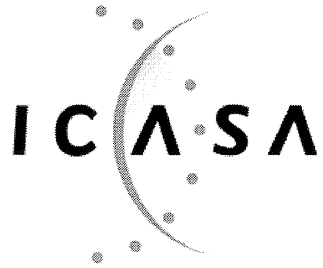
GENERAL NOTICE

NOTICE 1064 OF 2012

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA



PURSUANT TO SECTION 4 (1) OF THE ELECTRONIC COMMUNICATIONS ACT 2005, (ACT NO. 36 OF 2005)

HEREBY ISSUES A NOTICE INVITING COMMENTS REGARDING THE 2ND DRAFT FREQUENCY MIGRATION REGULATION AND RADIO FREQUENCY MIGRATION PLAN

1. The Independent Communications Authority of South Africa ("the Authority'), in terms of section 4, read with sections 31(4), 34(7)(c)(iii), 34(8) and 34(16) of the Electronic Communications Act (Act No. 36 of 2005), hereby gives notice and invites comments on the *2nd Draft Radio Frequency Migration Regulations and Radio Frequency Migration Plan*.

2. Interested persons are hereby invited to submit written representations, including an electronic version of the representation in Microsoft Word, of their views on the Draft Frequency Migration Regulations and Radio Frequency Migration Plan by no later than 16h00 on the 8th of February 2013.

3. Written representations or enquiries may be directed to:

The Independent Communications Authority of South Africa
Pinmill Farm Block A
164 *Katherine Street*
South Africa

Private Bag XI0002
Sandton
2146
Attention:
Mr Manyaapelo Richard Makgotlho
e-mail: rmakgotlho@icasa.org.za

4. All written representations submitted to the Authority pursuant to this notice shall be made available for inspection by interested persons from the 11th of February 2013 at the ICASA Library or website and copies of such representations and documents will be obtainable on payment of a fee.

5. Where persons making representations require that their representation or part thereof be treated as confidential, then an application in terms of section 4D of the ICASA Act, 2000 (Act No. 13 of 2000) must be lodged with the Authority. Such an application must be submitted simultaneously with the representation on the draft regulations and plan. All confidential material must be pasted onto a separate annexure which is clearly marked as "Confidential". If, however, the request for confidentiality is not granted, the person making the request will be allowed to withdraw the representation or document in question.

Dr SS MNCUBE
CHAIRPERSON

PART 1

2nd Draft Frequency Migration Regulations

DRAFT REGULATION
Radio Frequency Migration Regulations

SCHEDULE

1. Definitions

In these Regulations, terms used shall have the same meaning as in the Electronic Communications Act 2005 (no. 36 of 2005); unless the context indicates otherwise:

"Act" means the Electronic Communications Act, 2005 (Act No. 36 of 2005) as amended;

"ITU" means the International Telecommunication Union;

"SADC FAP" means the Southern African Development Community Frequency Allocation Plan;

"User" means a licensed or licence exempt user of the radio frequency spectrum; and

"**WRC"** means the World Radio communication Conference.

2. Purpose

The purpose of these regulations is to establish the framework by which the Authority may migrate users of the radio frequency spectrum under the National Radio Frequency Plan of South Africa.

3. Principles

(1) Radio frequency spectrum migration must be in accordance with the Radio Frequency Migration Plan.

(2) Radio frequency spectrum migration must be consistent with the National Radio Frequency plan.

(3) The National Radio Frequency Plan itself must be consistent with the International Telecommunication Union (ITU) Radio-regulations as updated by WRC, and with the SADC FAP.

(4) Allocations and assignments of radio frequency spectrum that are no longer in line and accordance with the National Radio Frequency Plan will be migrated.

(5) The users to be migrated shall not be entitled to be compensated by the Authority for the costs of the migration.

(6) To the extent that it is possible, the cost of migration should be minimised by considering, amongst other things, the duration of the licence and the economic life time of the equipment.

(7) Frequency migration may be required in core and central astronomy advantage areas in terms of section 22(2) (c) of the Astronomy Geographic Advantage Act (Act No. 21 of 2007).

4. Process for Radio Frequency Migration

The Authority shall initiate a process of radio frequency migration in the following circumstances:

(a) As specified in the Frequency Migration Plan;

(b) Where a change in the use of a radio frequency band is required to bring the South African National Frequency Plan into line with the ITU's Radio-regulations or the final acts of the latest WRC;

(c) Where a change in the use of a radio frequency band is required to ensure harmonisation of the South African National Radio Frequency Plan with the SADC FAP;

(d) Where the Authority has determined that a change in use of the frequency is necessary for efficient utilisation of the radio frequency spectrum and to otherwise meet the objectives of the Act;

(e) Where the Authority has determined that a change in a radio frequency spectrum licence holder's assignment within a radio frequency band is required to enable more efficient use of the radio frequency spectrum (in-band migration) or

(f) Where a South Africa specific requirement must be accommodated, such as that arising from protecting radio frequency spectrum for radio astronomy purposes in core and central astronomy advantage areas in terms of the Astronomy Geographic Advantage Act (Act No.21 of 2007).

5. Preparation of a Radio Frequency Spectrum Assignment Plan

(1) A change in the use of a radio frequency band(s) must be initiated through a Radio Frequency Spectrum Assignment Plan for the radio frequency spectrum bands in the manner specified in the latest Radio Frequency Spectrum Regulations.

(2) With respect to the radio frequency migration process, a Radio Frequency Assignment Plan may include:

(a) The process for migrating existing users and uses from their existing spectrum location, specifying the bands to which the users and uses will be migrated - including in-band migration where applicable.

(b) The period for the reallocation of the radio frequency band in question, specifying the date at which the users to be migrated should cease transmission.

(3) A Radio Frequency Spectrum Assignment Plan shall be subject to public consultation:

(a) The Authority shall publish the Radio Frequency Spectrum Assignment Plan in the Government Gazette, and invite interested persons to submit written representations as specified.

(b) The Authority may, after any defined period for lodging comments by interested persons has passed, hold a public hearing in respect of the application.

