



SHACKNEWS

HIGHVELD AMATEUR RADIO CLUB

NOVEMBER 2009

COMMUNICATION IS THE NAME OF THE GAME

Meeting A very good turn out at the meeting this month. First discussed was the xmas party to be held at the Promise Grill on Sunday 20 December. See attachments. Also the new meeting dates for next year were discussed. A visitor John Burton, ZS6RNA, gave a talk on his career in radio in England as well as his time in the Royal Navy-very interesting. Frank ZS6TMV demonstrated a homebrew dummy load using water and salt and various baluns. See further in this news letter.

SSC Meeting There is *no meeting in November*.

---oooOOOooo---

Build a Saltwater Dummy Load

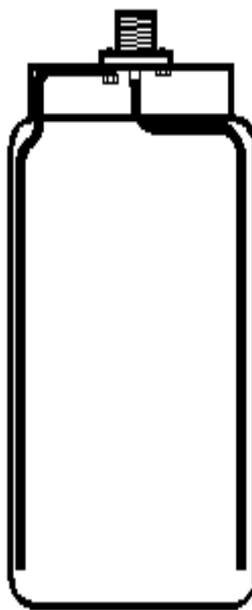
Construction

About the only requirement is that the container hold water and be non conductive. Glass jars but pretty much anything you can come up with to hold water and an SO-239 connector will work. You can use both bare solid copper wire and tin plated copper wire for electrodes.

Tinned electrodes seem to be a bit more resistant to the corrosive effects of the saltwater but either one seems to work equally well. Mount a chassis-mount SO-239 or BNC in the lid or cap of the container.

Solder one electrode to the centre pin, the other can wrap around one of the mounting screws and tighten the nut down on it.

Bend the electrodes so that they are as far apart as possible inside the jar and parallel to each other.



Cut them about 6 -12 mm above the bottom of the container. It might be a good idea at this point to seal up the connector underneath with silicone sealant to prevent liquid from leaking out, and salt from corroding the connector and hardware.

Alignment

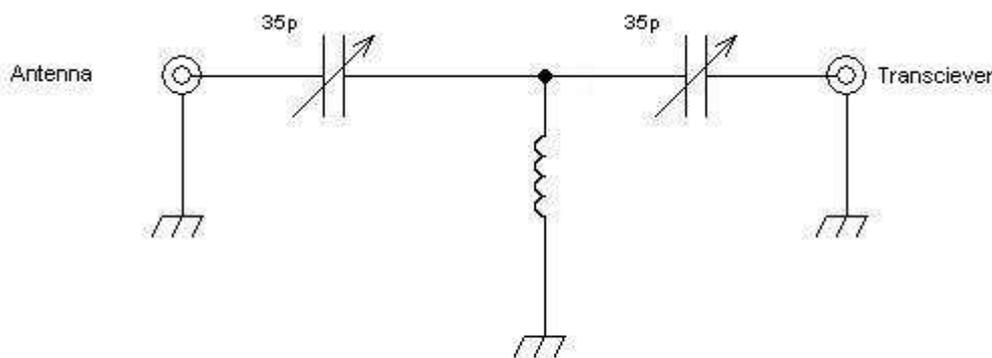
To "align" the saltwater load you need a transmitter capable of generating a few watts CW at the highest intended frequency of use (say 30MHz for a load intended for HF), an SWR bridge and some patch cables. If you have or can borrow an antenna analyzer like an MFJ-259 it makes this task a little easier. Fill the container up with water. Put the lid on and make an SWR measurement-- it will measure pretty high. Now, using the tip of a knife as a spatula, add a tiny amount of salt to the water. Stir it up, secure the lid of the container and make another SWR measurement - it should be incrementally lower. Keep adding salt until the SWR reaches 1:1. You want to "sneak up" on the 1:1 point without going past it.

If you put too much salt in and go past the 1:1 point you'll have to dump some of the solution out and add more fresh water. The actual amount of salt you'll need depends on how conductive your water is coming out of the tap, but in my load it worked out to be less than 1/4 teaspoon per pint of water. That's it! The saltwater load is now ready to use. Unless your container leaks or water evaporates out of it, the load's resistance won't change. Wash soda can also be used instead of salt.

