

REPUBLIC  
OF  
SOUTH AFRICA



REPUBLIEK  
VAN  
SUID-AFRIKA

# Government Gazette Staatskoerant

Vol. 410

PRETORIA, 4 AUGUST  
AUGUSTUS 1999

No. 20354

## GENERAL NOTICE

NOTICE 1771 OF 1999

**SOUTH AFRICAN TELECOMMUNICATIONS REGULATORY AUTHORITY**



**NOTICE OF INTENTION TO MAKE REGULATIONS REGARDING THE NUMBERING PLANS IN TERMS OF SECTIONS 96 AND 89 OF THE TELECOMMUNICATIONS ACT, 1996 (ACT 103 OF 1996).**

1. Pursuant to the Section 27 enquiry and a public hearing held on 31 May 1999, the South African Telecommunications Regulatory Authority ("the Authority") hereby gives notice of its intention to make regulations and hereby invites the public to comment on "A Revised Discussion Paper on the Future Of Telecommunications Numbering in South Africa" and Draft Final Numbering Plan (**Section 10 of this document**).

2. Interested persons are hereby invited to submit written representations only, including an electronic version of representations in Microsoft Word 6.0 or lower, of their views on -

**"A Revised Discussion Paper on the Future Of Telecommunications Numbering in South Africa" and Draft Final Numbering Plan (Section 10 of this document).**

**by no later than 16h00 on Wednesday, 3 November 1999.**

3. Furthermore, persons lodging written representations to the Authority are requested to submit twelve (12) hard copies of such submissions.
4. Written representations may be forwarded by post, hand delivery, e-mail or fax for the attention of Mr. Roger Nicol -

SATRA, Private Bag X1, Marlboro, 2063; OR  
SATRA, Block A, Pin Mill Farm, 164 Katherine Street, Sandton, Gauteng Province.

Any enquiries in this regard can be forwarded to Mr. Roger Nicol -

Tel. (+27 11) 321 8200

Fax (+27 11) 321 8550

E-mail: NICOR@satra.gov.za

5. All written representations and annexures thereto lodged with the Authority pursuant to this notice shall be made available for public inspection from **Monday, 8 November 1999 until Friday, 12 November 1999, during the business hours of the Authority, from 08h30 to 16h00**, and copies of such representations and annexures thereto will be obtainable on payment of the prescribed fee.
6. Interested persons are further requested not to submit written representations or annexures thereto containing information or documents regarded as confidential.

**H.N.L. MAEPA, PrEng, PE  
CHAIRPERSON SATRA**

**SOUTH AFRICAN TELECOMMUNICATIONS REGULATORY AUTHORITY**

# **TELECOMMUNICATIONS NUMBERING INTO THE TWENTY-FIRST CENTURY**

*A CONSULTATIVE DOCUMENT ON THE DEVELOPMENT OF THE  
NATIONAL NUMBERING PLAN*

**"A REVISED DISCUSSION PAPER ON THE FUTURE  
OF TELECOMMUNICATIONS NUMBERING IN  
SOUTH AFRICA"**

**ISSUED BY SATRA IN CONNECTION WITH**

**A PUBLIC ENQUIRY INTO**

**THE DEVELOPMENT OF THE NATIONAL NUMBERING PLAN TO BE  
PRESCRIBED BY SATRA, PURSUANT TO SECTION 89 OF THE  
TELECOMMUNICATIONS ACT.**

**JULY 1999**

---

# Tables of Contents

	<i>Page</i>
<b>1 Executive Summary</b>	<b>6</b>
1.1 Background	6
1.2 Summary of Findings on the Discussion Paper	6
1.3 Conclusions	8
<b>2 Introduction</b>	<b>8</b>
<b>3 Purpose of this Discussion Paper</b>	<b>8</b>
<b>4 The Role of SATRA</b>	<b>9</b>
<b>5 Background</b>	<b>10</b>
5.1 The existing regulatory regime:	10
5.2 The future regulatory regime:	10
5.3 The impact of deregulation on telecommunications numbering	10
5.4 Experience in other countries	11
<b>6 Why the need for change</b>	<b>11</b>
6.1 Potential Number Run-out	11
6.2 Increased Competition	12
6.3 Developments in Telecommunications Services	12
<b>7 Approach to Developing a New Numbering Plan</b>	<b>13</b>
7.1 Requirements of the telecommunications industry	14
7.2 Requirements of Customers	14
7.3 Requirements of Service Providers	14
7.4 The importance of neutrality	15
7.5 The Numbering Advisory Committee	15
7.6 Numbering Principles	15
7.7 SATRA's Statutory Obligations	16
7.8 International Standards	16
<b>8 Stages in the development of the National Numbering Plan</b>	<b>16</b>
8.1 Development stages	16
8.2 Public consultation	17
<b>9 Key Issues and Options for a New Plan</b>	<b>17</b>
9.1 Public Switched Telephone Network (PSTN) services	17
9.1.1 Discussion	17
9.1.1.1 Capacity to meet growth	18
9.1.1.2 Capacity for new Competitors	18
9.1.1.3 Number Structure and format	19
9.1.2 Assessment of Existing Plan	19
9.1.2.1 Capacity to meet Growth	19
9.1.2.2 Capacity for New Competitors	19



9.1.2.3	Number Structure and format	20
9.1.3	Proposal for PSTN Services	20
<b>9.2</b>	<b>Cellular and Paging Services</b>	<b>22</b>
9.2.1	Discussion	22
9.2.2	Assessment of Existing Plan	22
9.2.3	Proposal for Cellular and Paging Services	23
<b>9.3</b>	<b>Provision for New Services</b>	<b>24</b>
9.3.1	Discussion	24
9.3.2	Assessment of Existing Plan	24
9.3.3	Proposal for the provision of New Services	24
<b>9.4</b>	<b>Provision for New Competitors</b>	<b>25</b>
9.4.1	Capacity	25
9.4.2	Pre-selection and Carrier Access Codes	25
9.4.3	Pre-selection Override Codes	25
9.4.4	Service Provider Access Codes	26
9.4.5	Assessment of Existing Plan	26
9.4.6	Proposal for New Competitors	26
<b>9.5</b>	<b>International Standards</b>	<b>27</b>
9.5.1	Discussion	27
9.5.2	Assessment of Existing Plan	27
9.5.3	Proposal for International Standards	27
<b>9.6</b>	<b>National Emergency Service Codes</b>	<b>28</b>
9.6.1	Discussion	28
9.6.2	Assessment of Existing Plan	28
9.6.3	Proposal for National Emergency Service	28
<b>10</b>	<b>Draft Final Numbering Plan</b>	<b>28</b>
10.1	International service codes	29
10.2	Non-Geographic Codes	30
10.3	Geographic Services	33
<b>11</b>	<b>Impact of Change</b>	<b>34</b>
11.1	Human Impact	34
11.1.1	General impact	34
11.1.2	Older people and physically or intellectually disabled	34
11.2	The Cost of Change	35
11.2.1	Cost to Business Customers	35
11.2.2	Costs to Residential Customers	35
11.2.3	Costs to Carriers	36
<b>12</b>	<b>Numbering Administration</b>	<b>36</b>
12.1	Responsibility for Number Administration	37
12.2	Number Portability	38
12.3	Number Allocation	39
12.3.1	Allocation principles	39
12.4	Charging for numbers	40
<b>13</b>	<b>APPENDIX 1</b>	<b>42</b>
<b>14</b>	<b>APPENDIX 2</b>	<b>43</b>

## **1 Executive Summary**

### **1.1 Background**

Numbering of telecommunications services is central to the development of effective telecommunications infrastructure in South Africa and hence the well being of the South African economy as a whole. A sound Numbering Plan is essential for customers to use telecommunications services effectively, so that services can grow without constraint, and competition can develop fully.

The South African Telecommunications Regulatory Authority, SATRA, has a statutory obligation to prepare a Numbering Plan for telecommunications services. To this end SATRA is leading a project, which commenced during 1998, to develop the national Numbering Plan that will be adequate for the next 30 years. The project encompasses several distinct stages and should culminate in the publication of a final Numbering plan during the second part of 1999. The project has gained momentum and presently there is a considerable public awareness among consumer groups of the initiative by SATRA on Numbering. To date the project has already included, *inter alia*, the following important elements:

- A review of the existing Numbering Plan together with a review of existing Numbering capacity in Telkom's telephone network and the existing two licensed mobile cellular networks,
- The formulation and agreement of principles that should apply in developing a new Numbering Plan,
- The establishment of the Numbering Advisory Committee comprising industry representation, and
- SATRA initiated a public enquiry pursuant to Section 27 of the Telecommunications Act ("the Act"). A discussion paper was published by notice in the Government Gazette No. 19786 on 20 February 1999 (Notice 198 of 1999), inviting the public to comment on various proposed options for a new Numbering plan.