6. Amendment of a Radio Frequency Spectrum Licence

(1) Upon completion of the Radio Frequency Spectrum Assignment Plan, the Authority must issue a notice to users to be migrated.

(2) The notice of amendment may include the following:

(a) The date at which the licensee must cease transmitting within the frequency range of his existing assignment;

(b) The date at which the licensee may commence transmitting within the new assignment or

(c) The date within which the licensee must collect their updated radio frequency spectrum licence which contains the new terms and conditions of the new assignment, including technical parameters and whether the assignment is exclusive or shared.

7. Short title and commencement

These Regulations are called the Radio Frequency Migration Regulations 2012 and shall come into effect upon publication in a Government Gazette.

PART 2

2nd Draft Radio Frequency Migration Plan

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1 Introduction

1.1 Purpose

To develop a Radio Frequency Migration Plan with the aim of managing spectrum efficiently for the benefit of all South Africans in terms of section 2(e) of the Electronic Communications Act, 2005 (Act No. 36 of 2005) as amended ("the Act").

The plan provides for:

- Background and basis of the Radio Frequency Migration Plan;
- How the Radio Frequency Migration Plan was developed;
- Identification of the radio frequency bands where migration may be required and makes proposals regarding such frequency migration as may be required;
- The impact of the Frequency Migration Plan; and
- International benchmark study on the experience of other countries with respect to matters relevant to spectrum migration.

1.2 Definitions

1.2.1 ITU Definitions

The standard definitions for spectrum management in the International Telecommunications Union (ITU) Radio regulations (Article 1) are as follows:

> ***allocation*** (of a frequency band): Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space *radiocommunication services* or the *radio astronomy service* under specified conditions. This term shall also be applied to the frequency band concerned. (1.16)
>
> ***allotment*** (of a radio frequency or radio frequency channel): Entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more administrations for a terrestrial or space *radiocommunication service* in one or more identified countries or geographical areas and under specified conditions. (1.17)
>
> ***assignment*** (of a radio frequency or radio frequency channel): Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions. (1.18).

The ITU does not define spectrum migration as such.

In the Act, the reference to spectrum migration is clearly the migration of users of radio frequency spectrum to other radio frequency bands in accordance with the radio frequency plan. The main focus of the FMP is on migrating existing users.

Since certain issues of spectrum migration involve usage as opposed to users, it is useful to expand the definition of migration to include not just users but also uses

"Radio Frequency Spectrum Migration" *means the movement of users or uses of radio frequency spectrum from their existing radio frequency spectrum location to another.*

1.2.2 Spectrum re-farming

The term spectrum re-farming is widely used, but like spectrum migration does not have a universal definition and can mean slightly different things in different countries.

The ICT Regulation Toolkit[1] describes spectrum re-farming:

as a process constituting any basic change in conditions of frequency usage in a given part of radio spectrum (see The ICT Regulation Toolkit[2].

Such basic changes might be:

1. *Change of technical conditions for frequency assignments;*
2. *Change of application (particular radiocommunication system using the band);*
3. *Change of allocation to a different radiocommunication service.*

The term re-farming is used to describe:

- The process where a GSM operator changes the use of all or part of the spectrum used for GSM to UMTS / LTE; especially where the spectrum licence has specified the technology (as GSM) and the operator licence has to be changed[3] .
- The situation where the individual assignments within a band are changed to allow more efficient use to be made of the frequency band (usually due to a change in technology).

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[1]This allows spectrum migration to encompass re-farming of spectrum within assigned bands other technologies and in-band migration such as the digitalisation of TV broadcast.[2] The ICT Regulation Toolkit is a joint production of infoDev and the International Telecommunication Union

[2] The ICT Regulation Toolkit is a joint production of infoDev and the International Telecommunication Union

[3] Even where the licences are not technologically specific and it could be argued that the change in use from GSM to LTE does not require a regulator to get involved; in order to make efficient use of the spectrum it may be necessary to modify the individual assignments within the band.

- The process of reallocating and reassigning frequency bands where the licence period has expired, this is happening in Europe where the orial GSM licences are expiring[4].For the purposes of the plan therefore, radio frequency spectrum re-farming may be defined as follows:

  "Radio Frequency Spectrum Re-farming" means the process by which the use of a Radio Frequency Spectrum band is changed following a change in allocation, this may include change in the specified technology and does not necessarily mean that the licensed user has to vacate the frequency.

1.2.3 Other definitions

Where the user of a radio frequency has a change of assignment within the same band, usually to allow greater efficiency in the use of the spectrum, this may be termed **in-band migration**.

In some cases, a radio spectrum user may not only have his assignment changed in the same band, but have a new spectrum allocated in a different band. This has occurred with respect to the balancing of spectrum assignments in the GSM 900 MHz and 1800 MHz bands (refer to Appendix B **Error! Reference source not found.**) and may well become a feature of mobile broadband assignments in the future.

1.3 Spectrum use in the Karoo Central Astronomy Advantage Areas

The radio frequency spectrum use in the Karoo Central Astronomy Advantage Areas to be declared in the Northern Cape Province must be protected for radio astronomy purposes in terms of the Astronomy Geographic Advantage Act (Act No.21 of 2007). Section 22 of the AGA Act provides specifically for Restrictions on use of radio frequency spectrum in astronomy advantage areas.

[4] A good example is in Ireland ref: "Multi-band Spectrum Release: Release of the 800 MHz, 900 MHz and 1800 MHz Radio Spectrum Bands' – various consultations by ComReg 2012.

2 Applicable Legislation and Regulations

2.1 Electronic Communications Act

2.1.1 Section 34 - Radio Frequency Plan

Section 34 of the Act deals with the National Radio Frequency Plan and as part of this, radio frequency migration.

Subsection (2) essentially contains the key statement:

.....national radio frequency plan developed by the Authority, which must set out the specific frequency bands designated for use by particular types of services.....

