

Falkland Islands Government VHF Network

Public Information Pack

Version control				
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	3	Line added to Section 2 to note that if using a radio or equipment that do not support CTCSS codes, then it will not be possible to access the repeater network.	Geoff Baxter	03/06/2021

TABLE OF CONTENTS

1	Introduction	3
2	A brief description of the network and information on usage	4
3	User Equipment installations	5
4	Example page from the user manual for the Icom IC2730E Radio.....	6
5	User Frequencies and CTCSS Codes for FIG VHF Repeater Network.....	8
6	Network coverage predictions from the repeater stations	9
6.1	Mount Kent - Predicted coverage.....	9
6.2	Mount Pleasant Peak – Predicted coverage	10
6.3	Sussex Mountain -Predicted coverage	11
6.4	Wreck Gate - Predicted coverage	12
6.5	Green Hill - Predicted coverage	13
6.6	Cooke Hill - Predicted coverage	14
6.7	Mount Alice - Predicted coverage	15

1 Introduction

During 2020/ 2021 FIG commissioned Sure to undertake a project to install a new VHF network for the Falkland Islands. The outcome from this work is the network described in this document.

The purpose of this document is to provide technical guidance to people wishing to use the VHF network.

A few points to note:

- The VHF network is a public use network and has been designed to give as wider coverage as practically possible with the intention of allowing people to contact the Emergency Services via their VHF radios in the event of an emergency.
- The RFIP will keep a watching brief for the network.
- People using the network should be in possession of an appropriate license for their VHF equipment.
- As part of their contract to maintain the network, Sure will carry out daily automated checks on the network.
- The FIG contract holders for the VHF network are Development and Commercial Services (DCS) – Please contact DCS on 27040 to report any issues/ concerns regarding the network.
- The network does not provide coverage across the whole of the Falkland Islands. The coverage maps presented in this document are our best estimates of the ***predicted*** levels of coverage that people could expect to get at various locations and are based on proximity to the repeater stations. The quality of the communications will, to some extent, be dependent upon the quality of the VHF radio equipment being used to access the network.
- The frequency information for the repeater stations are given in Section 5 and it is suggested that, if possible, people program their radios with all the frequencies as testing has shown that it is possible to open and obtain good communications from other repeaters although not shown on the predicted maps.

2 A brief description of the network and information on usage

- The network is physically split into two chains, a North Falklands route (Sapper Hill, Mt Kent, Sussex Mountain, Green Hill, Cook Hill) and a South Falklands route (Sapper Hill, Mount Pleasant, Wreck Gate and Mt Alice).
- There is no system link between the two network chains, but coverage is such that users in southern locations can access north route repeaters and vice versa.
- Members of the public should be aware that all transmissions are broadcast across the network chain they are using.
- All information passed is not encrypted so is audible to anyone listening
- All calls present in the RFIP reception who will maintain a listening watch on the network.
- Due to changes in terrain, propagation and a variety of factors, no radio system provides 100% coverage of the area around it. Testing has shown that coverage is quite extensive, with some areas covered by more than one repeater, in view of this, it is advised that users of this repeater system program all repeater frequencies into their radios.
- CTCSS (Continuous Tone Coded Squelch System)
 - Although not previously used in the Falkland Islands CTCSS has been used in radios since the 1950's and is an internationally recognized system used to open repeaters that is legally enforceable throughout most of the amateur radio world today.
 - Otherwise known by a variety of names (Private Line, etc.), they are simply used in the FIG Repeater network to allow its repeaters to open when required by a user as opposed to reacting to spurious noise on the operating frequency of an individual repeater.
 - If your radio does not have CTCSS capability, then that device will not be able to use the repeater network.
- Differing radio manufacturers use a variety of methods to program 2 Meter radios for accessing repeater networks using CTCSS tones. The user manual for these radios will describe how to program these settings into your set. Section 4 shows example programming pages from an ICOM IC2703E.

