

Cell Phone Tower Co-location

***Presentation to the
NZ Commerce Commission
Wellington, 9th October 2008***

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Summary

- Background
- My Credentials
 - Industry
 - University
 - Independent Consultant
- The NZ Mobile Market - A View
 - Duopoly and competition
 - Customer choice and pricing
- Technical Issues
 - Interference margin
 - Antenna minimisation
- Conclusions

**NOT a
'technical' issue!**



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Mobility Matters

My Credentials

- Qualifications
 - BSc, BE(Hons), PhD, SMIEEE, FIEast, FACS
- Telstra 1976 - 1993
 - Research Labs, 1976 - 1988
 - Mobiles business, 1988 - 1993
- University 1993 - 2003
 - Professor of Telecommunications
- Expert Consultant 2004 -
 - Government policy / regulation
 - Expert witness

NZ Mobile Market

- Duopoly structure - different technologies
 - TCNZ and Vodafone
- Regulatory interventions
 - Site sharing - common outside NZ
 - Mobile termination - in good company!
 - MNP - in place for 10 years
 - National roaming requirement
- User experience
 - 25% higher call costs than Australia
 - High international roaming charges
 - Low network CHURN - high on-net traffic

Co-location Technical Issues

■ Interference Margin - 0.5dB versus 1.0dB

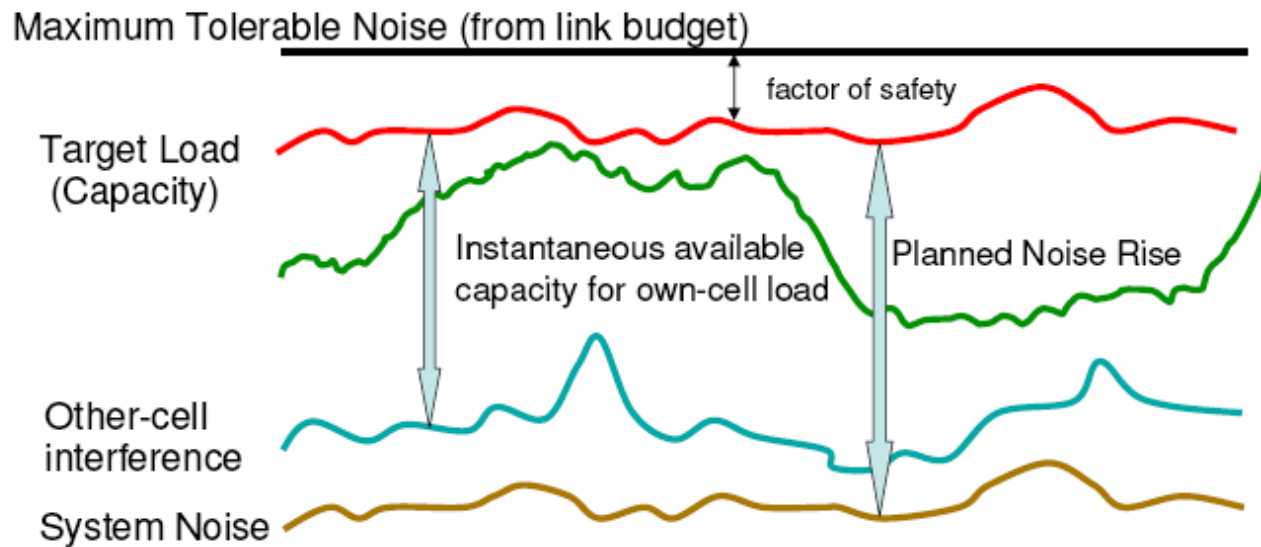
- ITU reports - background
 - Dated 2003
 - “balance of views” “competing objectives”
 - Report NOT recommendation
- Impact of 1.0dB versus 0.5 dB
 - Coverage
 - Capacity
 - Cell throughput

Marginal!

■ Antenna minimisation

- Current practice WITHIN operators
- Antenna Separation
 - Vertical - minimal
 - Horizontal - >2m

The Interference Problem



Ideal case: system noise is stationary, other cell interference is low and actual traffic is always below the target load

Source: 3G Optimisation Course by T Buot-Radionet Consulting



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Conclusions

- Mobile market in NZ?
 - Below industry standards (ie OECD, Australia)
 - Need for regulatory intervention
- Current process?
 - Draft STD - on the right track
 - Keep moving!
 - Need to address 'incentives' to collaborate
 - Eg National roaming & pricing
- Technical barriers? - NOT rocket Science
 - Impacts of 1.0dB versus 0.5dB
 - Grossly inflated
 - Need for engineering collaboration