Referring specifically to matter of migration:

- Section 34 (7) (c) (iii), states that the Authority must:

  Co-ordinate a plan for migration of existing users, as applicable, to make available radio frequency spectrum to satisfy the requirements of subsection (2) and the objects of this Act and of the related legislation.

- Section 34 (16) states that:

  The Authority may, where the national radio frequency plan identifies radio frequency spectrum that is occupied and requires the migration of the users of such radio frequency spectrum to other radio frequency bands, migrate the users to such other radio frequency bands in accordance with the national radio frequency plan, except where such migration involves governmental entities or organisations, in which case the Authority—

  (a) must refer the matter to the Minister; and

  (b) may migrate the users after consultation with the Minister

It is clear that ICASA has the obligation and authority to plan and implement the migration of users, subject to the approval of the Minister with respect to government entities[5].

2.1.2 Section 31 - Radio Frequency Spectrum Licence

Section 31 of the Electronic Communication Act (2005) deals with the radio frequency spectrum licences.

- Section 31 (4) states that:

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[5] Section 34 (16) of the Act

(4) The Authority may amend a radio frequency spectrum licence—

(a) to implement a change in the radio frequency plan;

(b) in the interest of orderly radio frequency spectrum management;

(c) to effect the migration of licensees in accordance with a revised radio frequency plan or the transition from analogue to digital broadcasting;

(d) if requested by the licensee concerned to the extent that the request is fair and does not prejudice other licensees; or

(e) with the agreement of the licensee.

It is the Authority's view that the latter legislation empowers it to amend a radio frequency licence/s to cater for instances listed in section 31(4) (a)-(e) of the Act.

2.1.3 Chapter 3 – Licensing Framework

Section 31(1) and (2) of the Act dealing with the radio frequency spectrum licence interlinks with Chapter 3 of the Act which in principle deals with the award of licences for individual and class licences for the provision of services, and clarifies that a person cannot provide services which require the use of the radio frequency spectrum without a radio frequency spectrum licence. Spectrum Licence Duration

The process of migrating users will not have an impact on the duration of their radio frequency spectrum licences. The radio frequency spectrum licences in South Africa are in principle granted for a period of 12 months or one year. In the case of multi-year licences, migration will not fall within the period of the multi-year licence.

2.1.4 Astronomy Geographic Advantage Act (Act No.21 of 2007)

The proceedings of ICASA are also subject to the Astronomy Geographic Advantage Act. This act contains the following provisions that affect the Draft Radio Frequency Migration Plan. Certain subsections in section 22 (Restrictions on use of radio frequency spectrum in astronomy advantage areas) and section 23 (Declared activities in core or central astronomy advantage area) that are relevant, state the following:

Section 22(1) - the Minister has the authority subject to subsection (2) within a core or central astronomy advantage area to protect the use of the radio frequency spectrum for astronomy observations.

Section 22(2) - Pursuant to the authority granted in subsection (1) and with the concurrence of ICASA, in so far as the Minister's action is likely to affect broadcasting service license or broadcasting service, the Minister may, by notice in the Gazette –

a) prohibit completely or restrict in any way the use of specific frequencies within the radio frequency spectrum or the radio frequency spectrum in general within a core or central astronomy advantage area;

b) require the conversion, within a reasonable time period, of analogue transmissions in the radio frequency spectrum within a core or central astronomy advantage area, to digital transmissions;
c) require any user of the radio frequency spectrum which transmits or broadcasts into a core or central astronomy advantage area to migrate onto a radio frequency or utilise alternative technology that more effectively protects radio astronomy observations; or
d) exempt from the provisions of such notice any person or organ of state who has entered into an agreement with the management authority of the core or central astronomy advantage area to mitigate their impact on the radio frequency spectrum within the relevant astronomy advantage area.

Section 22(6) - Notwithstanding anything contained in any other law, ICASA must not issue a broadcasting service license or a radio frequency spectrum license after the coming into force of this Act where the service to be licensed would cause radio frequency interference in a core or central astronomy advantage area, unless the conditions set out in the license make provision for the protection of such areas.

Section 23(1) - the Minister may, with the concurrence of ICASA where his or her action is likely to affect broadcasting service license or broadcasting service, declare that no person may, in a core or central astronomy advantage area, and conduct any activity in any of the following categories (only the items relating to radio frequency spectrum are listed below):

a) the construction, expansion or operation of any fixed radio frequency interference source;
b) activities capable of causing radio frequency interference, including bringing into the area or operating any interference source, mobile radio frequency interference source or short range device;
c) any other activity which may detrimentally impact on astronomy and related scientific endeavours, or the astronomy advantage of any core or central astronomy advantage area or may direct that such activities may only be conducted in a core or central astronomy advantage area in accordance with standards or conditions prescribed by the Minister.

Section 23(2) - Following publication of a declaration under subsection (1), the Minister must review all declared activities which were lawfully conducted in any affected core or central astronomy advantage area immediately before a declaration in terms of subsection (1) was published.

2.2 Review of Regulations

2.2.1 Radio Frequency Spectrum Regulations

The Final Radio Frequency Spectrum Regulations (Notice 184 0f 2011 in Government Gazette 34172) do not elaborate further (than the Act) on the issue of migration or the

related issue of the amendment of a radio frequency spectrum licence initiated by the authority.

Regulation 15 deals with the duration of a radio frequency spectrum licence

- Regulation 15 (1) stipulates that *The grant of a Radio Frequency Spectrum Licence and assignment*[6] *must not be construed as conferring upon the holder a monopoly of the use of the frequency or a right of continued tenure with respect of the frequency;*
- Regulation 15 (2) stipulates that, *unless otherwise specified, a Radio Frequency Spectrum Licence remains valid for one year and thereafter is renewable upon payment of the annual licence fee.*
- Regulation 15 (3) stipulates that where an assignment is issued in the Amateur Radio, Aeronautical, Maritime, Citizen Band frequency bands or for Ski Boats, the radio frequency spectrum licence can be renewed for a maximum period of 5 years.

