system is accommodated in and supported by the proposed SANS 1883 standard: South African Address Standard, expected to be published in 2008.

The way ahead: integration into the larger addressing system

This Rural Addressing data structure complies with our new Postal Addressing System and Postcode. It is intended that this innovation is to be introduced later this year and next year. This system comprises multiple sets of data.

For integration of rural addresses, consider two types of data:

- Geographic (where a place is)
- Postal routing for delivery (how to get there)

Other data are also included: origin (where a mail item came from), tariff (the value of the item) and customer (available for originator's own use). These data are represented as a string of characters for database configuration. The postal routing data are a hierarchy of country, province, municipality, town, place, and delivery point ID. The geographic data are also in a hierarchy from postal sorting hub, route, office and walk. The ISO country code is for Universal Postal Union compliance and enables international sorting and routing.

This accommodates the three main types of delivery addresses: urban street addresses, PO Boxes and rural street addresses. An example of a rural address in this system is shown in Fig. 7.

These and other data are contained in the four-state barcode for automated high-speed machine processing of mail. In due course, the four-digit postcode will also be replaced with a new code, which can include coded address detail down to delivery point, for improved hand processing. This coded addressing system is another new innovation of the Post Office, described in another paper by the author and published separately.