3 User Equipment installations

The network is accessible to users with a 2m VHF radio set. As with any radio network, optimum performance is achieved if the following are in good condition and correctly installed:

- Radio base station and or handheld units
- Microphones and any audio connecting leads.
- Rubber duck antenna
- Fixed antenna and coaxial feeder.
- Vehicle mounted antenna and coaxial feeder.

4 Example page from the user manual for the Icom IC2730E Radio.

- The section below gives guidance on how to use the CTCSS function for a particular type of 2m VHF radio. This is purely intended as illustrative, and people will need to consult the manual for their brand of radio for guidance on how to use the CTCSS function on their radio set.

■ Tone Squelch function

The squelch opens only when you receive a signal containing a matching subaudible tone in the FM or FM narrow mode. You can silently wait for calls from others using the same tone.

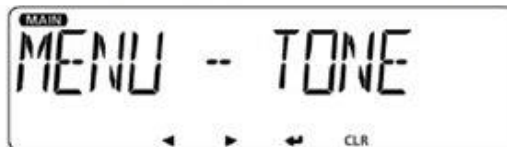
Also, the reversed Tone Squelch function will mute the squelch when a signal containing a matched subaudible tone.

You can set different tone frequencies or codes between transmission and reception.

◇ Operation

1. Setting the Tone function

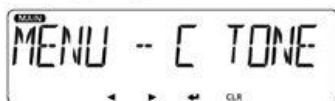
- ① Push [MENU] [P/O] [C].
 - Enters the MENU mode.
- ② Rotate [DIAL] [S] to select "TONE" (Tone).



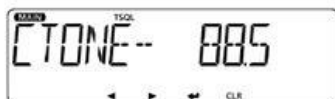
- ③ Push [↵] [D].
 - Goes to the next tree level.
- ④ Rotate [DIAL] [S] to select a desired tone squelch type.
 - Selectable options are listed on the next page.
 - To use the Tone Squelch function, select other than "OFF," "TONE," or "DTC.OFF."

◇ Setting the Tone frequency

- ① Push [MENU] [C].
 - Enters the MENU mode.
- ② Rotate [DIAL] [S] to select "C TONE" (TSQ L Freq).

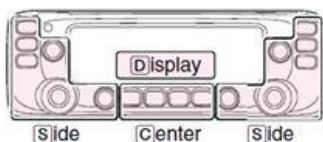


- ③ Push [J] [D].
 - Goes to the next tree level.
- ④ Rotate [DIAL] [S] to select a desired tone frequency.



Selectable options: 67.0 Hz to 254.1 Hz

- ⑤ Push [J] [D].
 - Sets the selected option, and goes back to the previous tree level.
- ⑥ Push [MAIN BAND] [S].
 - Exits the MENU mode.

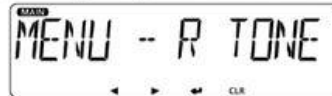


The [C], [S], or [D] in the instructions indicate the area of the controller.

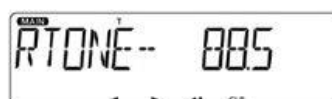
[C]: Center
[S]: Side
[D]: Display

◇ Setting the Repeater Tone frequency

- ① Push [MENU] [C].
 - Enters the MENU mode.
- ② Rotate [DIAL] [S] to select "R TONE" (Repeater Tone).



- ③ Push [J] [D].
 - Goes to the next tree level.
- ④ Rotate [DIAL] [S] to select a desired tone frequency.



Selectable options: 67.0 Hz to 254.1 Hz

- ⑤ Push [J] [D].
 - Sets the selected option, and goes back to the previous tree level.
- ⑥ Push [MAIN BAND] [S].
 - Exits the MENU mode.

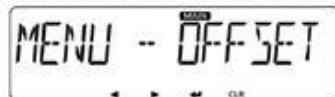
■ Duplex operation

The Duplex operation shifts the transmit frequency up or down from the receive frequency by an offset amount.

• This section describes the MAIN band operation.

◇ Setting the frequency offset

- ① Enters the MENU mode. (p. 11)
- ② Rotate [DIAL] [S] to select "OFFSET" (Frequency Offset).



- ③ Push [J] [D].
 - Goes to the next tree level.