SATRA received nine (9) written submissions on the options proposed in the discussion paper. Public hearings were held at SATRA on 31 May 1999 and oral presentations were provided by Telkom, Vodacom and MTN.

### **1.2 Summary of Findings on the Discussion Paper**

With reference to Notice 198 of 1999, each of the individual options that were presented in the discussion paper have their individual merits, strengths and weaknesses in achieving the objectives and criteria based on the principles specified. These options have been evaluated by SATRA, to determine the best balanced choice, and the main findings are summarised as follows:

Scenario	Finding and Remarks
<b>PSTN Capacity</b>	<p><b>Option A and Option E</b></p> <p>The existing Gauteng Central area ("011") should be split into two separate areas using area codes "010" and "011". This will provide relief for the expected PSTN number shortage in the Gauteng Central area.</p>
	<p>In addition to Option A, it is further proposed that a <u>closed ten-digit dialling scheme</u> be introduced nationally. This will provide the additional capacity required for future competitors and allow single-digit carrier selection codes prior to regulatory policy issues being resolved on carrier pre-selection.</p>
<b>Cellular and Paging</b>	<p><b>Retain Status Quo with "08X" range.</b>  <b>New "07" range will be opened upon justification of current mobile cellular utilisation thresholds.</b>  <b>Code "089" to be used for GMPCS. Initial allocation of "08900" to Globalstar pending the issue of a GMPCS licence.</b></p> <p>Existing "089" MaxiNet will be migrated by Telkom to the appropriate new "11" range when available. The preliminary time-line for completion of the migration is 31 March 2002.</p>
<b>Provision for New Services</b>	<p><b>Option C</b></p> <p>"10X" range will be retained by Telkom for existing services only, all new services will use the appropriate "1X" range of services.</p> <p>Preliminary time-line for implementation is 31 March 2002.</p>
<b>Provision for New Competitors</b>	<p><b>Carrier Pre-selection Policy needed urgently</b></p> <p>Reserve "14XX" for pre-selection override codes and service provider access codes.</p>
<b>International Standards</b>	<p><b>Option A - use "00" for International Direct Dial prefix.</b></p> <p>Preliminary time-line for implementation 31 March 2002.</p>
<b>National Emergency Service</b>	<p><b>Option B - "112"</b></p> <p>SATRA should recommend to the National Emergency Committee to adopt "112" as the new national emergency code.</p>

### **1.3 Conclusions**

After due consideration of the submissions from the public to Notice 198 of 1999 ("the Notice") and after consultation with the Numbering Advisory Committee ("the NAC") together with key industry role-players and National Regulatory Authorities abroad, SATRA has prepared a revised discussion paper which has consolidated the findings of the public enquiry. The multiple options that were presented in the Notice have now been effectively narrowed down to one (1) preferred result in the revised discussion paper, with the exception of PSTN services where two options have been provided. Pursuant to Section 96(4) of the Act, the revised discussion paper and draft final Numbering Plan is published in this Gazette for further public comment. After three months from the publication of this Gazette and further consultation with the NAC, SATRA will publish the final Numbering Plan with implementation time-lines.

H.N.L. MAEPA, Pr.Eng.P.E.  
**CHAIRPERSON SATRA**

## ***2 Introduction***

All telecommunications services require numbers whether it is a standard telephone, mobile, facsimile, pager, toll-free or any other type of telecommunications service.

The telecommunications industry in South Africa is undergoing major reform, which will result in new competitors entering the market, offering a range of new and innovative services to consumers.

The way in which telecommunications services are numbered has a direct influence upon the effectiveness of competition in the industry and the provision of telecommunications services to consumers.

The existing numbering plan has generally served South Africa well. However with the introduction of competition, new and innovative services and overall growth in the use of telecommunications services, it is necessary to develop a new plan which will accommodate the telecommunications needs of South Africans well into the next century.

Up until the time of the establishment of the South African Telecommunications Act 1996, Telkom managed the national numbering plan for South Africa. The Telecommunications Act confers this responsibility on SATRA, and requires that it develop a numbering plan for use in respect of telecommunications services.

SATRA is currently pursuing that task.

## ***3 Purpose of this Discussion Paper***

The purpose of this paper is to:

- ❑ inform the public of the issues impacting on the numbering of telecommunications services;
- ❑ explain why changes will be necessary to existing telecommunications numbers;
- ❑ present preferred options for a new plan based on the findings of the public enquiry initiated by SATRA, and to encourage all interested parties to submit comments on the proposals detailed in this paper, and
- ❑ present a draft final numbering plan (refer to section 10).

This paper does not cover:

- ❑ numbering for data networks (including the internet), or;
- ❑ implementation issues for a new numbering plan (other than preliminary time-lines for implementation).

#### **4 The Role of SATRA**

The South African Telecommunications Regulatory Authority, SATRA was established by the Government in 1996 to regulate the industry and to oversee, among other regulatory duties, the introduction of competition in the South African telecommunications industry.

SATRA's role is defined under the Telecommunications Act 103, 1996.

One of SATRA's responsibilities is to develop a numbering plan for telecommunications services. Specifically, section 89 of the Act states:

##### ***"Numbering Plans***

**89. (1) *The Authority shall prescribe a numbering plan for use in respect of telecommunications services.***

**(2) *A numbering plan shall consist of a scheme of identification so as to ensure that telecommunication is correctly and efficiently directed to the point of reception for which it was intended.***

**(3) *In preparing a numbering plan the Authority shall take account of existing numbering plans and schemes.***"

In giving SATRA responsibility for the numbering plan, the Government is sending a clear message to the industry that the development, implementation and ongoing management and administration of the plan must be done by an independent body.

There are several reasons for this. Firstly, numbers for telecommunications services is a scarce national resource because it has a finite capacity. Secondly, numbering is being increasingly



viewed as a key competitive issue. For example, a provider of telecommunications services could gain an unfair competitive advantage over its competitors should it have a greater range of numbers to choose from to allocate to customers, or have exclusive access to numbers which are most sought after by customers.

Therefore it is critical that the allocation of numbers is equitable. The only way to ensure this is to have it managed by an independent body.

## **5 Background**

The South African Government is implementing major reform of the telecommunications industry. The primary objective of this reform is to promote the provision of affordable telecommunications services to all South Africans through increased competition in the supply of these services.

### **5.1 The existing regulatory regime:**

- ◆ A fixed network monopoly with Telkom licensed to provide a full range of domestic and international services. This exclusivity expires in 2002 with a possible extension to 2003;
- ◆ A cellular duopoly with MTN and Vodacom licensed to supply mobile based services;
- ◆ Unrestricted competition in the supply and operation of private telecommunication networks (PTNs), (currently 2 major players - ESKOM and Transtel);
- ◆ Resale is prohibited;
- ◆ Unrestricted competition in the supply of value added network services (VANS), subject to being licensed, and;
- ◆ Unrestricted competition in the supply of customer premises equipment (CPE), which includes inter alia, telephone sets, PABXs and cellular phones.

### **5.2 The future regulatory regime:**

- ◆ A second, and possibly third, fixed line operator will be licensed shortly to provide service in 2002 or 2003;
- ◆ One additional mobile cellular licence will be awarded in 1999, and;
- ◆ Resale may be permitted.

### **5.3 The impact of deregulation on telecommunications numbering**

This additional competition will place greater demand on numbers for telecommunications services because:

- ❑ it will stimulate growth in the use of telecommunications services generally, placing greater demand on numbering capacity;
- ❑ new competitors will require their own blocks of numbers, and;
- ❑ it will promote the introduction of new and innovative telecommunications services, which will require new number ranges.

## **5.4 Experience in other countries**

Implementing a new numbering plan is not unique to South Africa. Over the last 10 years the United States, United Kingdom, Hong Kong, Japan, France, Australia, Sweden and New Zealand have all undertaken reviews of their numbering plans. Many found that their existing plans would not provide sufficient capacity for the future and that they would literally run out of numbers if a new plan were not developed.

The fact that developed countries such as these (all of which have moved to increased industry competition) saw the necessity to have a well developed numbering plan for telecommunications services, is evidence that it is critical for South Africa to ensure that it has a plan which will provide for the provision of telecommunications services for at least the next 30 years.

## **6 Why the need for change**

The four main reasons why the existing numbering scheme in South Africa needs to change are:

- ❑ potential number run-out in some areas due to normal growth in demand for telecommunications services;
- ❑ increased competition in the provision of telecommunications services;
- ❑ developments in telecommunications services; and
- ❑ to ensure stability within the telecommunications industry.

### **6.1 Potential Number Run-out**

The current numbering plan for PSTN services provides a theoretical capacity of 10 million numbers for the Gauteng Central area, (the "011" area). However, because "0" and "1" are not used for directory numbers, only 8 million numbers are theoretically available. At first glance this would appear to be more than enough numbers for the population of this area, which is about 7.3 million.

