

Network connectivity – Base Station and mobiles at UHF frequencies – scenario 6a

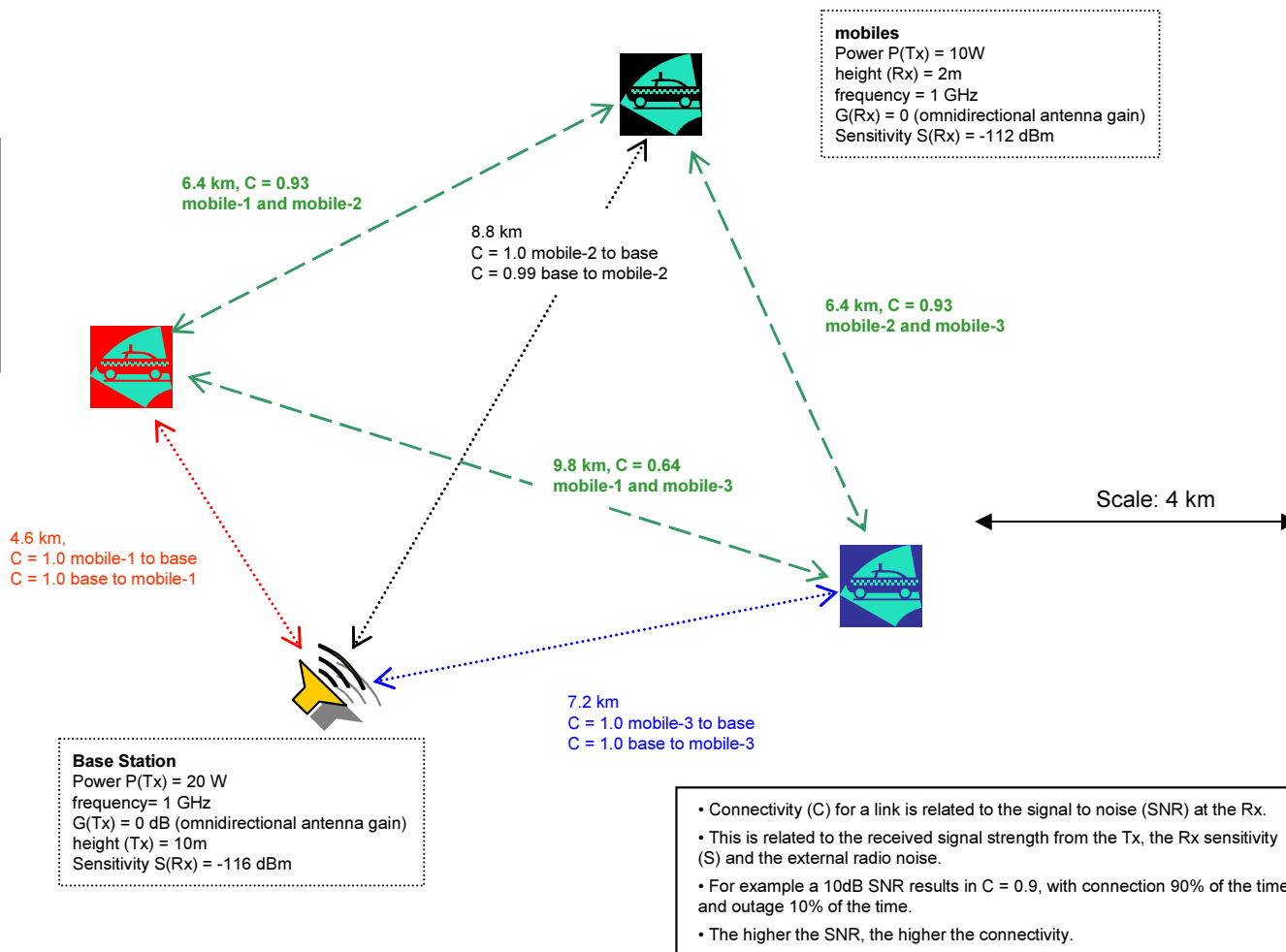
Baseline obstruction version (flat terrain <1m undulations, minimal buildings, no significant vegetation – forest/jungle)

All units using basic radios – Base station has better (higher power P(Tx), better sensitivity S(Rx)) than mobiles

Benign radio environment – Environmental noise < S(Rx) at 'Rural' level.

Examine the effect of rough terrain on the network

- To establish a baseline system to examine the effects of rough terrain, parameters will be set to establish workable connectivity.
- The mobiles have been given a transmitter power of 10W and antenna mountings of 2m height to establish a reasonable level of connectivity across all the links.
- The noise background has been set at 'rural', below the sensitivity of the receivers at this 1 GHz frequency, so the more sensitive base station receiver advantages are realised.



Baseline Network Connectivity

- For the 'centralised - duplex' (between mobiles and base station) sub-net, the connectivity is 5.99 across the 6 links (99.8%).
- For the 'full' net the connectivity is 10.99 across the 12 links (91.6%), the 'centralised - duplex' sub-net (between mobiles and base station) provides 55% of that connectivity and the 'mobile to mobile' sub-net provides the remaining 45%.