- ④ Rotate [DIAL] [S] to set a desired frequency offset.
 - Set to between 0.000.00 and 59.995 MHz.
 - The selected tuning step in the VFO mode is used when setting the frequency offset.
- ⑤ Push [J] [D].
 - Sets the selected value, and goes back to the previous tree level.
- ⑥ Push [MAIN BAND] [S].
 - Exits the MENU mode.

◇ Setting the duplex direction

- ① Hold down [MONI DUP] [C].
 - Displays the duplex direction setting screen.



- ② Rotate [DIAL] [S] to select a desired option.
 - OFF: For simplex operation (the receive and transmit frequencies are the same).
 - DUP-: The transmit frequency shifts down from the receive frequency by the offset amount. ("DUP-" appears.)
 - DUP+: The transmit frequency shifts up from the receive frequency by the offset amount. ("DUP" appears.)



- ③ Push [MONI DUP] [C].
 - Sets the selected offset direction.

5 User Frequencies and CTCSS Codes for FIG VHF Repeater Network

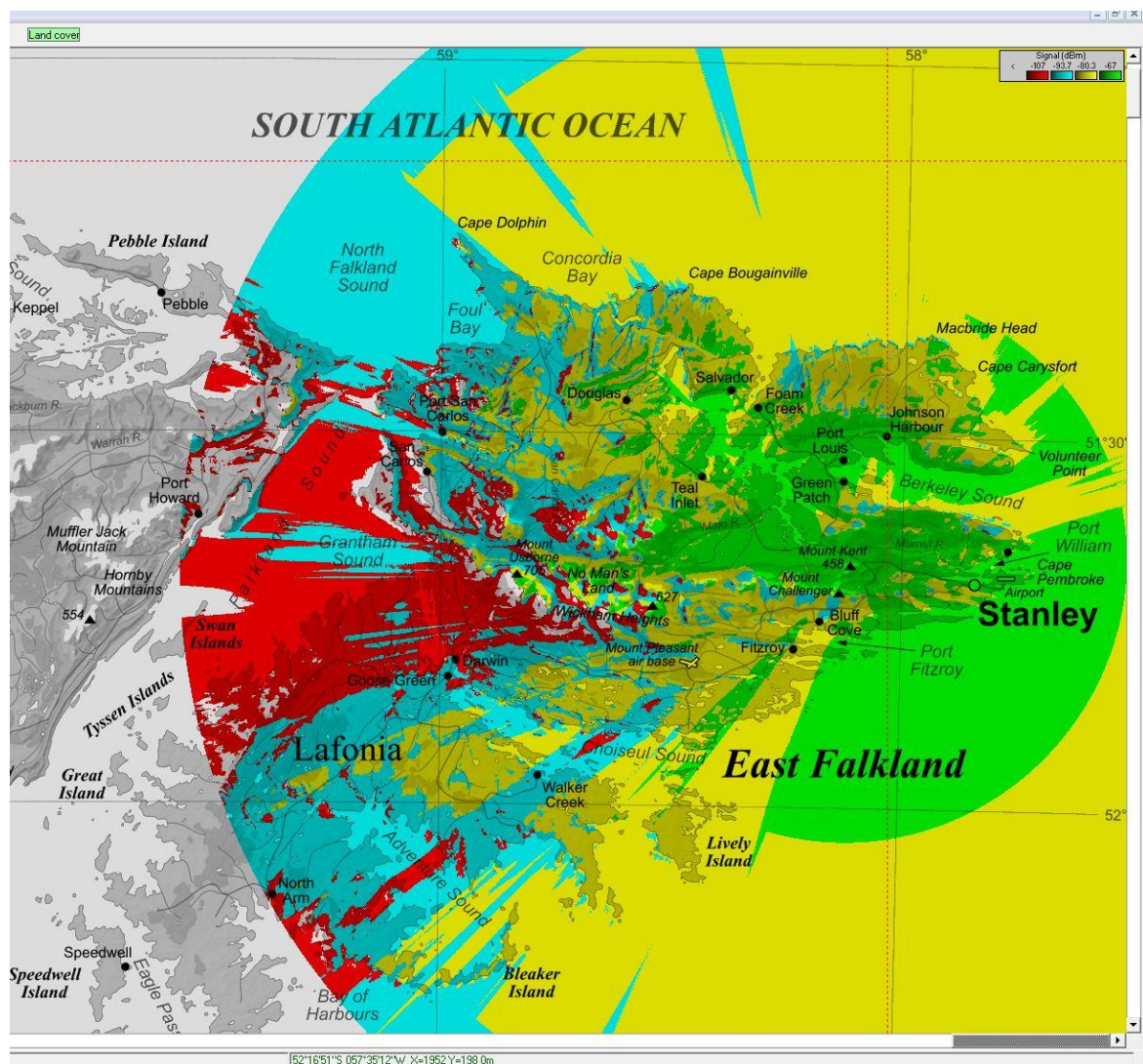
- The table below gives information about the frequencies for the various repeaters that have been installed as part of the new FIG VHF network.
- Duplex Offset Frequency setting is +600KHz.