A dummy load is an indispensable tool for the novice as well as expert ham. For starters, it's a safe way to test your transmitter without worrying about "QRM'ing" the bands, and you know it's a perfect match for the transmitter. Unlike an antenna, which could have mismatch and is reactive when off-resonance. Additionally, it's very useful for testing coaxial cable, especially if you doubt the integrity of the antenna installation or suddenly something with the antenna doesn't seem to be working right, and you want to eliminate the feed line as a variable. Terminating a coax cable with a dummy load, then testing power at the transmitter end and power at the dummy load end will tell you how much loss your cable has at that frequency. Many new hams set up an antenna and discover their SWR is high no matter what they do, or suffer RF feedback and aren't sure where it's coming from. Putting a dummy load at the end of the cable and seeing if the symptoms change can go a long way to isolating and solving these problems.

A 2 meter ATU

For those who love seeing 1:1 on the SWR meter



This ATU only requires two 35 pf variable capacitors or two adjustable mica compression capacitors. A four turn coil is made from 20 - 22 AWG solid copper wire wound on a 6mm drill as a former (air spaced). The nearest SWG wire is number 21. Wire diameter is between 0.810 and 1.03mm including enamel . Construct it breadboard fashion on a plastic or wooden base - no metal box. Note that the coil junction is off-centre. Adjusting the coil spacing will give some variation. Layout is not important . A wide ground strap between ANT and XCVR coax fittings is a good idea and avoid a metal box. Can be kept very small



I assembled this one using 50pf variables found in the "junkbox". Beware hand capacitance. The dummy load used reads 54ohms on my digital meter. In practice it gives a 1:1 reading. (Ed)

When putting up an HF Yagi antenna in a tower, it is common practice for many hams to put 8 or 10 loops in the coaxial cable to form a choke coil, in order to suppress shield currents. While this does reduce shield currents somewhat on the higher frequencies, the very low induction of such a coil is far less effective on the lower bands - even on 15 meters the effect is insufficient to prevent the tuner and/or radio chassis from being "hot" and causing TVI.

An effective choke for the lower bands requires a higher inductance. One way to do this is to wind RG58 coaxial cable onto a ferrite core. This method is frowned upon by some hams because cored baluns are susceptible to saturation, which in turn leads to excessive heat. While this is a serious concern to our brethren overseas who are allowed to use four figure power levels, most of us use only 100 or 200 Watts on HF. Even at our legal limit of 400W, core saturation and heating only occurs when the balun encounters a gross mismatch, in which case you have a problem that should be addressed in other ways, rather than just trying to suppress the effects with a choke.

While toroids are generally considered ideal for RF suppression, in fact a simple ferrite rod will often perform as well, or better. The balun shown here is wound onto such a rod. Any old ferrite rod salvaged from an AM radio will do, as long as the size is appropriate. The thicker the better, but any size over 10 or 12mm will do. A length of 10cm is generally sufficient, but longer lengths can be used as well.

