

ComReg Document 13/19a

The Proposed MBSA Transitional Project Plan (TPP) Following Stakeholder Input

Joint Report for ComReg

By



1 Introduction

This document sets out Red-M/Vilicom's proposals to ComReg on the Transition Project Plan (TPP) in respect of ComReg's Multi-Band Spectrum Award ('MBSA') Process. This document has been prepared using the information supplied to ComReg by the Mobile Network Operators ('MNOs') and other information supplied by ComReg to Red-M/Vilicom.

Information sources include:

- Information supplied to ComReg prior to the announcement of the results of the MBSA process in November 2012;
- information supplied to ComReg during meetings held with the four MNOs in the week commencing 3rd December 2012 to discuss the MBSA results and transition¹ preparations;
- the submissions from the four MNOs to ComReg dated 12th December 2012 in relation to the Transition Project Proposals²; and
- the subsequent submissions and information provided to ComReg in relation to its draft TPP of 21st December 2012 (*See ComReg document 13/06*).

2 Description of the Transitional Project Plan (TPP) following stakeholder input

The transition plan considered in this document is called the '**Proposed TPP following Stakeholder Input**' and is detailed in Annex 1. It is derived from the earlier Recommended Transition Plan as contained in Annex 2 of the Red-M / Vilicom document VRN829_300 published by ComReg as part of ComReg document 13/06.

¹ The Transition phase of the MBSA process is the phase required to facilitate the network adjustments required by the Existing GSM Licensees (and potentially Winning Bidders in Time Slice 1 in advance of the commencement date of Time Slice 2) to retune or relocate parts of their networks to the new spectrum assignments determined by the MBSA process. Transition activities are the activities associated with this phase.

² ComReg received an individual 'Transition Proposal' from two of the Existing GSM Licensees, Meteor and Telefónica. Vodafone did not provide a Transition Proposal, thereby suggesting that it would not be carrying out Transition activities beyond 31st January 2013. H3GI provided comments on the individual 'Transition Proposals' from the other MNOs.

The '**Proposed TPP following Stakeholder Input**' has been modified to reflect the updated information that has been supplied to ComReg and in particular the critical path (see section 2.2 below) information such as the delivery timescales received from key third party suppliers. In addition, in order to reduce the risk of relocation³ activities in the 1800 MHz band affecting the timely completion of relocation activities in the 900MHz band, it is proposed that Telefónica's main 1800MHz relocation activity be moved to the end of the project so that it does not occur simultaneously with any activity in the 900MHz band.

2.1 Activities within the Proposed TPP following stakeholder input

A Gantt chart representation of the recommended transition plan is provided in Annex 1. The activities within this transition plan are as follows:

- **Site Analysis Completed.** For radio sites within the MNO's network that require hardware changes as a result of the relocation activity, the MNO must determine the appropriate hardware solution. Hardware changes are required at some sites shared by Meteor and Telefónica, and two categories of hardware change have been identified, one based on replacing cavity combiners⁴ with hybrids⁵ and the other based on logical sharing of active radio site infrastructure.
- **Hardware Delivery.** Hardware has to be purchased and delivered. This activity represents the time required to obtain the hardware with the longest lead-times, however some hardware will be delivered earlier.
- **Complete Shared Site Works.** The new hardware must be installed on all shared sites.

³ "Relocation" refers to the situation where an Existing GSM Licensee obtains an equal or a greater amount of spectrum rights in the 900/1800 MHz band and has to relocate its network to this new spectrum location.

⁴ Combiners are used to combine two or more transmitters, so that a single feed and antenna system can be used for radiating the signals. Based on the frequency separation between the transmitters a choice of cavity or hybrid combining may be made. Cavity combiners allow transmitter combining where there is frequency separation between the transmitted signals, with low insertion losses.

⁵ Hybrid Combiners allow transmitter combining without regard to the frequency of the transmitted signals. Hybrid combiners have high insertion losses compared to cavity combiners..

- **Verify Hardware.** It must be confirmed that the new hardware has been installed correctly and is working properly.
- **AFP Preparation.** AFP means 'Automatic Frequency Plan', and refers to a computer generated list of new frequencies for the network. The plan must include neighbour relations and take into account coordination activities with other operators, for example on the border with Northern Ireland.
- **Repeater Retune/Replace.** Repeaters provide additional coverage in 'hard to reach' areas. Repeaters are tuned to the frequencies of the specific MNO whose coverage they are extending and must be compliant with the frequency assignments of the MBSA. Some categories of repeater need to be replaced or retuned manually when the respective MNO frequencies change.
- **Relocate/Transition.** This is the actual process of modifying the frequencies. Each radio site in the network is changed to operate on its new set of frequencies. There is a short outage in each cell as this process takes place across the network. For this reason, the change is made during the early hours of the morning in order to minimise disruption to subscribers. The Proposed TPP shows this occurring for the whole operator network over a short period.
- **Complete Transition - Post Relocation Verification.** This activity, which occurs immediately after the relocation, allows the operator to determine whether the network is stable following relocation. The performance of the network is monitored closely to assure that it is working as expected following the relocation.
- **Post Relocation Optimisation.** This refers to the performance optimisation activities that will be carried out directly after the relocation.