However, due to the geographical nature of PSTN numbers, effective numbering capacity can be exhausted at very low levels of utilisation (utilisation rate is the percentage of telephone numbers in use against the total number available). In some countries numbering capacity has been exhausted at only 5% utilisation.

Analysis shows that based on the existing utilisation rates and demand forecast in the Gauteng Central area, PSTN numbers will be exhausted around 2004. Therefore changes to the current numbering plan for this area will be necessary in order to provide sufficient capacity well into the next century.

The remainder of South Africa should have sufficient number capacity for PSTN services for at least the next 30 years.

## **6.2 Increased Competition**

In 1996 the Government introduced new legislation which opens up the telecommunications industry to increased competition. Within the next few years a new fixed network operator will be licensed to compete with Telkom and new mobile licences will be awarded. In the longer term more competition is likely.

With the prospect of many players competing in the industry, SATRA, as administrator of the numbering plan, is about to face massive demand for numbers. The current plan will be unable to meet that demand.

## **6.3 Developments in Telecommunications Services**

At one time it was never contemplated that mobile phones, pagers, facsimile and other telecommunications services other than the "plain old telephone" would be in use today.

However, these services are now considered almost commonplace and demand is growing rapidly. In only 5 years the total number of digital mobile services in South Africa has grown to over 3 million.

In the days when the plain old telephone was the only service people used, the requirements for numbers was straightforward. However as new services were introduced greater demand was placed upon the numbering plan. Fortunately the existing numbering plan has been able to accommodate these developments.

However with continuing developments in technology, new and innovative services will be on offer to customers. These will include:

### **□ Universal Personal Telecommunications Services (UPT)**

UPT services will enable a customer to have only one number for all services, so that wherever the location, the customer can be reached on that one number. This will

provide total personal mobility. The number is allocated to a customer rather than a service.

❑ Global Mobile Personal Communications Services (GMPCS)

GMPCS will provide world wide mobile service based upon sophisticated satellite technology. It will provide global voice and data access, so wherever the customer may be in the world access will be available. Handsets will be dual mode so that when a customer is within cellular network coverage the call will be connected through that network, but when that customer moves outside of cellular coverage the call will be routed via the GMPCS network.

❑ Local Rate Services

These services may use short memorable numbers and provide sophisticated features. For example, South African Airways (SAA) could use the number 13 13 13. A customer could call this number anywhere within South Africa and be connected to the nearest SAA office.

❑ Premium Rate Information Services

These will provide recorded and live information for a range of services such as legal advice, dating services, horoscope readings, investment advice, news and sport.

❑ Broadband Services

Broadband services provide voice, video, teleconferencing, internet and high speed data. These services are being offered now and are continually being enhanced to provide greater amounts of capacity at higher speeds.

These new services, as well as emerging and future technologies, will place greater demand on numbering and a new plan is needed to accommodate them.

## ***7 Approach to Developing a New Numbering Plan***

In developing the new numbering plan SATRA will have regard to:

- ❑ requirements of the telecommunications industry;
- ❑ customer and service provider requirements;
- ❑ the need for numbering neutrality;
- ❑ The Numbering Advisory Committee;
- ❑ SATRA's numbering principles;
- ❑ SATRA's statutory obligations; and

- ❑ international standards.

## 7.1 Requirements of the telecommunications industry

Adequate number capacity within the plan will be critical to service growth, innovation and competition. Adequate capacity also ensures that changes to numbers are kept to a minimum.

Any constraint on capacity could stifle growth and deter competition. This will limit the economic benefits achievable through deregulating the market.

Number allocation to service providers must be fair. The market must be left to determine the success or failure of commercial ventures.

## 7.2 Requirements of Customers

In the light of inputs from South African consumer groups and taking cognizance of international trends, customer requirements **may** include:

- ❑ that, in the case of PSTN services, the telephone number indicates the area/location being called;
- ❑ that the prefix of the number indicates the type of call (e.g. "083" is a mobile call);
- ❑ that the number gives an indication of the cost of the call;
- ❑ that as far as possible numbers should be of standard length and similar format; and,
- ❑ the ability to retain a number when relocating or changing service provider (ie. number portability)

## 7.3 Requirements of Service Providers

Having considered the views of industry, the likely requirements of Service Providers **may** include:

- ❑ an adequate supply of numbers;
- ❑ minimal digit analysis for the purposes of simplifying call routing;
- ❑ minimising the cost to implement a new plan; and
- ❑ freedom to manage numbers within number blocks allocated to them.



#### **7.4 The importance of neutrality**

SATRA believes that it is important for numbering to be independent of service providers. That is, the number plan should not be designed primarily to convey service provider branding. For example, the leading digits of a number will primarily indicate the broad service type rather than identifying the service provider.

To do otherwise would, amongst other things, result in inefficient use of numbering capacity and restrict the opportunity for competitor number portability.

#### **7.5 The Numbering Advisory Committee**

To assist in the development of the new numbering plan, SATRA has established a Numbering Advisory Committee (NAC) to provide advice to SATRA on numbering matters. The NAC consists of representatives from industry including fixed, mobile and private network operators. There are also members representing consumer, disabled and business interests. A list of committee members and the terms of reference for the committee is included at the Appendix.

#### **7.6 Numbering Principles**

SATRA, in consultation with the Numbering Advisory Committee, has developed a set of numbering principles to guide the development of the numbering plan. The principles are:

- ☐ The availability and supply of telecommunications numbers should promote the provision of universal service and equitable access.
- ☐ Every customer should have convenient and transparent access to all other domestic and international customers irrespective of the carrier to which they are physically connected.
- ☐ The frequency of changes to telecommunications numbers should be kept to a minimum.
- ☐ Where change to telecommunications numbers is required, disruption and inconvenience to customers should be kept to a minimum.
- ☐ The availability of telecommunications codes and numbers should promote the supply of telecommunications services in South Africa.
- ☐ The allocation of telecommunications numbers by SATRA to carriers, service providers and customers should be fair, reasonable and equitable.

- ❑ Telecommunications codes and numbers should be allocated and used as efficiently as practicable taking into account the interests of consumers and the need to promote the supply of innovative telecommunications services.
- ❑ The numbering plan should comply with international standards wherever possible.

## 7.7 SATRA's Statutory Obligations

Under the Telecommunications Act 103 of 1996, SATRA must prepare a numbering plan and in doing so must have regard to the existing plan.

## 7.8 International Standards

SATRA needs to take account of international standards for numbering. These include:

- ❑ "0" to be reserved for trunk access, and
- ❑ "00" to be reserved for international access.

## 8 Stages in the development of the National Numbering Plan

### 8.1 Development stages

SATRA has decided that the plan will be developed in the following stages:

#### Stage 1      Review of Existing Plan and Develop Principles

Revise the existing numbering plan and develop the principles by which the new numbering plan should be developed. Identify key issues and recommend possible solutions and/or further action.

**This stage has been completed**

#### Stage 2      Discussion Paper and Draft Plan

Produce a paper for public comment, which focuses discussion on the key issues and presents a draft plan. SATRA will accept submissions from all interested parties.

**This stage has been completed**

#### Stage 3      Public Consultation

Analysis by SATRA of submissions and comments received from Stage 2. Meetings held with key submitters. During this stage SATRA will also convene public hearings on submissions to the discussion paper and draft plan.

**This stage has been completed**

**Stage 4** Overview of Public Debate

SATRA will produce a summary report of submissions and comments received to date. SATRA will produce a revised discussion paper which will integrate the findings of the public debate, and a draft final plan. SATRA will publish the text of the draft final plan for three (3) months and invite written comments from interested persons.

**This is the current stage**

**Stage 5** Final Plan

SATRA will prepare and release the final national numbering plan which will include implementation time-lines.

**Stage 6** Implementation Plan

SATRA will manage the implementation of the final national numbering plan. This specifies how and when the plan will be put in place and also takes cognizance of the cost. This will include a public awareness and public education campaign to coincide with the numbering change management process.

## **8.2 Public consultation**

In undertaking the development of the new numbering plan, SATRA is committed to open public debate and consultation. The quality of any new plan will be directly dependent upon the input and cooperation of the telecommunications industry and the public. Whilst SATRA has its own views on the issues surrounding a new numbering plan, it does not presume to have all the answers. It is relying on industry to provide objective and informed comment on the issues, and on the opinion of consumers, to ensure that South Africa has a well developed and successfully implemented numbering plan.

## ***9 Key Issues and Options for a New Plan***

### **9.1 Public Switched Telephone Network (PSTN) services**

#### ***9.1.1 Discussion***

#### 9.1.1.1 Capacity to meet growth

Most numbering systems exhaust effective numbering capacity at low rates of utilisation (utilisation rate is the percentage of telephone numbers in use against the total number available). This is because of a) the geographical nature of PSTN numbering, b) the population distribution and c) in some cases switching limitations. For example the United Kingdom began developing a new numbering plan when it reached a utilisation rate of 5%. North America (including the USA, Canada, Mexico and most of the Caribbean), with a less geographically based system, started to run out of numbers when it reached 25% utilisation. Australia developed its new plan when it reached 13% utilisation.