2.2.2 Terrestrial Broadcasting Frequency Plan

The Final Terrestrial Broadcasting Frequency Plan (Notice 1538 of 2009 in Government Gazette 32728) deals with the planning of the broadcast bands in South Africa including the digitalisation programme and the vacation of broadcast channels from the 800 MHz frequency band following the 2006 regional radio conference in Geneva (GE06), which in turn was derived from resolutions made in WRC 07.

This plan is being currently updated and will reflect the WRC12 resolutions on the 700 MHz band.

This plan essentially deals with the conversion of analogue to digital Television and the subsequent migration of the existing TV channels to a new spectrum location. The key issues of interest are that there is a period during which broadcasts continue simultaneously in analogue and digital until the analogue channels are switched off.

2.3 Overview of rights

2.3.1 Radio frequency spectrum rights

Neither in the Act, nor in the regulations are there any rights on the parts of users to retain spectrum. The spectrum licence is currently valid for one year only and a spectrum assignment can be revoked at any time. As the International benchmark study (refer to Appendix B (**Error! Reference source not found.**) indicates, this is not unique to South Africa and many administrations retain the ultimate right to decide on the use of the

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[6] There is a semantic difference between licence and assignment. The assignment is the right of use of a specific frequency or frequency band, the licence is the document giving the assignment. Where a user is migrated from one spectrum location to another, his licence may be amended to give a new assignment and change other terms and conditions.

spectrum at any time, notwithstanding the procedures for withdrawal, amendment or suspension of a licence.

The process for spectrum migration shall include the following:

- a consultation process,
- consideration of the economic lifetime of the equipment,
- the identification of alternative frequencies for users who have to be migrated out of a frequency band,
- advance planning along with an adequate time frame,
- consideration of the duration of the radio frequency spectrum licence,
- consideration of the duration of a broadcast licence.

3 Principles Governing Frequency Migration

3.1 Identification of Bands which are subject to Frequency Migration

Bands are identified for radio frequency migration according to the following hierarchy:

- First Level – where the ITU radio regulations / decision of a World Radio Conference (WRC) require a change in national allocation that will require existing users to be migrated;
- Second Level - where a Regional Radio Conference require a change in national allocation that will require existing users to be migrated;
- Third Level – where the SADC Frequency Allocation Plan (FAP) requires a change in a change in national allocation that will require existing users to be migrated and
- Fourth Level – a decision is taken to change the use of a frequency band at national level and this requires the migration of existing users.

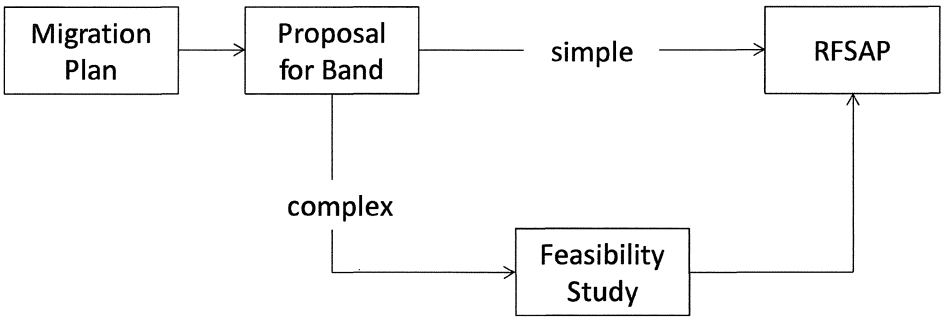
3.2 Process

The process of frequency migration is carried out in a manner consistent with the radio frequency spectrum regulations and the generic process is described in the draft frequency migration regulation that is attached to this draft plan. The key processes are:

- Preparation of a Radio Frequency Spectrum Assignment Plan (RFSAP)
- Amendment of a Radio Frequency Spectrum Licence

When it has been established that migration is required, then the critical issue is to determine the time frame in a manner consistent with sound radio frequency spectrum management.

The first consultation highlighted the need in some cases to carry out a feasibility study on the band in question. This is illustrated in the process flow indicated below.



The RFSAP will be subject to a consultation process, but it is desirable that a feasibility study be carried out first where there are contentious issues and alternative options.

Submissions in the first consultation touched on the issue of specifying the destination bands for services migrating out. It cannot be a requirement of the Frequency Migration Plan that destination bands for out-migrating users or uses be identified because the appropriate destination band will vary from user to user depending on their specific requirements of the user. The spectrum pricing regime is intended to facilitate this process and guide users to the 'optimum' choice.

3.3 Time Frame for Migration

In principle, ICASA can migrate a user to another location as part of sound radio frequency spectrum management as required. However, an appropriate time frame should be applied as a matter of standard practice.

In determining the time frame, the following factors will be taken into account:

- the duration of the spectrum licence,
- the time frame to migrate existing customers (end users),
- the economic life of the equipment installed and
- adequate forward planning.

3.3.1 Time Frame to migrate existing end users

The issue of the migration of existing users is a key determinant of a spectrum migration time frame. The issue arose in the past with cessation of the analogue mobile phone systems and the migration to GSM and is currently an issue with respect to broadcasting. In Europe, the main controversy is with regard to proposed plans to terminate VHF FM and possibly Medium Wave broadcasting and as a result of this opposition, the termination of FM does not seem likely in the short term. There has been less opposition to the cessation of analogue television broadcasts.

The critical area in South Africa is the digitalisation of TV where end users have to obtain a digital-to-analogue box to accommodate digital signals to their existing televisions before analogue switch off in 2015.

Potential areas that may arise in the future include:

- Conversion of existing cellular frequencies to HSPA/ LTE.
    - Because of the large number of GSM customers with voice / text only phones in South Africa and the availability of other bands for mobile broadband, it is unlikely that GSM bands will be shut off any time soon.
    - A switch over from 3G / HSPA to LTE – if this ever occurs would involve a time frame of 3-5 years to accommodate the life cycle of the end-terminal equipment.
- Switch off of an analogue radio: This is unlikely to occur within the time frame envisaged by this spectrum migration strategy.