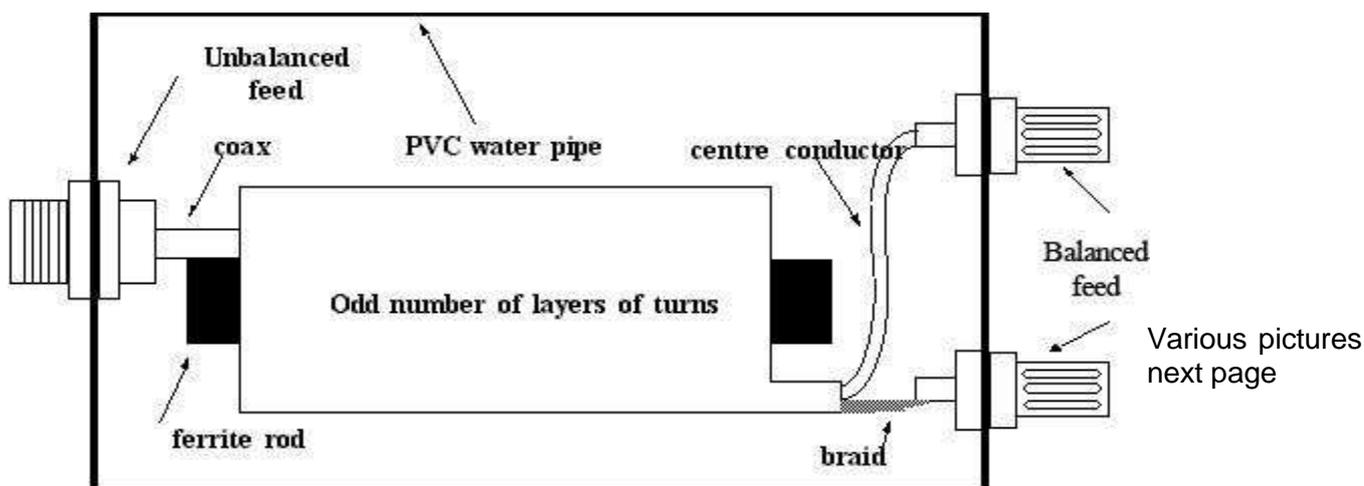
Use a cable tie to affix the coax to one end of the rod. Lay down three layers of 10 windings each; the first one from left to right, the second one from right to left on top of the first layer, and finally the third layer from left to right again. Use another cable tie to keep the coax in place.

The resulting coil can be housed in a length of PVC water pipe with end caps. I have found this method to be cheap, reliable, convenient and easy to make weatherproof. For experimentation I use banana plug type stand-offs; for permanent installations I replace these with bolts or eye bolts. You can also make a version with a coaxial connector on both ends for insertion into any coaxial cable - also known as a "line isolator" and sold commercially under various brand names.

For permanent installation at the feed point of my G5RV, I have used a plastic electrics box from the hardware store, which can be mounted to any wall, pole, tree or other convenient mounting point. Two cable glands on top with bolts running through them provide the balanced mounting points for the G5RV's tuned chicken ladder feed line. The standard hole size in which the cable glands are mounted is exactly right to admit a PL259 connector, so I just put the connector inside the box. Liberal amounts of silicone sealant applied to the cable glands and the lid for the box provide sufficient weather proofing.

This balun works very well on the lower bands down to 80 meters, and possibly even 160 (although I have not tried that). For the higher bands (15-10) it is less ideal due to the capacity between the windings. For these frequencies a single layer of 10 windings with a little spacing (requiring a slightly longer ferrite rod) would be better.

Also keep in mind that more is not always better! If you have a longer rod and you use three layers of, say, 20 windings each instead of 10, the capacity between the windings starts to play a role and the effectiveness of the choke is reduced.





CLUB INFORMATION

Postal address PO Box 19937 Sunward Park 1470

Monthly meeting venue

Website <http://www.qsl.net/zs6hvb/>

e-mail zs6hvb@gmail.com

Repeater 145.1875 MHz input - 145.7875 MHz output

Linked to 70 cm - 438.850 Mhz (Sunday bulletins)

Witwatersrand Rifles HQ
Cnr Barlow and Cavaleros Str
Industries West
Germiston

Bulletins Sunday morning - 145.7875 MHz & 7062 KHz @ 08h45. *First Saturday of the month at 14:30*
Relay - 80M - 3662KHz

Committee

Chairman	Frank van Wensveen	ZS6TMV	082-294-2648
Vice Chairman	Frank Mercier	ZS6MER	011-845-1146
Secretary/Treasurer	Berridge Emmett	ZS6BFL	011-893-1291
Assistant Secretary	Marianne Treyvellan	ZR6JMT	084-403-3355
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Public Information Officer			