Take Gauteng Central as an example, which has a 7-digit number length behind the "011" prefix. The theoretical capacity within the "011" area is 10 million numbers. However because "0" and "1" are not used for directory numbers, only 8 million numbers are available. Based upon current and planned utilisation rates for the multi exchange area of Gauteng Central which is 24%, this area will begin to run out of numbers at around 2004.

Consistent with the numbering principles, it is important that the numbering plan provides sufficient capacity for geographic based services for at least the next 30 years without the need for major change to the plan over that period.

The advent of advanced switching technologies such as ATM (Asynchronous Transfer Mode), may improve utilisation rates. There is an international forum considering the impact of ATM addressing and the ITU is also doing some work in this area. However it appears that only limited progress has been made and there are no specific recommendations formulated at this stage.

#### 9.1.1.2 Capacity for new Competitors

It is absolutely critical that there is sufficient numbering capacity for new competitors.

If number portability is not available then each fixed line carrier will need to be allocated separate blocks of numbers from which they can then allocate numbers to their respective customers.

Current plans envisage one additional fixed network carrier. The demand for fixed network numbers could be significant if the second licensee has immediate access to a potentially large customer base.

Further, it is highly likely that in the longer term there may be no restriction on the number of carriers licensed. There will be an even greater demand for numbers if in the future, more carriers are licensed and resale is permitted.

If however number portability is provided, then this will greatly reduce the demand on numbers because carriers will be able to share numbers (that is, within common number range blocks) rather than needing separate dedicated blocks of numbers.

### 9.1.1.3 Number Structure and format

Experience shows that customers consider many characteristics of telephone numbers to be important. These include, being able to identify the geographical location of the number and what charging will apply if they use the service. Also important to customers is that numbers are of a standard length, similar format and have the same dialling procedures.

## *9.1.2 Assessment of Existing Plan*

### 9.1.2.1 Capacity to meet Growth

A review of the current numbering capacity in the PSTN was recently conducted by SATRA in order to determine whether there will be sufficient PSTN number capacity to meet forecast growth up to 2050. The figures are based upon current utilisation rates for each area (eg. Gauteng Central, Pretoria, North East etc.) matched against forecasted growth in services. It is important to remember that utilisation rates are generally fixed because they are directly related to how the network is designed and how exchanges and switching nodes are dimensioned and geographically deployed. This is the main reason why utilisation rates differ between areas, regions and countries.

These figures indicate that in all areas except Gauteng Central, there will be sufficient PSTN number capacity up to 2050 without the need to change numbers or number structure over that period.

In the case of Gauteng Central ("011" prefix), the planned utilisation rate is 24%. At this utilisation rate, there will be insufficient numbers to meet Telkom's forecast growth beyond 2004. Therefore changes to the way PSTN services are numbered will be necessary, at least for Gauteng Central.

### 9.1.2.2 Capacity for New Competitors

Whilst determining whether there will be sufficient capacity to meet growth in customer demand is reasonably quantifiable, it is more difficult to determine whether there will be sufficient capacity for new fixed line competitors. This depends on several factors such as whether local number portability between competing carriers will be available by the time new carriers enter the market. If "competitor" number portability is available then there should be little impact on number capacity other than that as a result of growth in demand (as discussed under the section above, "Capacity to meet Growth").

Licence conditions for new carriers and their commercial objectives will also impact upon demand for numbers. For example whether new licensees will offer local services immediately as opposed to offering long distance services only initially.

If new competitors are either required by licence or, take their own commercial decision to offer local services, and number portability is unavailable, then those competitors will have to be allocated separate dedicated blocks of numbers. How many and what size number blocks those competitors will require, will depend upon licence obligations and the business plans of those competitors.



The extent to which the new competitor will take market share of growth in demand for PSTN services will also impact number demand and utilisation.

Notwithstanding the above, a broad assessment can be made of the likely impact of competition on PSTN number capacity given a worst case scenario. Should the second fixed line carrier require substantial number capacity, then based upon projected figures for forecasted growth and utilisation, it is likely that the area where numbering capacity may become an issue will be in Gauteng Central. This will be in addition to the capacity issue due to growth in demand. Other areas have utilisation rates that indicate substantial remaining number capacity and therefore should be able to accommodate the need to allocate dedicated number blocks to competitors.

#### 9.1.2.3 Number Structure and format

Currently South Africa has a standard length full national number of 10 digits. This is made up of a mix of different length area codes and telephone numbers. It was structured this way primarily because of population densities and distribution.

Given that the numbering plan is now being reviewed, it is worthwhile addressing the issue of the different lengths in area codes and service numbers with a view to adopting a standard format. That is, a uniform length area code and directory number for all of South Africa. The standard format is (0NN) ABC-XXXX where NN is the national destination code or geographical area and ABC-XXXX is the local directory number.

#### *9.1.3 Proposal for PSTN Services*

Two preferred options have emerged in SATRA's findings:

Option A: In order to increase the numbering capacity to meet the future demand, primarily for Gauteng Central, it is proposed that the existing "011" area is split into 2 area codes, "010" and "011".

The area code "010" is spare and if implemented would increase the total available numbers within Gauteng Central to 16 million. Based on Telkom's forecast growth, this would provide sufficient capacity until 2030. However, should growth exceed Telkom's estimates then capacity limitations may be reached sooner than 2030.

This proposal would mean that some 50% of existing Gauteng Central customers may have to incur a change to the new "010" area code. It will also mean that customers within Gauteng Central will need to dial ten digits on those occasions when calling other customers within the same area but who reside within the adjacent area code. This could cause confusion with Gauteng Central customers not sure when to dial the local 7-digit directory number or the new 10-digit number.

Area code size and boundaries would need to be determined along with which numbers would need to change and when. SATRA is currently consulting with Telkom on the details

of how and when the Gauteng Central area will be split. A preliminary time-line for the implementation of this project is mid-2002.

**Option B:** As a contingency as well as an adjunct to Option A, (whereby the existing Gauteng Central area is split into two area codes), it is further proposed that the numbering scheme be closed to 10-digits on a national basis. That is, no 7-digit local dialling would be permitted. A closed ten-digit dialling scheme means that the same ten-digit number is dialled to reach a particular person or service regardless of the point of origin of the call.

This arrangement will free up all ranges with an initial digit 2 to 9 and immediately increase the capacity of all geographic numbers by 20% due to the availability of digits 0 and 1 in the A-digit position of the exchange ABC code. Another added advantage of a closed national numbering scheme is that a single digit carrier selection code (digit 2 to 9) will be available for use in accessing future fixed line operators. For example, calls to access a future "second fixed line operator" could be prefixed with digit 2 and calls carried by a "third fixed line operator" could be prefixed with digit 3 and so on.

This proposal may also overcome confusion that could arise as a result of splitting area codes to increase number capacity. To avoid customer confusion, it makes practical and logical sense to abandon the existing local call dialling with a 7-digit directory number and introduce a standard 10-digit dialling scheme nationally.

When area codes are split, particularly in relatively small geographic areas, customer confusion can result. In the case of Gauteng Central it would mean that some 50% of customers would be on a different area code. Therefore, whereas before the split they could be accessed by the 7-digit directory number only, after the split the full 10-digit national number (ie area code + directory number) would have to be dialled. This could result in Gauteng Central customers not knowing when they have to dial the directory number only or the full national number to access other customers in Gauteng Central.

Mandating that the full national number always be dialled (ie "closing" the number scheme) would overcome this confusion.

The obvious drawback with this proposal is that customers are forced to dial long number sequences, when often it may be unnecessary. Due to the non-geographic nature of the cellular environment, some 3-million cellular customers in South Africa at present all have to dial 10-digits to access other customers and in a sense have become accustomed to a closed scheme. However, one must consider that all customers who are geographically outside of the Gauteng Central area, i.e. Western Cape, Eastern Cape, Kwa-Zulu Natal etc., who are currently accessed locally by dialling 7-digits will now also have to relinquish the local dialling and convert to 10-digit dialling. To these customers, the evolution to 10-digit dialling may appear unnecessary and will require a properly focussed public awareness and education campaign to inform everyone that is affected by these changes.

With the present Numbering scheme and 7-digit local dialling, customers can easily distinguish a locally charged call from a national call (first digit "0") which attracts a higher charge rate. If local dialling is abandoned for a standard 10-digit closed scheme, it may not be so easy for customers to distinguish the call charge rate since all calls will have a prefix "0".