3.3.2 Economic life of the equipment installed

It should not be automatically assumed that a change in frequencies will require new transmission equipment; it is possible that the equipment can be retuned at relatively low cost.

In terms of the economic lifetime of the equipment, SABRE 2 which was gazetted in August 2001, planned for switchover deadline of December 2005 for the services subject to migration which was a time frame of just under 5 years. This was at a time when the technological life-cycle was longer than it is today.

3.3.3 Adequate Forward Planning

Probably the most important factor for a frequency migration is the allowance of sufficient time for adequate forward planning. In terms of the overall process this may include:

- Proper time for consultation,
- Band planning,
- Adequate time for existing users of the spectrum to migrate out, and
- Adequate time required for dual illumination during a switchover period subject to no interference.

In terms of the time frame, the critical determinant is the earliest time in which new users can begin transmitting as this will be the final date at which existing users cease transmitting. In principle, there is little to be achieved by shutting down existing transmission before new licensees are ready to start transmitting.

3.3.4 Conclusions regarding time frame.

It is proposed that the forward looking time frame for a process of spectrum migration should be 3-5 years from the moment of announcement, unless otherwise specified.

To ensure that there is no confusion, where there are multi-year radio frequency spectrum licences; these should generally not exceed 5 years. Where there is a spectrum migration planned for a particular frequency band, there is nothing to stop a licence being issued for the period up to the date at which transmission should cease if the licensee is able to 'live with' this.

3.4 Frequency Migration in the Karoo Central Astronomy Advantage Areas

The need for frequency migration in the Karoo Central Astronomy Advantage Areas will be determined by the South Africa specific requirements for protecting the use of the radio frequency spectrum for astronomy observations. The following principles will be applied:

- The protected spectrum within a core or central astronomy advantage area will be determined in the declaration of the area in terms of the Astronomy Geographic Advantage Act;
- The frequency bands in the protected spectrum to be exempted from the restriction of its use will constitute a frequency allocation plan for the Karoo Central Astronomy Advantage Areas;
- The frequency band exemptions will be determined by the relevant management authority designated for the declared areas in terms of the Astronomy Geographic Advantage Act, and will be subject to a public consultation process after advance consultation with ICASA;
- The frequency band exemptions will be published in the Gazette after the public consultation had been concluded; and
- Frequency use outside the exempted frequency bands must migrate to frequencies inside the exempted frequency bands. The procedures to determine the frequency spectrum bands to be exempted are detailed in the draft Regulations on Procedural Matters for the Central Astronomy Advantage Areas. As preliminary information, the radio frequency bands and the services that need to be considered for exemption for radio communications purposes are set out in the following sub items. Only spectrum from 100 to 960 MHz is addressed in the comments below. No exemptions are contemplated above 960 MHz, however, a possible need for exemptions will be considered as required.

4 Development of the Radio Frequency Migration Plan

4.1 Background

The First Draft of the Draft Frequency Migration Regulation and Frequency Migration Plan was issued for consultation in August 2012. The industry submitted comments and public hearings were held in November 2012.

The table below illustrates the time line of documents and conferences that informed the creation of First Draft of the Draft Frequency Migration Regulation and Frequency Migration Plan

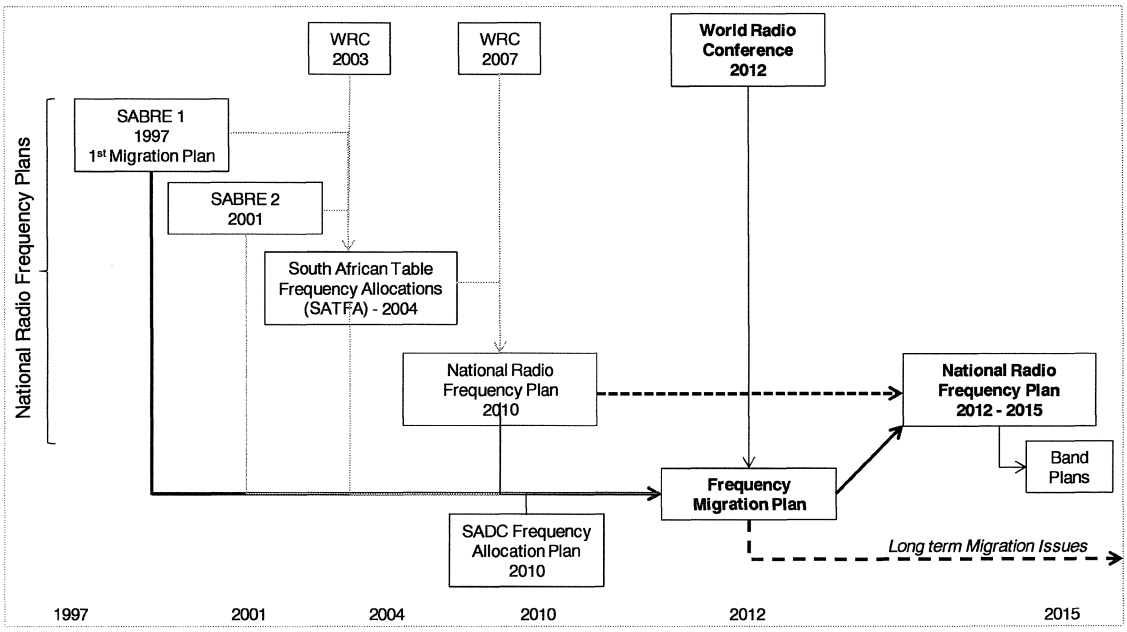


Figure 1 Time Frame and events informing Frequency Migration Plan

This Second Draft Frequency Migration Regulation and Frequency Migration Plan have taken account of the industry submissions insofar as they relate to Frequency Migration. This second draft also takes cognizance of the draft update of the National Radio Frequency Plan and both reflect the Final Acts of WRC-12 World Radiocommunication Conference (Geneva 2012) and the subsequent update of the ITU Radio Regulations in November 2012.