Site	RX (MHz)	TX (MHz)	CTCSS
Sappers South	146.0	146.0	71.9
Sappers North	146.250	146.250	67.0
MPP	147.120	147.720	156.7
Mt Kent	147.030	147.630	131.8
Sussex Mountain	147.150	147.750	110.9
Wreck Gate	147.060	147.660	173.8
Green Hill	147.090	147.690	94.8
Cooke Hill	147.000	147.600	71.9
Mt Alice	147.180	147.780	189.9

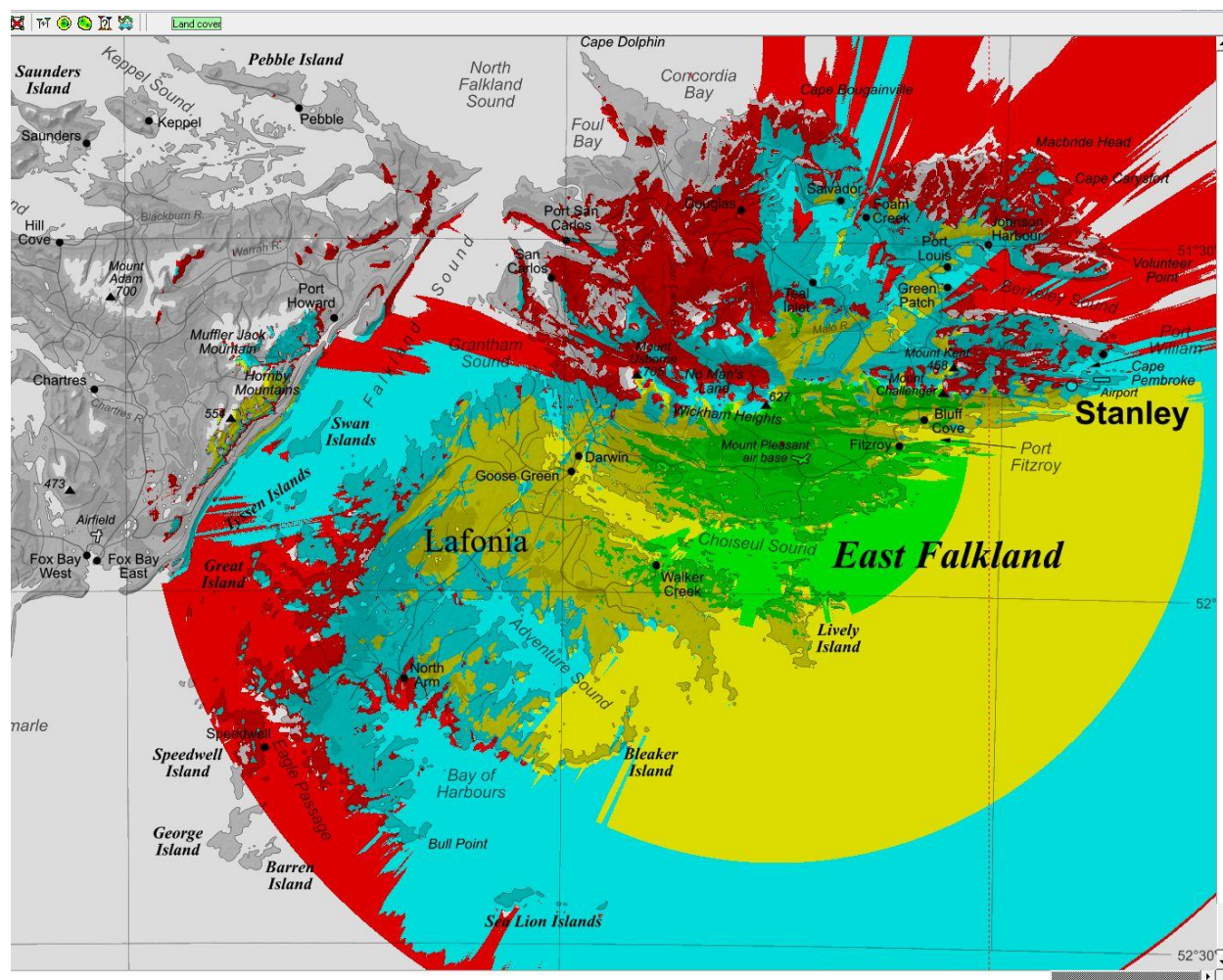
6 Network coverage predictions from the repeater stations