SATRA is aware of the radical nature and impact of a national ten-digit dialling project. Ideally, the time-line for the implementation of a national ten-digit dialling project should coincide with the same time-frame as the Gauteng Central area split, in order to alleviate customer confusion in this area. However, Option B is a contingency plan that SATRA will pursue if customer confusion at the time of the implementation of Option A becomes unmanageable. The practical implementation date of a national ten-digit dialling project must be carefully considered together with all the pros and cons explained previously. The benefits of such a scheme to the national Numbering resource pool will need to be balanced against customer interests.

**SATRA strongly encourages comment and input on this important issue**

## **9.2 Cellular and Paging Services**

### *9.2.1 Discussion*

There are presently 2 operators licensed to provide mobile services, viz. Vodacom and MTN. SATRA is currently engaged in the process of evaluating applications for a third mobile cellular licence which could be issued by December 1999. There is also the possibility of more mobile cellular licences being issued at a later date.

There must be sufficient numbering capacity to allocate blocks of numbers to these new competitors in a way, which affords them the opportunity to compete on equal terms with the current operators.

### *9.2.2 Assessment of Existing Plan*

The current plan accommodates mobile and paging services in the "08X" range. Specifically it reserves "081" for analogue cellular and "082", "083", "084" and "085" for digital cellular. Presently Vodacom occupies the "082" range and MTN occupies the "083" range. The ranges "084" and "085" are vacant.

Paging services are located in the "08X" range, that is "0880".

Other services operating in the "08X" range are toll free services - "080", VPN, Centrex, televoting and credit card calling - "086", and maxinet (mass calling) service - "089".

Also, because there is no number range currently available in the national Numbering Plan for cellular special services such as operator assistance, information services and fax mail, cellular operators have to use cellular numbers to provide customers access to these services. This significantly reduces the available quantity of numbers for allocation to customers.

Locating special services in the mobile range is inconsistent with the numbering principles and they should be allocated a separate dedicated range. This would free up additional

capacity for cellular services. It is proposed to use the "1X" range for special services (refer section 9.3)

### 9.2.3 Proposal for Cellular and Paging Services

In presenting the proposal it is important to take account of the unprecedented growth in mobile services around the world, the rapid developments in mobile service technology and the history of dramatic underestimation of mobile service growth.

The submissions provided to SATRA during the first round of the public enquiry have indicated that there is no consistency in the views on cellular and paging services. A certain degree of ambivalence was also evident in that, on the one hand, Telkom's inbound call services in the '08X' range are very well established and would be very difficult to move to another range, and on the other hand the incumbent cellular operators are equally well established in the '08X' range and are strongly opposed to moving their customers to another common dedicated range ("07").

It was also evident that the incumbent cellular operators were not completely satisfied with any of the original options that were presented. Both Vodacom and MTN submitted a new hybrid option which proposed the use of both the existing '08X' code and the corresponding '07X' code for future mobile cellular services, viz. '082' + '072' for Vodacom and '083' + '073' for MTN. The limitations of service provider branding are discussed in section 6.4.

SATRA has carefully considered all the possibilities and implications in the provisioning of number capacity for future cellular and paging services. A key principle is that the Numbering Plan must not be a constraint to the growth of future innovative services in this category. It is therefore proposed that the status quo be maintained for all existing '08X' services with the exception that '089' be reserved for GMPCS and Telkom will move '089' Maxinet service to the appropriate '11XX' range when this becomes available. It is proposed that the '07X' range be reserved as a second range for future mobile cellular services. The '07X' range will only be officially opened and allocated to licenced operators by SATRA upon justification of efficient use of the existing numbering resource and upon reaching a pre-determined practical utilisation threshold. The existing and future '08X' and '07X' ranges will be mapped as follows:

080	Freecall	070	Spare
081	Spare	071	Spare
082	Vodacom	072	Reserved Vodacom
083	MTN	073	Reserved MTN
084	3 <sup>rd</sup> Cellular Operator	074	Reserved 3 <sup>rd</sup> Cellular Operator
085	4 <sup>th</sup> Cellular Operator	075	Reserved 4 <sup>th</sup> Cellular Operator
086	Telkom's inbound call services	076	Spare
087	Spare	077	Spare
088	Paging, Virtual Telephony	078	Spare
089	GMPCS	079	Spare



**SATRA strongly encourages comment and input on this important issue**

### **9.3 Provision for New Services**

#### **9.3.1 Discussion**

New and innovative telecommunications services are being offered. For example GMPCS, information services, universal personal telecommunications (UPT) services, premium services and others. Some of these are described at section 6.3. They are generally referred to as "special services" or "non geographic services" because the service does not give an indication of the geographic location. Users will demand these services and the numbering plan must provide numbers for them.

#### **9.3.2 Assessment of Existing Plan**

The existing plan will provide for some new services. However there are some services for which there is no specific allocation such as premium services and information services.

Also, there is no available capacity allocated for competitors services within existing ranges.

An important characteristic of any plan is to group like services in the same number range, primarily so customers can readily identify the type of service. Experience shows that customers want to be able to identify the type of service through the number format or prefix. Taking current examples, "0800" is free call and "102" is operator assisted.

#### **9.3.3 Proposal for the provision of New Services**

There are few options available to accommodate new services. Fundamentally a new range has to be found and one that is either completely vacant or mostly vacant.

The "11" to "19" range will be available for use once Telkom has replaced all existing electro-mechanical exchanges in the telephone network. This places a further restraint on the provision of future New Services since the preliminary time-line for the recovery of all the electro-mechanical exchanges in Telkom's telephone network is 31 March 2002. Number blocks in this range can then be allocated for new services and accommodate new competitors' services. The draft final plan proposes a structure within the "1X" range for the allocation of service types.

Telkom currently uses most of the "10" range for a mix of services including, operator assistance, community services such as time and weather, and emergency services. This is not in keeping with grouping like services in common ranges. However, services in the "10" range have been established since the 1960s.

To require Telkom to move these services into the respective new ranges as proposed in the draft plan may be unrealistic because of the substantial inconvenience to existing customers.



Also, there is wide range of services in this range and to move them would incur a substantial cost on Telkom.

It is proposed that the entire "1X" range be reserved for new and "special" services, except Telkom would retain the "10" range to service existing customers only. All new customers would be allocated numbers in the new "1X" ranges.

Under this option Telkom could continue to service existing customers in the "10" range, however it would have to locate all new customers in the new ranges as proposed in the plan, when the new "1X" ranges become available for use. This would ensure that over time with natural attrition, that all services would eventually be located in the appropriate range.

## **9.4 Provision for New Competitors**

### **9.4.1 Capacity**

The need to have sufficient numbering capacity for new competitors is covered in section 9.1.

### **9.4.2 Pre-selection and Carrier Access Codes**

Pre-selection allows for the automatic selection of one of several alternative carriers for all normally dialled calls, by the customer nominating that carrier in advance. Pre-selection is only necessary where the carrier does not have its own local network infrastructure in place and therefore must rely on the use of Telkom's local network to gain access to customers.

If the second fixed line carrier does not have a local network in place, pre-selection will be necessary for it to compete effectively with Telkom. This may be the case if the second carrier chooses to roll out a long distance network first and delay building a local access network.

Pursuant to a regulatory policy directive mandating the provision of carrier pre-selection, then this will have to be enabled within Telkom's network.

If for some reason pre-selection is not provided, then a "carrier access code" will need to be made available in the interim until pre-selection is available. This would need to be accommodated in the plan. There are several options for this access code, but in principle it should be as short as possible. This is important because although short codes absorb significant capacity, it must be convenient for customers to gain access to the new carrier. A long access code will deter customers from using the second carrier.

### **9.4.3 Pre-selection Override Codes**

Pre-selection override codes allow a customer to gain access to a fixed line carrier (on a call-by-call basis) other than the one they are pre-selected to. If pre-selection is implemented, then provision for these codes will need to be made in the numbering plan.

#### **9.4.4 Service Provider Access Codes**

If resale is permitted in the future, then "service provider access" codes will need to be provided and allowed for in the plan.

Resellers do not use their own infrastructure but instead lease capacity from licensed carriers and then resell that to customers with the reseller providing its own value-added features. Therefore resellers need some way for customers to gain access to their services. This is why each service provider will require a separate and dedicated code, so that customers can gain access to the service provider via a carriers' network.

Service provider access codes and pre-selection override codes are usually short, about 4 digits in length. This is designed primarily to make it convenient for users to choose between competitors. If codes were too long then users would be disinclined to use another competitors' network and services.

#### **9.4.5 Assessment of Existing Plan**

It is understood that pre-selection for new fixed line carriers may be a requirement under the new regulatory structure and therefore there may be no need for "carrier access codes" and no need to provide for them in the new plan.

However, there is no specific provision in the current plan for:

- preselection override codes and;
- service provider access codes.

Because these are a form of special service they should be allocated numbers in the "special service" number range.