4.2 International Context

The use of the Radio Frequency Spectrum is fundamentally determined through the ITU Radio Regulations which are established by treaty and modified by treaty in the form of the Resolutions of the World Radio Conferences in which South Africa has participated

since 1994. The primary driver for a change in use is a change in allocation stemming from a World Radio Conference Resolution.

South Africa has to harmonise uses and management of frequency bands with other countries in Africa and elsewhere in Region 1 on the grounds that this facilitates coordination and allows South Africa to benefit from potential economies of scale with regard to equipment as well being able to capitalize on existing development work.

South Africa has actively participated in the preparation of the SADC Frequency Allocation Plan (SADC FAP) and to keep the National Radio Frequency Plan as harmonised as possible with the latest version of the SADC FAP as is necessary to maintain international co-ordination with neighbouring countries.

4.3 Approach to development of FMP

The Radio Frequency Migration Plan is drawn up using the latest National Radio Frequency Plan (NRFP 2010) as a baseline.

As a first step, a confirmation is made with regards to the frequency migrations proposed in SABRE[7] (see below) with respect to the following:

- Whether the migration as proposed (both from and to other bands) has been carried out and
- If identified service/s continue to occupy the original band, whether these services should still be migrated or if the migration has now become irrelevant in the present context. This is carried out by:
    - Evaluating the current utilization of these bands by the incumbent
    - Determining whether these bands could be put to better use

In the next step, the proposals in the SADC Frequency Allocation Plan 2010 (SADC FAP 2010) are considered for relevancy in the Republic of South Africa. In terms of relevancy, points under consideration are:

- Whether the bands proposed for alternate use by SADC are being currently utilized (by whom and to what extent) and
- If there is a global trend and perceived economic benefit in migrating the current users to accommodate new services.

The third step involves looking at the resolutions adopted at the World Radiocommunication Conference (WRC) 7 and 12 etc., applicable to Region 1 and determines applicability for South Africa. Similar criteria as used to evaluate SADC proposals would be applied here.

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[7] The Revision of South African Frequency Allocation Plans (Band Plans) and Migration Strategies – Notice 759 of 1997 – which covered 20MHz to 3 GHz (SABRE-1) and 3.4GHz to 3.6 GHz.

The fourth step involves identifying South Africa specific migration issues.

In this manner, all matters of significance from global, regional and national context along with the historical activities around migration are awarded due consideration in drafting the frequency migration plan.

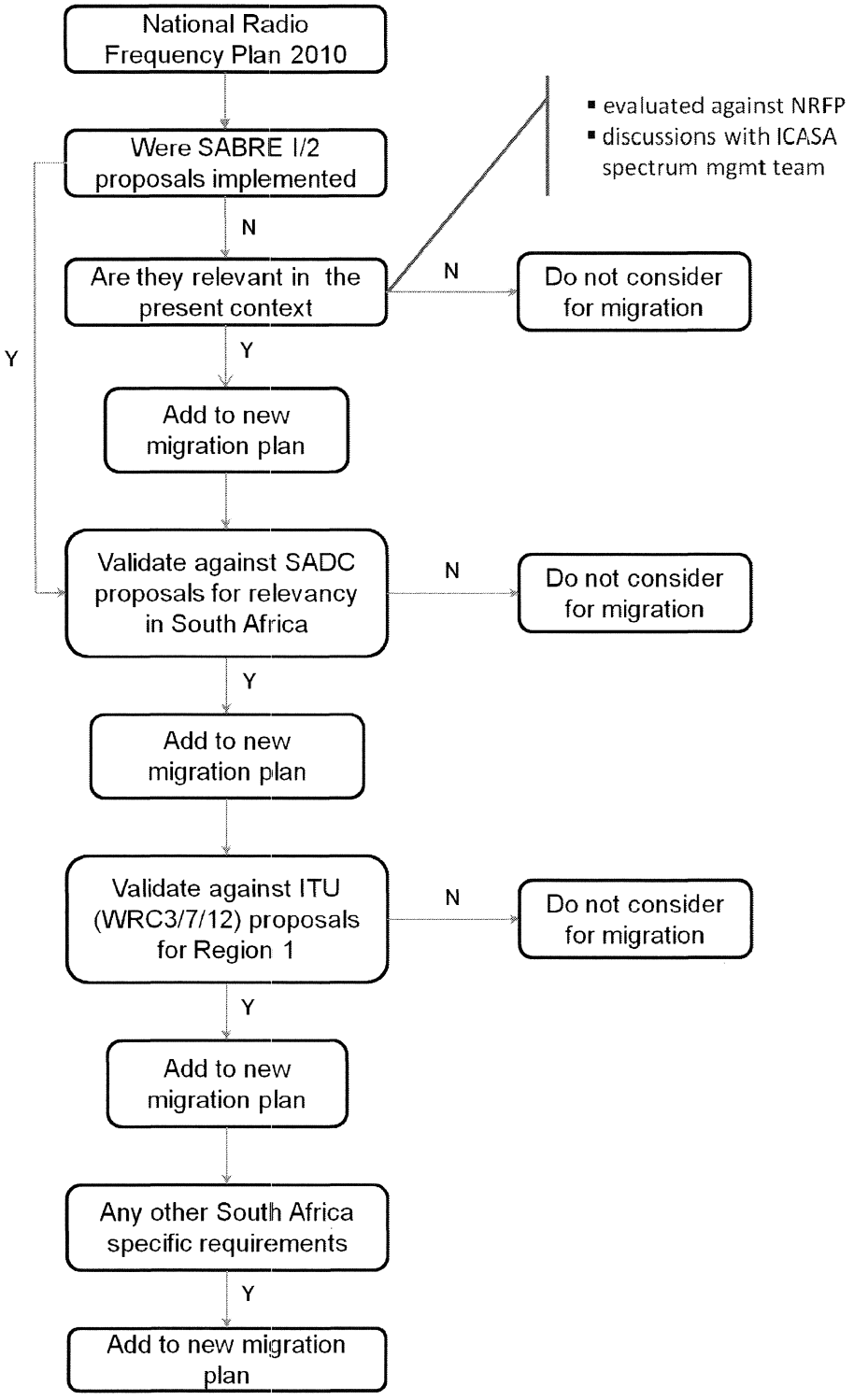

Figure 2 Process for Development of Frequency Migration Plan

4.4 SABRE 1 and SABRE 2

There were two South African Bands Re-planning Exercises (SABRE) carried out in 1997 and 2001. SABRE 1 has been the most comprehensive spectrum migration exercise to date.