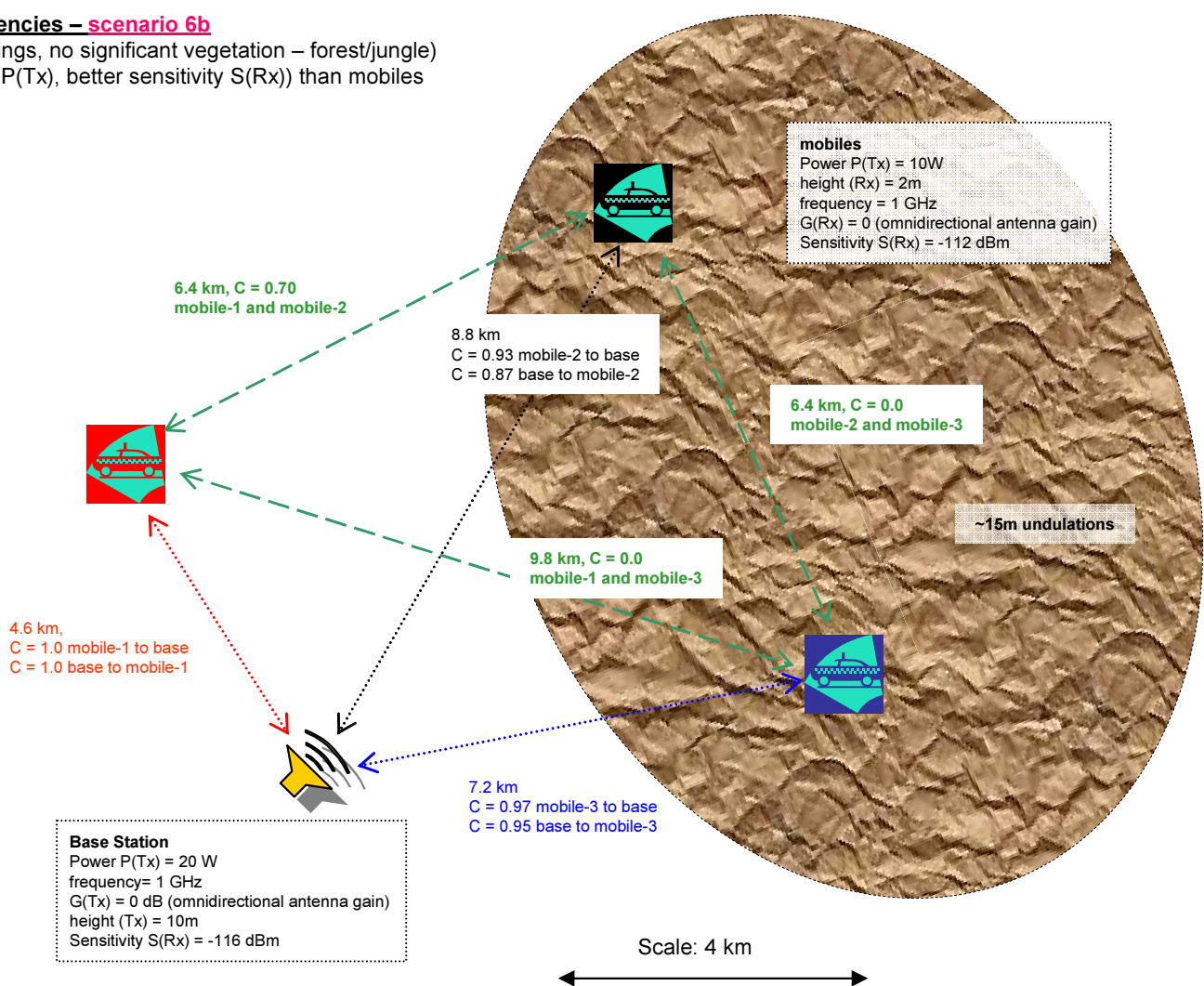
Network connectivity – Base Station and mobiles at UHF frequencies – scenario 6b

Modified obstruction version (~15 terrain undulations, minimal buildings, no significant vegetation – forest/jungle)

All units using basic radios – Base station has better (higher power P(Tx), better sensitivity S(Rx)) than mobiles

Examine the effect of rough terrain on the network

- An area of rough terrain with ~15m undulations has been introduced, within which two of the mobile units are located.
- Two pairs of the inter-mobile links have been severed with connectivity to zero, and the remaining inter-mobile link pair has had connectivity reduced by 23% although they are workable at 0.70.



Modified Network Connectivity

- For the 'centralised - duplex' (between mobiles and base station) sub-net, the connectivity is 5.72 across the 6 links (95%, reduced from 99%). So this sub-net has not been greatly affected by the terrain.
- For the 'full' net the connectivity is 7.12 across the 12 links (59%), the 'centralised - duplex' sub-net (between mobiles and base station) provides 80% of that connectivity and the 'mobile to mobile' sub-net provides only 20% as it has been severely reduced by the terrain.