If future policy dictates that service providers should also have the right to be pre-selected, then there will be no need for service provider access codes. However it is expected that service providers will not be awarded that right, at least initially, and that access codes will be necessary.

#### **9.4.6 Proposal for New Competitors**

There are few if any options available to provide for pre-selection override codes and service provider access codes. A spare range must be found, and one which can accommodate short numbers (i.e. where number capacity can be comprised).

The only viable option available is to use numbers in the "1X" range. Which particular range is fairly arbitrary, however "14" is suggested here.

## 9.5 International Standards

### 9.5.1 Discussion

The international standards setting body, the ITU-T, prescribes certain standards for international numbering.

In particular that:

“0” be reserved for trunk access; and

“00” be reserved for international access.

The ITU-T recommends that when a country is reviewing its numbering plan, conformity to these recommendations should be implemented.

The standards also recommend that UPT services be allocated a separate dedicated range. That is for example, they should not be located in the same range as mobile services.

### 9.5.2 *Assessment of Existing Plan*

The existing plan complies with the trunk access prefix, but does not comply with the international access prefix. South Africa presently uses “09” as its international access code.

### 9.5.3 *Proposal for International Standards*

The ITU-T recommendation E.164 requires that the IDD code be preceded by “00”. It is therefore proposed that “00” be adopted as the IDD prefix for international access.

Telkom currently uses “00XX” range for manual trunk operator services. Telkom is currently in the process of migrating the manual trunk operator services from the “00XX” range to the appropriate “1X” range designated by SATRA. The migration will free up the “00” range for international access. The preliminary time-line for the availability of “00” is 31 March 2002.

The recovered “09” range will be reserved for future growth in the PSTN, and is consistent with the standard of using the prefix “0” for trunk access.

It is also proposed that “double trunking” be provided on this service for a period of 6 to 12 months after “00” is introduced. This would allow customers to use either “00” or “09” for international access for the first 6 months, thereby giving customers time to become used to the change to “00”. After this transition period only “00” would be available for international access.

## **9.6 *National Emergency Service Codes***

### **9.6.1 *Discussion***

The national emergency service number for South Africa is "107".

Cellular customers can also dial "112" to access emergency services. The use of "112" is a mandatory international standard for GSM networks and therefore must be provided by all GSM cellular operators.

Now that South Africa is reviewing its' numbering plan, it may be opportune to reconsider whether "107" is the best number for national emergency services.

In most administrations access to emergency services is via a standard 3 digit number which is easy to remember and can be accessed nationally, such as "911" in the USA, "000" in Australia and "112" for GSM mobile.

In considering this issue, it should be noted that:

- there is no international standard for emergency service numbers, other than that prescribed for GSM cellular (i.e. "112").
- the quality and reliability of the emergency service should in no way be related to, or dependent upon the number allocated to access it.
- the National Emergency Committee is reviewing the national emergency service code

### **9.6.2 *Assessment of Existing Plan***

The current plan accommodates all present emergency services. This includes "non national" emergency service codes such as "10111" (police).

### **9.6.3 *Proposal for National Emergency Service***

It is proposed that SATRA recommend to the National Emergency Committee to adopt "112" as the new national emergency code. The legislation on "107" national emergency service will require amendment.

## **10 *Draft Final Numbering Plan***

The draft final numbering plan has been prepared based upon the revised discussion of the issues, arguments and proposals in the previous sections.

It recommends an overall structure for a future plan. Where appropriate it includes recommendations on number "sub groups" and service groupings. However it does not propose to describe number range details to the lowest possible level.

The plan is divided into three main sections. International service codes, non geographic service codes and geographic service codes.

### 10.1 International service codes

Range	Service
-------	---------

00	International Direct Dial (IDD) Access Code
----	---



## 10.2 Non-Geographic Codes

---

**Range****Service**

---

**10****Existing Telkom Services**

eg. directory assistance  
operator services  
community services (time, weather)  
current national emergency service (107)

Telkom will retain this range, however all new services must be located in the appropriate new range.

---

**11****Community Services and Mass Dialling**

e.g. 1100 dial before you dig  
112 GSM emergency service  
113X Time, Weather  
114X radio competitions  
115X lottery results

---

**12****Operator Services**

e.g. difficulties and faults  
directory assistance domestic and overseas  
manual assistance  
international telegram enquiries  
ships at sea  
payphone connected calls  
wake up reminder  
charging/pricing

**Possible groupings:**

122X manual assist  
123X directory assist  
124X faults/service difficulties  
125X internal network codes (customer barred)

---

---

<b>Range</b>	<b>Service</b>
<b>13</b>	<b>Local Rate Services</b>  Services which are limited to a local call charge rate.  e.g. short code numbers – 13 XX XX  This range may contain groups of different length numbers.  e.g. 13 1X XX to 13 3X XX (6 digits) 13 4XX XXX to 13 6XX XXX (8 digits) 1300 (10 digits)
<b>14</b>	<b>Service provider access and preselection override codes</b>  141X to 146X for service providers (capacity for 60 service providers)  147X to 149X for preselection override (capacity for 30 carriers)
<b>15</b>	<b>Universal Personal Telecommunications (UPT)</b>
<b>16</b>	<b>Reserved for future growth</b>
<b>17</b>	<b>Reserved for future growth</b>
<b>18</b>	<b>Special Network Services</b>  Services in this range would include: virtual private networks credit card services network wide PABX type services future freecall services

---

<b>Range</b>	<b>Service</b>
<b>19</b>	<b>Premium Services</b>  Services which may attract a premium charge.
<b>1900</b>	<b>Initial allocation</b> (capacity for 1million services)  further ranges can be released when needed e.g. 1901, 1902 etc

---

---

<b>Range</b>	<b>Service</b>
<b>08</b>	<b>Mobile, Paging, GMPCS and Inbound Call Services</b>
<b>080</b>	<b>Freecall</b>
<b>081</b>	<b>spare</b>
<b>082</b>	<b>Vodacom</b>
<b>083</b>	<b>MTN</b>
<b>084</b>	<b>reserved for 3<sup>rd</sup> operator</b>
<b>085</b>	<b>reserved for 4<sup>th</sup> operator</b>
<b>086</b>	<b>Telkom inbound call services</b>
<b>087</b>	<b>spare</b>
<b>088</b>	<b>paging</b>
<b>089</b>	<b>GMPCS</b>

---

### 10.3 Geographic Services

Range	Service
01 to 05	<b>Public Switched Telephone Network Service</b>  01 Gauteng, Northern Province and Mpumalanga  <i>Gauteng Central to be split into 2 area codes, "010" and "011"</i>  02 Western Cape 03 Eastern (KwaZulu – Natal) 04 Southern Eastern Cape 05 Central (Free State and Northern Cape)
06	<b>Reserved for PSTN growth</b>
07	<b>Reserved for additional cellular range</b>
09	<b>Reserved for PSTN growth</b>  <i>(after migration to the new IDD code "00")</i>

Note: After the completion of the ten-digit dialling project, at a date yet to be determined, all calls to any person or service will require a full 10-digit national number regardless of the point of origin of the call. Initially all national calls will have a prefix "0" and digits "2" to "9" will not be used as the first digit. The "10X" special services and "1X" new services will be the only ranges where short codes will apply.

## ***11 Impact of Change***

### **11.1 Human Impact**

Change in telecommunications numbering impacts people in three ways. These are:

- ❑ difficulty in comprehending a new numbering scheme;
- ❑ difficulty in remembering changed or longer telephone numbers; and
- ❑ difficulty in dialling longer or changed telephone numbers.

SATRA believes it is important that in developing a new numbering plan, consideration is given to the way in which change affects different members of the community so that disruption and inconvenience is kept to a minimum.

#### ***11.1.1 General impact***

The change proposed to the structure of PSTN numbering in particular, will mean that telephone customers will need to learn the form in which a new digit or digits will be added to the number.

A large portion of customers rely on their memory for storing and recalling phone numbers. For these people change will have a substantial effect. However experience in other countries where there have been changes, shows that over a relatively short time period, people do adapt quite readily and become accustomed to new numbering.

Also, the use of number memory facilities on modern equipment means that for those customers the impact of changes to numbers is less significant.

Uniformity in the way numbers are presented is important to people so they can readily recall numbers. What is important here is that whatever the change, numbers are presented in one uniform format, particularly for telephone directories.

#### ***11.1.2 Older people and physically or intellectually disabled***

Change to numbers has a more significant impact on this group of people. Often people in this group have difficulty in dialling numbers quickly enough within the maximum time permitted by the network, and the call is disconnected. Making numbers longer can exacerbate this problem. It is therefore important that the issue of post dialling delay be considered in the event of number changes.

#### **Summary**

SATRA is aware that special consideration will need to be given to the needs of older people and those with disabilities in designing its public information campaign for the new



plan. SATRA will consult closely with the community and representative groups on how best to manage the change process.