Club bank details

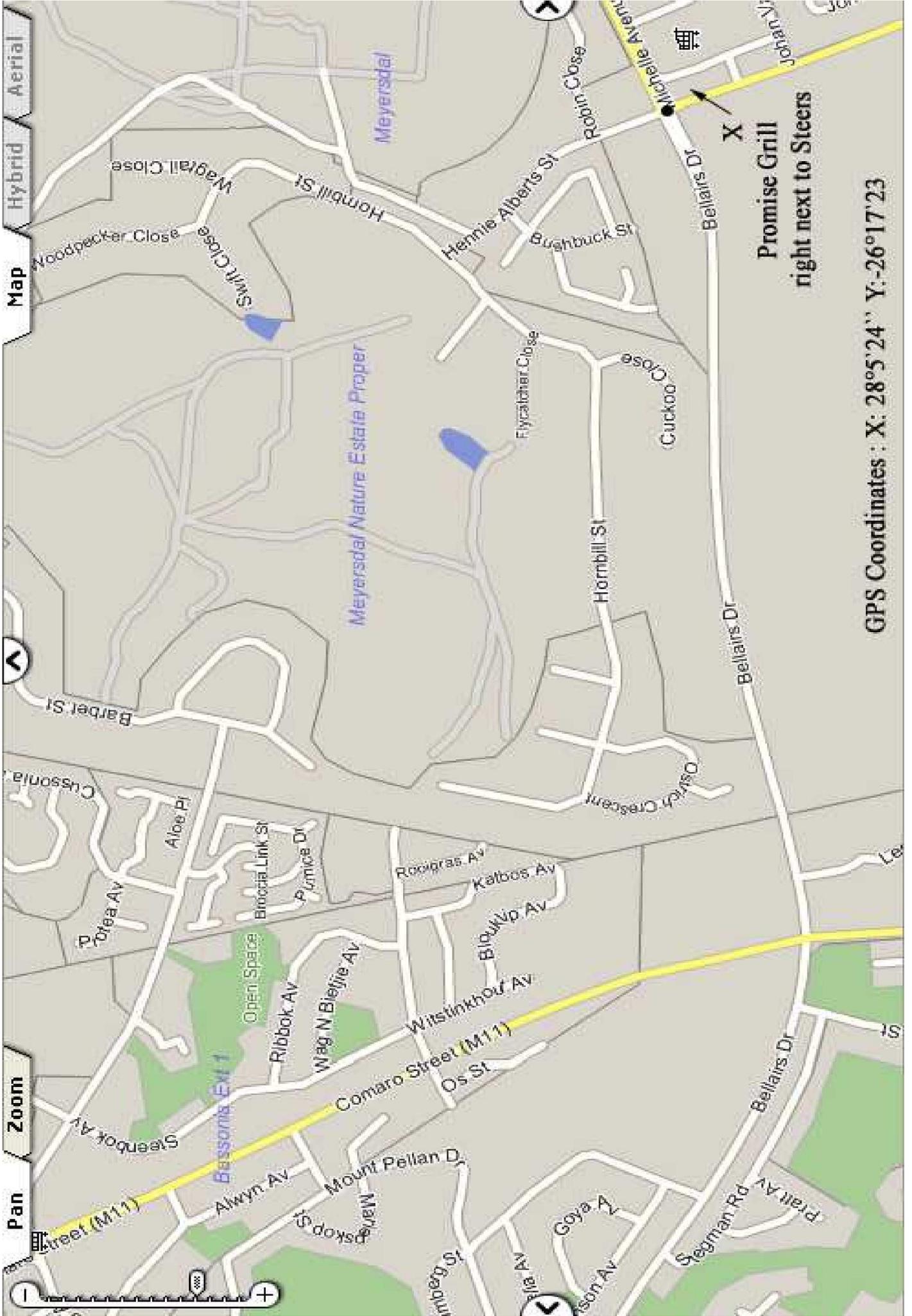
First National Bank - Current Account 62116557309
Branch Code 201209 - Sunward Park

*Highveld Amateur Radio Club
cordially invites all its paid up members
to a 'end-of-the-year' closing social
at*