The images presented in this section are based on predicted levels of coverage from the various repeaters based upon the digital terrain model available for the Falkland Islands. In the images, green indicates the best levels of network coverage followed by yellow and blue indicating that lesser levels of coverage. Areas shown as red could be expected to have little or no coverage from that particular repeater. The maps are intended to be indicative *i.e. the edge of the circle does not indicate a hard stop on coverage*.

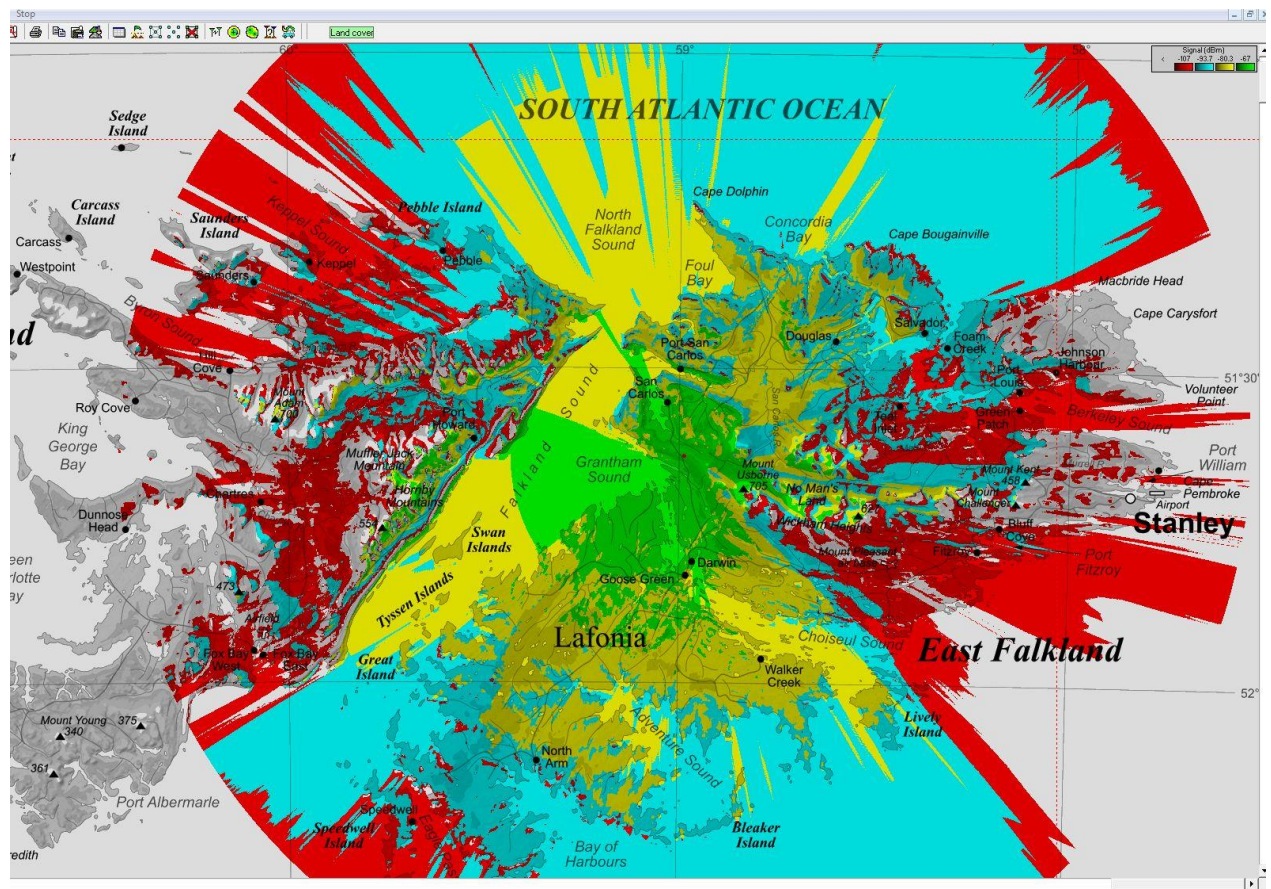
6.1 Mount Kent - Predicted coverage



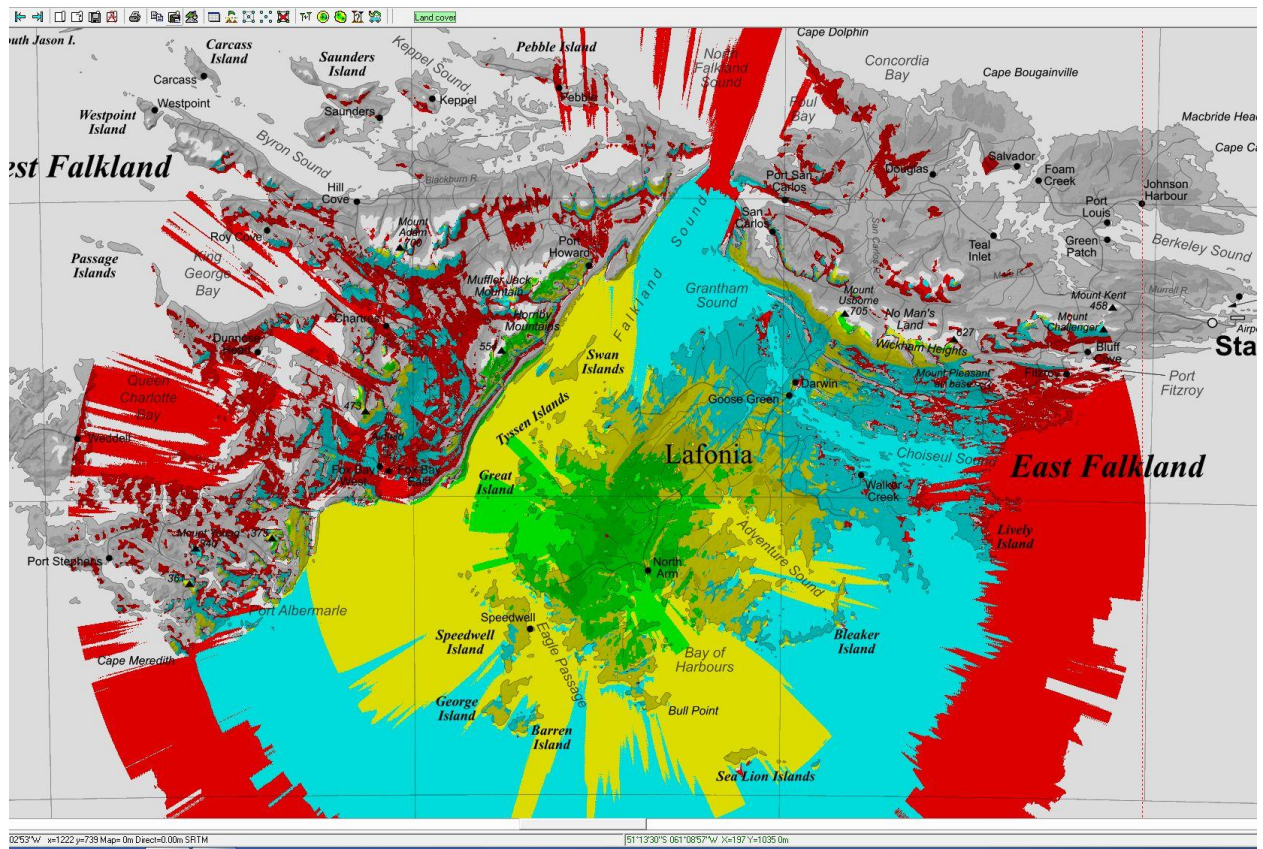
6.2 Mount Pleasant Peak – Predicted coverage