## **11.2 The Cost of Change**

The cost to implement a new numbering plan will have to be borne by carriers, service providers, residential and business customers. Some studies indicate that the main cost is incurred by customers. Costs are extremely difficult to estimate, however experience shows that forward planning significantly reduces costs incurred.

South Africa is in a relatively fortunate position in that it is reviewing its numbering plan well in advance, thereby having time to plan ahead and minimise inconvenience, disruption and costs to customers.

### **11.2.1 Cost to Business Customers**

Costs to business customers are difficult to assess because of the different nature and size of businesses.

However, potential disruption and financial costs to businesses due to number changes, include:

- ☐ Reprinting stationary
- ☐ Advertising and marketing
- ☐ Informing customers of number changes
- ☐ Reprogramming of telecommunications equipment eg. PABXs, and
- ☐ Potential loss of business

However with adequate forewarning of planned number changes, businesses will be able to reduce, if not eliminate, these costs.

### **11.2.2 Costs to Residential Customers**

The 2 main areas of costs to residential customers are:

- ☐ Informing people

These are costs incurred by those people wishing to contact others to inform them of their new number.

This cost can be almost completely eliminated because in most cases this information is usually conveyed through the course of normal conversation. This will be assisted by double trunking and recorded voice announcements.

❑ Customer inconvenience

Less easily quantifiable are the costs involved in learning new dialling procedures and the inconvenience resulting from number changes.

However experience elsewhere indicates that dialling different or extra digits does not pose a problem for most customers. This is generally because of push button phone equipment, and the provision of memory capacity, abbreviated and speed dialling facilities.

### ***11.2.3 Costs to Carriers***

The main costs to carriers are:

- ❑ Cost to publicise number changes to customers;
- ❑ Cost of implementing changes required in the network, and;
- ❑ The cost of misdialled calls during the transition phase from the old plan to the new plan.

These costs will fall mostly on the incumbent because it is the main network provider.

Network costs are unavoidable, however they can be minimised with forward planning and when the changes are incorporated into other network modernisation and upgrade activities.

Costs associated with misdialling will be incurred because carriers will need to trap the misdialled call and advise the caller of the correct dialling procedure. This will occur mostly during the transition from the old plan to the new plan.

Costs to inform customers of number changes are largely unavoidable.

## ***12 Numbering Administration***

Numbering administration is associated with the management of the numbering plan. It refers to a range of management policies and processes necessary to ensure that the numbering plan is administered effectively and fairly.

Numbering administration can cover issues such as:

- number allocation - how will numbers be allocated, who to and on what basis;
- number portability - the ability for customers to retain their number when changing location and/or service provider;
- charging for numbers - whether charges should be levied on operators and customers for using numbers;

- rights of use - what rights, if any attach to the allocation and use of numbers, and;
- trading in numbers - whether operators and customers can buy and sell numbers.

Numbering administration is an entire project in itself and although it is not part of the numbering plan as such, it is a critical element in the overall operation of the plan. For that reason the issues of administration responsibility, number portability, number allocation and charging for numbers is discussed in this paper with the aim of raising awareness of the issues involved and to stimulate thinking and debate on some of the more important aspects associated with them.

## 12.1 Responsibility for Number Administration

It is generally accepted world wide that the number administration function must be performed by an independent body and that it be either a government entity, or a duly authorised agent of the government. The reason for this is to ensure that the management of numbering resources is fair and reasonable. In most countries the National Regulatory Authority (NRA) (generic term) is given responsibility for this function.

In general terms the NRA is responsible for ensuring non discriminatory access to numbering resources. In terms of number allocation for example, it is responsible for the assignment of numbers to market parties, the surveillance of usage and the withdrawal of assigned numbers where necessary.

Numbering administration comprises the establishment of policies and the administration of those policies. These two roles are undertaken differently in different countries. For example in some countries the ministry establishes the policies and the management of them is undertaken by the NRA. In other countries both functions are undertaken by the NRA.

The following are examples of how some countries handle numbering administration:

In the U.S.A numbering administration for most types of numbers is undertaken by the North American Numbering Plan Administrator (NANPA). The NANPA works under the policy guidance of the North American Numbering Advisory Council which is itself an advisory committee to the FCC. The rules for allocation of numbers are developed and maintained by the Industry Numbering Committee, which probably has a similar role to the Numbering Advisory Committee (NAC), recently established by SATRA. Toll free numbers in the U.S.A are administered by Database Service Management Incorporated which is an outsourced operation.

In Hong Kong and the United Kingdom numbering administration is undertaken by their respective TRAs, OFTA and OFTEL. OFTEL recently released a discussion paper which canvassed the concept of separating the policy and administration issues and outsourcing the latter.

In Germany numbering administration is undertaken by the German Regulatory Authority for Telecommunications and Posts which is a government body.

In Denmark numbering administration is the responsibility of the National Telecommunications Agency which is a government body.

In Australia numbering administration is undertaken by the Australian Communications Authority which is a government body.

## **12.2 Number Portability**

Number portability is a major issue in itself and SATRA has plans to initiate a public inquiry on it. Therefore it is discussed here in general terms.

There are various forms of number portability and it is important for these to be understood because each has significant competitive and customer implications. Number portability can also effect number capacity.

There are two main types of number portability.

### **a) Competitor Number Portability**

Competitor portability, enables the customer to keep the same number when changing carrier or service provider. Competitor portability promotes competition. Without competitor portability customers have to change their number if they wish to move to another service provider. Services for which competitor portability may be considered desirable are for example PSTN, mobile and toll free services.

### **b) Geographic number portability**

Geographic number portability applies to PSTN services, and allows a customer to retain the same telephone number when relocating premises. Geographic number portability breaks down the significance of the geographic information contained within the number (refer section 7.2). As a result consumers would not be able to identify the location of a particular service from the number.

It is generally accepted that the technical implementation of number portability requires that carriers' have intelligent networks (IN) implemented. Some forms of number portability can be achieved without IN (e.g. using network call forwarding) however it is more difficult and can require complex network routing. It is understood that by the year 2000 all of Telkom's network will be IN. This will be timely because it will coincide with the planned introduction of the second PSTN carrier. Therefore there appears to be no technical impediment to implementing number portability at that time between the two fixed network operators.

However, the technical feasibility of number portability is only one aspect of the issue. As important if not more, are the policy, management and administrative issues. Such as, who

is responsible for maintaining the database of numbers and what are the costs involved in implementing portability and who should pay.

Consistent with the principles, competitor number portability must be reciprocal. That is, it must apply to all carriers.

Number portability can impact upon numbering capacity and utilisation. If portability is provided then numbering utilisation may be improved because it can reduce the need to allocate each carrier its own number blocks. That is, competitors can share numbers within the same number blocks. Conversely, without portability, each carrier needs to be allocated its own dedicated number blocks from which they can allocate numbers to their respective customers. This can result in significant inefficiencies for number utilisation.

The extent to which number portability affects numbering capacity is almost impossible to estimate because it depends on several external variables such as operators' business plans and licence conditions (eg network roll out obligations). Number portability is more important to the issue of competition, because without it competition is restricted.

**SATRA welcomes any comment on this issue as part of this discussion paper. However SATRA intends to initiate a separate public inquiry into the feasibility of number portability. The scope of this inquiry will include, types of services, technical feasibility, consumer interests, implementation costs and timing and administration issues.**

## 12.3 Number Allocation

The number allocation role can be broken down into specific procedures. These procedures need to be considered in establishing the number allocation function. The following is an outline of the types of procedures that may be required. It is indicative only and is by no means a definitive list.

### 12.3.1 Allocation principles

Specifies by what principles numbers will be allocated. Some principles may include the need for fairness, responsiveness, compliance and consistency.

#### Applications and eligibility

Specifies who will be eligible to apply for numbers.

Specifies what information must be supplied by the applicant.

#### Primary assignment (assignment to a service provider or carrier)

Specifies what size number blocks will be allocated.

Requires that the application provides sufficient justification for the allocation.



Requires that the proposed use of the number/number blocks is compliant with the numbering plan.  
Specifies who receives priority if there are applications for the same number blocks.

#### Timing for processing applications

Includes procedures for informing applicants of progress and receipt of application.  
Specifies under what conditions applications may be refused.

#### Usage conditions

Specifies what rights of use attach to the allocation.  
Specifies the legitimate purpose of use.  
Specifies a time limit on when number/numbers must be put into use.  
Specifies under what circumstances can the number/numbers be recovered.

#### Conditions for secondary and tertiary assignment

Specifies conditions, if any, placed upon secondary and tertiary assignment by the primary operator.

#### Transparency and Public Information

Specifies what information on number allocations should be made available to the public. A balance between preserving competitor confidentiality and the public interest must be determined.