Meteor has indicated that it will relocate its 900MHz spectrum on the 29th March 2013, after which blocks 900/C and 900/D will be unoccupied. In Meteor's meeting with ComReg on 15th January 2013, Meteor stated that it would require three days to verify whether the relocated network is

operating correctly and determine whether a '**Rollback**'⁶ is required or not. If no rollback is required by Meteor, then blocks 900/C and 900/D will be available from 2nd April 2013 for Telefónica to relocate into. The Gantt chart in Annex 1 shows an overlap between Meteor's 'Post Relocation Optimisation' activities and Telefónica's 'Complete 900MHz Transition' activity. As some 'Mosaic'⁷ resources may have to be shared between Telefónica and Meteor in the completion of these activities, it is recommended that a period of 4 weeks is provided to Telefónica's for its '900MHz Transition' activity,

The 'Proposed TPP Following Stakeholder Input' in Annex 1 does not make allowance for a **Rollback** as it is considered an unlikely event. Where relocation planning has been completed and new configurations have been tested, there should not be any unforeseen issues causing significant parts of the network not to function following the relocation. If a rollback is required, then although the network can be "rolled back" relatively quickly (for example, as an overnight process), the process of rollback would add approximately eight days to the overall relocation activity, since it would be necessary to analyse the cause of the network failure before making a second attempt to relocate the network. In the event that Meteor did require a 'rollback' following its relocation in the 900MHz band, then the start date for Telefónica's 'Complete 900MHz Transition' activity will be delayed as it cannot commence until Meteor has vacated the blocks 900/C and 900/D.

2.2 Critical Path Analysis

The critical path for the overall project is as follows;

- Complete Site Analysis (*activity 6 and 15*).
- Order and Deliver Hardware (*activity 7 and 16*). This is the longest activity on the critical path, and the proposed plan shows it as nine weeks.

⁶ Prior to the relocation of a network, the configuration of the operational network is archived in a known, good, state. In the event that the network does not function satisfactorily following the relocation, the archived network state can be recovered, i.e. the network can be "rolled back" to the previous known good state.

⁷ Telefónica O2 Ireland and Eircom (Meteor) have agreed a strategic partnership to facilitate a mobile network sharing arrangement. Both MNO's are cooperating in a number of areas of mobile network sharing such as site equipment, power supply, technology and transmission sharing. A team, known as Mosaic and comprising network staff from both organisations, has been set up to manage the day-to-day build and operation of the distinct networks. There is no transfer of assets and spectrum is not shared under this arrangement.

- Complete Shared Site works (*activities 8 and 17*). The proposed plan shows these activities being complete three weeks after activity 7 and 16.
- Verify Hardware (*activity 9 and 18*). The proposed plan shows this activity taking one week.
- Meteor's Relocation in 900MHz band (*activity 11*). The proposed plan shows this activity taking one week, as the post relocation verification and optimisation takes place after the relocation activity.
- Telefónica's 900 MHz Transition (*activity 22*).
- Telefónica's 1800 MHz Transition (*activity 25*).

2.3 The Proposed TPP: Reporting Method

In its submission of the 12th December 2012, Meteor suggested that it would provide a fortnightly report to ComReg and the other winning bidders, containing the following items:

- Progress against milestone dates.
- Identification of any risks and mitigating actions.

Noting that no objections were raised to this proposal, and that H3GI supported it, this proposal seems reasonable and we would recommend that this measure be adopted for all the Existing GSM Licensees as it will ensure that ComReg has a regular incremental view of the implementation of the finalised TPP.

In reporting progress against the milestone dates during the TPP, it may become apparent that there are opportunities to accelerate the project (e.g. equipment being delivered ahead of schedule) or that delays may arise within certain activities. It would be appropriate that the fortnightly report contain information on both of these items.

When an Existing GSM Licensee has vacated spectrum, it would clearly be appropriate for it to notify ComReg and all other Winning Bidders immediately of this event, instead of waiting to do so in the fortnightly report. This is in order to ensure full transparency for both ComReg and all MNOs during implementation of the Proposed TPP.

2.4 Recommendation

In light of the above and taking into consideration all of the circumstances, proposals and further information submitted by MNOs, we consider the 'Proposed TPP Following Stakeholder Input' in Annex 1, to be both viable and achievable within the proposed timescales, while avoiding any undue delay in the availability of liberalised spectrum. We therefore recommend that ComReg adopt this proposed TPP as its finalised TPP for both the 900MHz and 1800MHz bands.

Andy Barnard
Red-M Wireless Ltd

Louise Hopkins
Vilicom Engineering Ltd

3 Annex 1- Proposed Transition Project Plan Following Stakeholder Input – Gantt chart

Operator	Activity	2013 week number	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
		week ending Friday	14-Dec	21-Dec	28-Dec	04-Jan	11-Jan	18-Jan	25-Jan	01-Feb	08-Feb	15-Feb	22-Feb	01-Mar	08-Mar	15-Mar	22-Mar	29-Mar	05-Apr	12-Apr	19-Apr	26-Apr	03-May	10-May	17-May	24-May		
Vodafone	1 Christmas Lockdown																											
	2 900MHz Transition - No activity required																											
	3 Complete 1800MHz Transition																											
Meteor	4 Christmas Lockdown																											
	5 1800MHz Transition - No activity required																											
	6 Site Analysis Completed																											
	7 Hardware Delivery																											
	8 Complete Shared Site Works																											
	9 Verify Hardware																											
	10 Repeater Replace/Retune (900MHz)																											
	11 Relocate (900MHz)																											
	12 Complete 900MHz Transition - Post Relocation Verification																											
	13 Post-Relocation Optimisation																											
Telefónica	14 Christmas Lockdown																											
	15 Site Analysis Completed																											
	16 Hardware Delivery																											
	17 Complete Shared Site Works																											
	18 Verify Hardware																											
	19 AFP Preparation (900MHz)																											
	20 Repeater Equipment Ready																											
	21 Repeater Replace/Retune (900MHz)																											
	22 Complete 900MHz Transition																											
	23 AFP Preparation (1800MHz)																											
	24 Relocate 3 channels from 1800/L to 1800/A-C																											
	25 Complete 1800MHz Transition																											

Figure 1: The Proposed Transition Project Plan Following Stakeholder Input