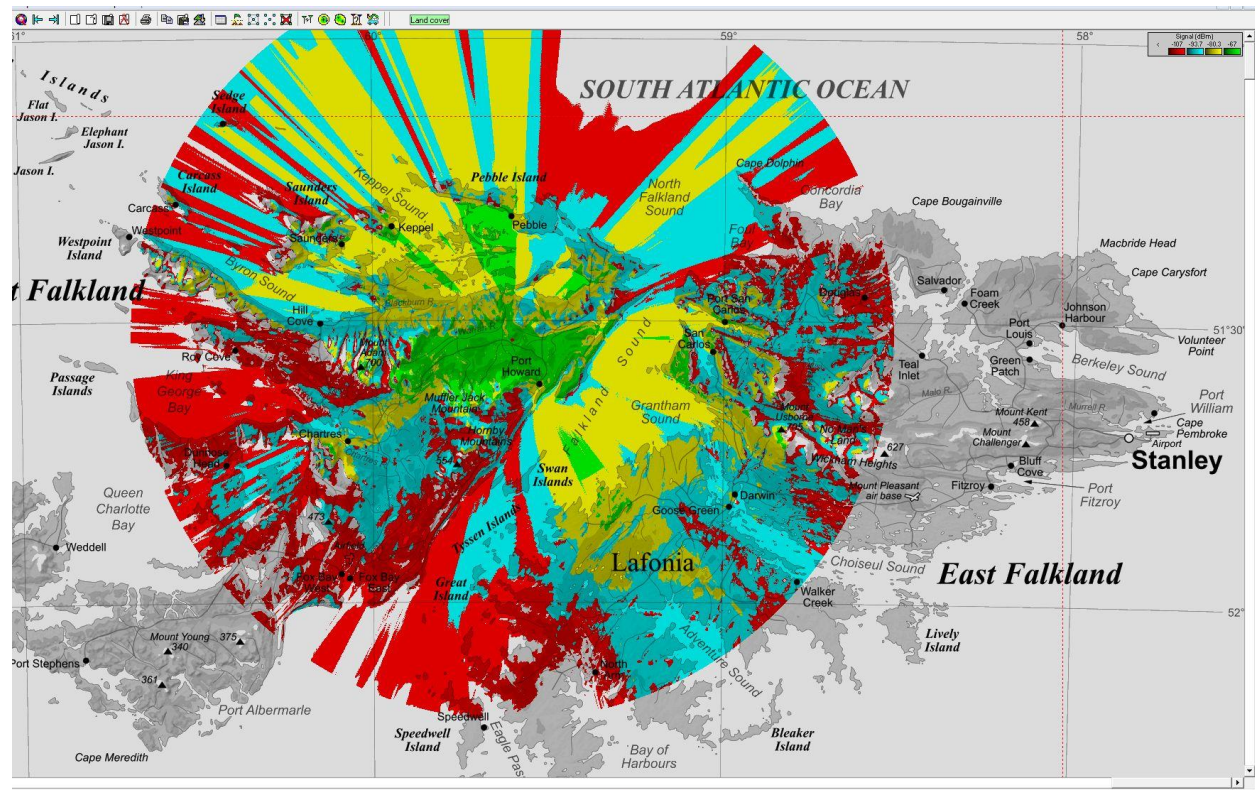
6.3 Sussex Mountain -Predicted coverage



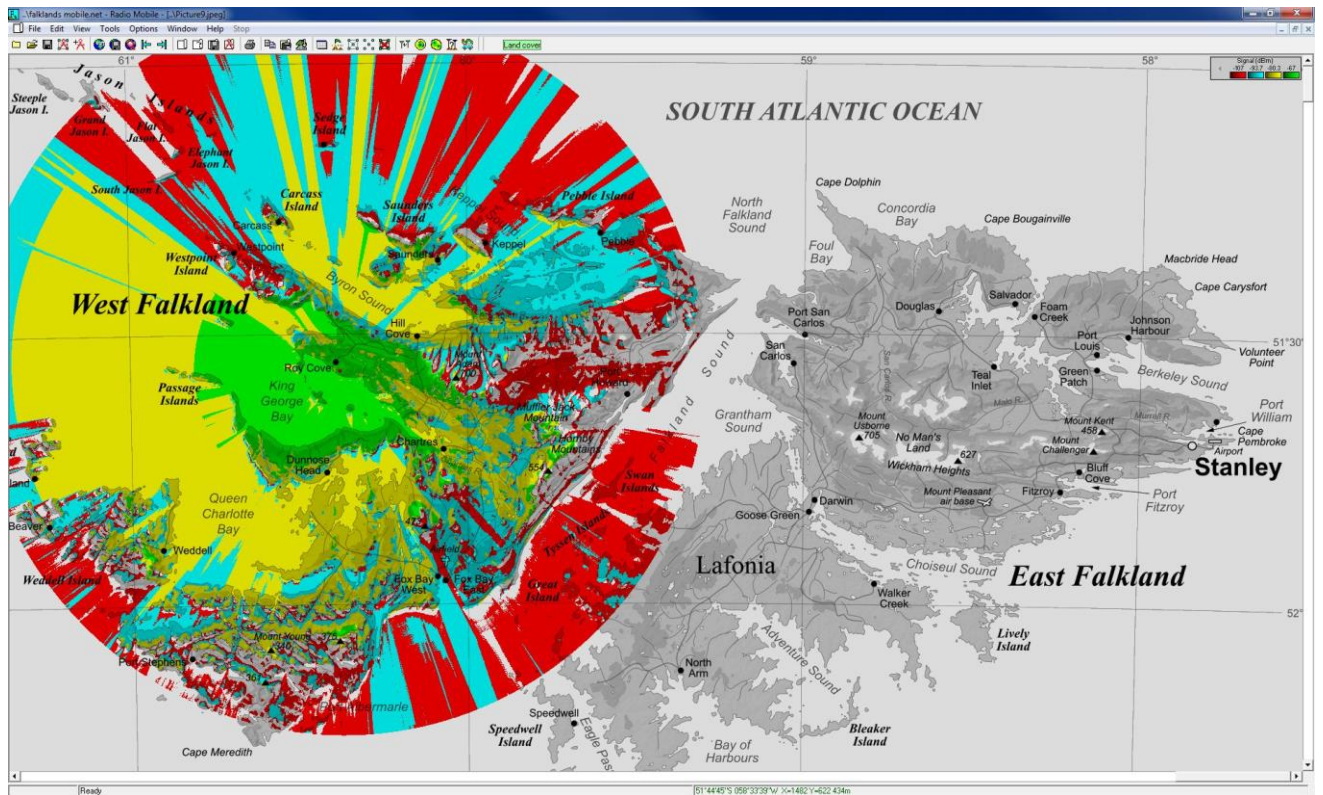
6.4 Wreck Gate - Predicted coverage



6.5 Green Hill - Predicted coverage



6.6 Cooke Hill - Predicted coverage



6.7 Mount Alice - Predicted coverage