## **12.4 Charging for numbers**

Recognising the value attaching to certain numbers and the scarcity of the numbering resource, many countries have established regimes for charging carriers and service providers for numbers. This is particularly the case with premium numbers or what are commonly known as "gold" numbers. These types of numbers usually have special characteristics such as being short in length and/or easy to remember.

There are various ways in which charges can be levied for numbers including an initial allocation charge and an ongoing annual charge. However in many countries the government sets a total revenue target and a charging formula is calculated in order to achieve that target.

In Australia annual charges are levied and are based upon the quantity of total numbering resources a number occupies. This essentially means that the charge is based upon the number length. The following formula is used to calculate the charge:

$$A = A_s \times M^{(L_s - L)}$$

where

$A$  = amount of charge on given number

$A_S$  = amount of charge on standard (10-digit) number

$M$  = number length multiplier = 10

$L$  = length of given number

$L_S$  = length of standard (10-digit) number

This results in higher charges for numbers shorter than the standard 10 digit number and lower charges for numbers longer than the standard 10 digit number.

There is a cap on the maximum amount that can be charged on any individual number.

Some numbers are exempt from charges such as those used in the supply of standard telephone services.

In Finland charges are based upon the type of service which is provided by the number together with number length. Service types include:

- standard subscriber number
- operator prefixes including 3, 4 and 5 digit trunk and international prefixes
- data network identification codes (DNICs)

In Switzerland OFCOM divides numbers into 2 classes and applies application and annual charges. Class 1 numbers are those numbers with end users such as PSTN numbers. They are allocated in blocks of 10,000 and are charged accordingly. Class 2 numbers are service identification numbers and short numbers. These are allocated in blocks of 1000 and are charged at a premium.

Application charges take account of how much time is required by OFCOM to allocate the number and any other administration costs.

In Denmark a similar regime is used as in Australia.

In most countries the charging formula is established by the relevant government department or ministry. Usually it is then the responsibility of the NRA to administer the arrangements.

**13 APPENDIX 1****Numbering Advisory Committee (NAC) Membership**

Mr. Nape Maepa (Chairperson)	SATRA
Ms. Noluthando Gosa (Alternate Chairperson)	SATRA
Mr. Roger Nicol	SATRA
Mr. Sidney Arnold	MTN
Ms. Tanya Lacob	MTN
Mr. Gary Robinson	Vodacom
Mr. Amish Chana	Vodacom
Mr. Brian Blackadder	Telkom
Mr. Jack Tlokana	Telkom
Mr. Renier Joubert	Eskom
Mr. Ray Webber	NTUG/SAVA/SATMA
Mr. Anthony Brooks	ISPA
Mr. Zolisa Masiza	Transtel
Mr. Denis Hasenjager	Consumer Protection Committee
Mr. Daan van Niekerk	Special Advisory Committee
Mr. Sudheer Sukumaran	Department of Communications
Mr. Kerry Stephenson	SACSPA
Mr. Davy Ivins	Direct Marketing Association

## **14 APPENDIX 2**

### **NAC – Terms of Reference**

The Numbering Advisory Committee (NAC) shall provide a forum for the exchange of views on numbering issues and will advise SATRA on a range of matters including, *inter alia*, the following:

Development of a Numbering Plan that will meet the Telecommunications sector's requirements into the 21<sup>st</sup> century.

Implementation of a proposed new or revised Numbering Plan.

Industry and consumer views on numbering matters.

Public awareness and information on numbering.

Key principles proposed by SATRA, by which a new or revised Numbering Plan should be developed.

Key issues and recommend possible solutions and/or further action.

Input to a paper for public comment, which focuses on the key issues and presents a Draft Numbering Plan.

The evaluation of submissions to the paper from all interested parties.

Administration of the Numbering resource, for example:

Allocation of codes and numbers

Charging (for numbers)

Portability

Rights of usage/ownership

In order to fulfil the obligations of the terms of reference and to focus on certain key issues, it may be necessary for the NAC to work in sub-teams or working groups which will report back to the main committee.

---

---

**CONTENTS**

No.

Page  
No.      Gazette  
            No.**GENERAL NOTICE****South African Telecommunications Regulatory Authority***General Notice*

1771	Telecommunications Act (103/1996): Notice of intention to make regulations regarding the numbering plans in terms of section 96 and 89 .....	1	20354
------	--	---	-------

---



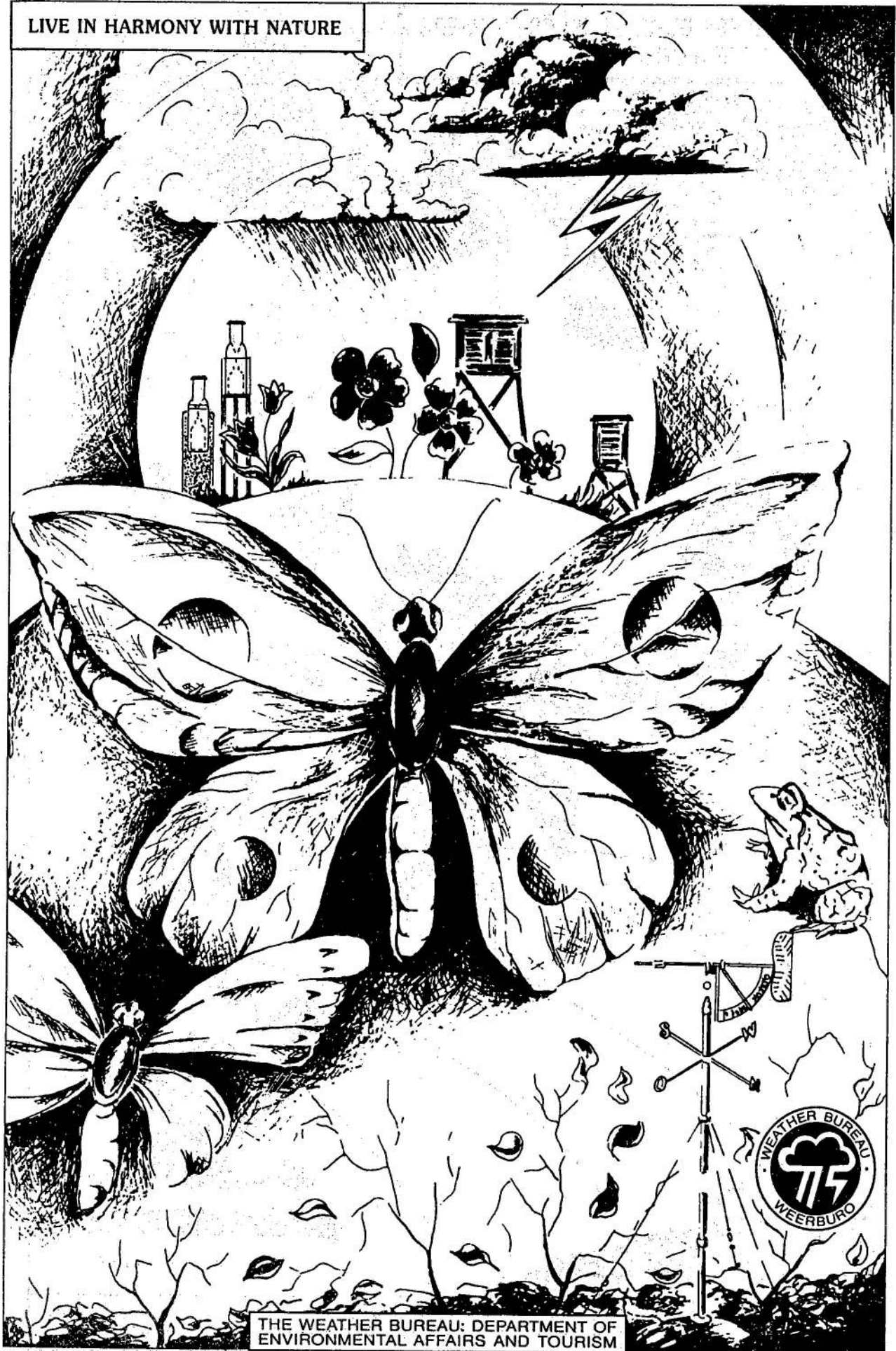


# THE WEATHER BUREAU HELPS FARMERS TO PLAN THEIR CROP



THE WEATHER BUREAU: DEPARTMENT OF ENVIRONMENTAL AFFAIRS & TOURISM  
DIE WEERBURU: DEPARTEMENT VAN OMGEWINGSKE EN TOERISME

LIVE IN HARMONY WITH NATURE



THE WEATHER BUREAU: DEPARTMENT OF  
ENVIRONMENTAL AFFAIRS AND TOURISM

Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001  
Tel: (012) 334-4507, 334-4511, 334-4509, 334-4515  
Gedruk deur en verkrygbaar by die Staatsdrukker, Bosmanstraat, Privaat Sak X85, Pretoria, 0001  
Tel: (012) 334-4507, 334-4511, 334-4509, 334-4515