- SABRE I – in 1997 addressing the radio frequency spectrum between 20MHz and 3 GHz, and between 3.4 – 3.6 GHz
- SABRE II – in 2001 addressing radio frequency spectrum above 3 GHz with the exception of those bands already addressed in SABRE I

4.4.1 SABRE 1 – 1997

SABRE 1[8] was a significant programme to re-plan the radio frequency in line with the ITU Region 1 frequency allocation plan from 20 MHz to 3GHz and to migrate users that either did not accord with the existing allocation plan or prevented efficient use of the spectrum. A prime example of this was the drive to migrate fixed links to over 3 GHz. SABRE 1 was extended to cover 3.4 – 3.6 GHz

The primary services which were targeted for this exercise were

- Fixed links – plan to migrating the fixed links (wherever possible) to higher frequencies above 3 GHz. The primary rationale was that the frequency below 3 GHz was prime estate for mobile communications and should be reserved for that purpose
- Mobile services in VHF High Band – plan for migrating out existing services such as paging, alarms, municipal and governmental authorities into bands reserved for their use and migrate in mobile services into the cleared band
- Paging services – consolidate paging services into bands specifically allocated for that purpose. This would include low power paging, amateur, regional and other paging system
- Alarms – consolidate alarm systems into specific bands

4.4.2 SABRE 2 – 2001

SABRE 2[9] was a programme to re-plan the radio frequency spectrum from 3GHz to 70 GHz (with the exception of 3.4 – 3.6 GHz which was part of SABRE 1), partly driven by the need to in-migrate fixed-links from below 3Gz.

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[8] The Revision of South African Frequency Allocation Plans (Band Plans) and Migration Strategies – Notice 759 of 1997 – which covered 20MHz to 3 GHz (SABRE-1) and 3.4GHz to 3.6 GHz.

[9] Radio frequency spectrum band plan covering the range 3 GHz to 70 GHz – (SABRE-2) Notice 1920 of 2001

4.4.3 Analysis of SABRE

The analysis conducted shows that the following migration of services out of specified bands as proposed under SABRE (1 and 2) did not take place.

Table 1 SABRE planned allocations that have not been implemented

Frequency Band (MHz)	Planned allocation under SABRE	Current allocation in NRFP 2010
53.025 – 53.225	Low power paging	Wireless Microphones (53 -54 MHz)
(81 – 81.625 BTX) paired with (86.375 - 87 MTX)	Dual frequency alarms/ Mobile	Mobile 7 BTX only
141 – 142	None	Remote controlled industrial apparatus (should be in the ISM band)
150.05 – 151	Wide area paging	Wildlife telemetry tracking 148-152 MHz
(165.55 – 167.4875) paired with (172.05 – 173.9875)	BTX-DF (165.55 – 167.4875 MHz) MTX-DF(172.05 – 173.9875 MHz)	MTX-DF (165.55 – 167.4875 MHz) BTX-DF(172.05 – 173.9875 MHz)
240 – 246	DAB	International distress (239 MHz)
278 – 286	FLEX outbound paging services	SF Mobile
406.1 – 410	SF links only	Fixed links (406.1 – 407.625 MHz) paired with (416.1 – 417.625 MHz) Fixed links (407.625 – 410 MHz) paired with (417.625 – 420 MHz)
426.1 – 427.625	Public trunking	SF links (426.1 – 430 MHz)
427.625 – 430	urban–government and public safety rural – SF links	SF links (426.1 – 430 MHz) only
(454.425 – 460) paired with (464.425 – 470)	Mobile trunking MTX (454.425 – 460 MHZ) BTX (464.425 – 470 MHz)	Mobile trunking BTX (454.425 – 460 MHZ) MTX (464.425 – 470 MHz)
463 – 463.975	SF Mobile out of the band	SF Mobile
876 – 880	Digital trunking	Mobile Wireless Access (824 – 849 MHz paired with 869 - 894 MHz)
925 – 925.4	Two-way paging (FLEX inbound)	No allocation
1885 – 1980	FPLMTS (satellite)	No allocation

Frequency Band (MHz)	Planned allocation under SABRE	Current allocation in NRFP 2010
1980 – 2010/ 2170 – 2200	Mobile – Satellite (earth – to – space)	Fixed links 1980 – 2010 MHz paired with 2170 – 2200 MHz
21400 – 22000	Broadcasting satellite service	Fixed links

4.5 National Radio Frequency Plans

After SABRE, there have been two national radio frequency plans, SATFA and the NRFP 2010.

4.5.1 The South African Table of Frequency Allocations 2004

SATFA: The South African Table of Frequency Allocations 2004[10] consolidated SABRE 1 and SABRE 2 in one plan covering the range 20MHz to 70 GHz.

4.5.2 National Radio Frequency Plan 2010

The National Radio Frequency Plan 2010[11] updated SATFA 2004[12] and extended the frequency range covered (now 9 kHz – 3000 GHz). Its stated aim was to incorporate the decisions taken by WRC and include updates on the Table of Frequency Allocations extending up to 3000GHz.

4.6 SADC Frequency Allocation Plan (FAP)

The SADC Frequency Allocation Plan was drawn up in 2010 and guides the use of frequency in the SADC countries as spectrum coordination is required between SADC members. The allocations of the SADC FAP are largely consistent with those for South Africa and the SADC FAP is used as a reference in the preparation of the FMP.

4.7 ITU World Radio Conference resolutions

The following resolutions from the World Radio Conferences have been taken into consideration. The primary focus is on WRC12, however 4 resolutions from WRC07 have also been analysed.

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[10] The South African Table of Frequency Allocations (SATFA) – Notice 1442 of 2004.