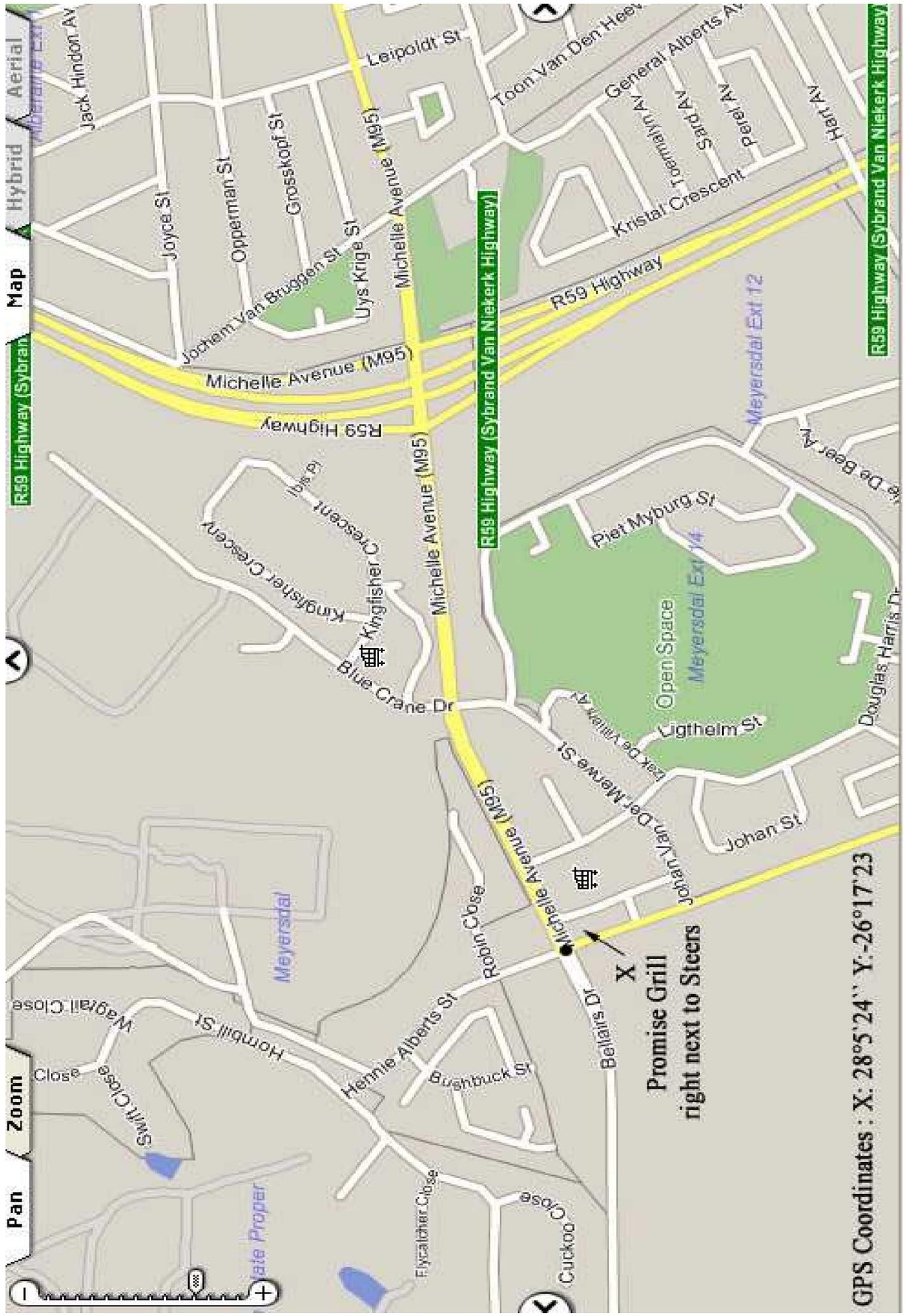
*The Promise Grill
cnr Michelle Ave (M95)
& Hennie Alberts Str (M82)
Meyersdal
for a
Full Carvary.*

Date	: 20th December 2009
Time	: 12:30pm for 13:00pm
Cavary cost	: R80.00 per person
Club contribution	: R50:00 per member
Drinks cost	: own responsibility
Area	: non-smoking



Promise Grill
right next to Steers

GPS Coordinates : X: 28°5'24" Y: -26°17'23



GPS Coordinates : X: 28°5'24" Y: -26°17'23"