[11] The National Radio Frequency Plan – Notice 727 of 2010

[12] The main reason for the name change is that the term 'National Radio Frequency Plan' is used in the ECA.

Table 2 WRC resolutions

Frequency Band (MHz)	WRC	Res. No.	Resolution
108 - 117.975	12	413	Use by aeronautical mobile (R) service without interfering with existing ARNS systems
450 – 470	7	224	Frequency bands for the terrestrial component of International Mobile Telecommunications below 1 GHz
690 – 794	12	232	Use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service in Region 1 and related studies
790 – 862	12	224	Frequency bands for the terrestrial component of International Mobile Telecommunications below 1 GHz
960 – 1164	12	417	Use of 960 – 1164 MHz by aeronautical mobile (R) service meeting standard and recommended practice
1518 - 1544 1545 - 1559 1610 - 1626.5 1626.5 - 1645.5 1646.5 - 1660.5 1668 - 1675 2483.5 - 2500	12	225	Use of additional frequency bands for the satellite component of IMT
1525 – 1559/ 1626.5 – 1660.5	12	222	Use of 1525-1559 MHz and 1626.5-1660.5 MHz by the mobile-satellite service, and procedures to ensure long-term spectrum access for the aeronautical mobile-satellite (R) service
1885 – 2025/ 2100 - 2200	7	212	Implementation of International Mobile Telecommunications in the bands 1885-2025 MHz and 2110-2200 MHz
2300 – 2400	12	223	Additional frequency bands identified for IMT
5150 – 5250/ 5250 – 5350/ 5470 – 5725	12	229	Use of the bands 5150-5250 MHz, 5250-5350 MHz and 5470-5725 MHz by the mobile service for the implementation of wireless access systems including radio local area networks
15400 – 15700	7	614	Use of the band 15.4-15.7 GHz by the radiolocation service
22550 – 23150	7	753	Use of the band 22.55-23.15 GHz by the space research service

4.8 Key issues with respect to migration

The following explains the approach to key issues regarding the frequency migration plan:

Broadcasting Service

- Digital Terrestrial Television (DTT): The process of migrating TV services from analogue to digital (and corresponding in-band migration) is in progress. The plans need to be updated following the WRC 12 along with the allocation of the 700 MHz band to MOBILE (which includes IMT) on a co-primary basis and the corresponding consideration to consolidate UHF TV broadcasting to the 470-694 MHz UHF band in line with the original Draft Broadcasting Digital Migration Framework (Government Gazette number 31490). The potential spectrum for IMT in the 800 MHz (WRC07) and 700 MHz band will be the major spectrum resource for mobile broadband.
- Studio Links: These are point-to-point links connecting broadcast studios to transmitters that have been part of the broadcast frequency bands, especially the 800MHz band. With the reallocation of the 700MHz and 800 MHz band to IMT, these studio links also need to be migrated out. They should be given assignments in the bands allocated for Fixed Point to Point links.
- Self Help Stations – These are repeater stations rebroadcasting television channels to limited areas on a low power basis[13]. These must be migrated into the broadcast bands below 694 MHz.

Mobile Service

- Mobile broadband: 'Mobile' broadband is an important use of radio frequency spectrum at the current time and there is a large demand for spectrum in several bands for this purpose. As such, mobile broadband is the service that is most likely to require the migration of other services to accommodate its spectrum needs. The allocation of spectrum for mobile broadband / IMT has already been the subject of WRC resolutions for ITU region 1 as well as per SADC proposed common sub-allocation/ utilization. This ensures that equipment is readily available and a harmonized service can be provided both across the Southern African region as well as other countries in Region 1
- Paging – Paging was still considered to be a major service at the time of SABRE, however (due mainly to GSM) the use of paging services is declining to the point where it will only be used in certain niche areas such as hospitals. SABRE aimed to consolidate paging channels and planned specific migration to achieve this; however this is probably no longer relevant. It is expected that the remaining principle use will

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[13] Refer to 'Review of Self-Help Stations' – ICASA Position Paper February 2006 and 'Inquiry into Self Help Stations' – ICASA Discussion document of December 2004.

continue to be in medical environments where current allocations for low-power paging services would be more than adequate to meet the demand. Accordingly, the SABRE plans for paging can be discounted.

- Alarms – There are a large number of assignments in the bands allocated for alarms and the bands are generally highly utilised. If the present trend of demand for new assignments continues, there are two options:
  - Direct users to convert to a newer technology that is more spectrally efficient and can be accommodated in the existing spectrum allocation.
  - Allocate more spectrum for Alarms in adjacent bands.
- Public Safety: It is proposed that:
  - All public safety services should be consolidated in the same radio frequency band (380 – 400 MHz)
  - It is recommended that where possible public safety users should adopt a common standard. This would have multiple benefits including economic benefits borne out of infrastructure sharing as well as increased effectiveness due to interoperability between users using a common equipment base.

4.9 Proposed Migration Plan

The following table deals with all bands where there is a potential frequency migration issue. The motivation for a migration is either that it is an original SABRE proposal, stems from WRC resolutions and the SADC FAP or is a 'New ICASA' proposal for migration.

This 2nd draft of the frequency migration plan has been adjusted following the consultations on the First Draft of the Draft Frequency Migration Regulation and Frequency Migration Plan and has been aligned with the update of the National Radio Frequency Plan

Column 1 indicates the frequency range.

Column 2 states the allocation in the National Radio Frequency Plan 2012 and also any applications that are mentioned in the NRFP. As is the standard practice for frequency plans, primary allocations are in UPPER CASE, secondary allocations are in Lower Case. Applications are (within brackets).

Column 3 indicates the proposals for new allocations and utilization. The proposed allocation is indicated along with the source of the proposal (SABRE, WRC, SADC FAP, New ICASA proposals).

Column 4 contains notes on any migration issues.

This table only includes those bands where frequency migration is under consideration, some bands have been removed following the consultation process for the First Draft of the Draft Frequency Migration Regulation and Frequency Migration Plan.