

QUESTnet 2009

Celebrating AARNet's 20th Birthday
See how far we have come!

Don Robertson



In the beginning.....

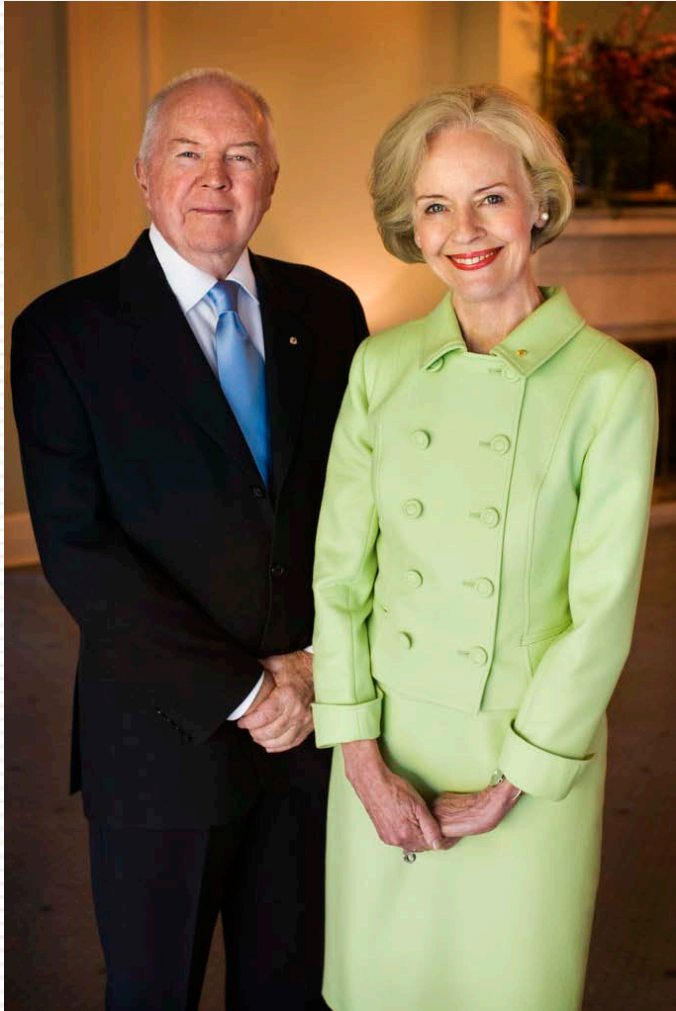
- AVCC meeting in July 88 – development of a national network
- Networkshop at USyd in December 88 Geoff Huston outlines proposal
- AVCC hires Huston as Network Technical Manager, March 89
- Named AARN, later Robert Smart suggests AARNet
- Peter Elford joins in December 89
- Cisco routers running TCP/IP, DecNet & X.25
- 56kbps to Hawaii

Then to now.....

- Late 1990 128kbps to SF, April 1991 256kbps, Nov 1991 512kbps
– 2001 155Mbps, 2004 dual 10Gbps
- Microwaves to Dark fibre



AARNet Book



- Book celebrating 20 years of the Internet in Australia
- Any photos or related information please don't hesitate to send to us
- Will be launched by Governor General in late November

National Broadband Network

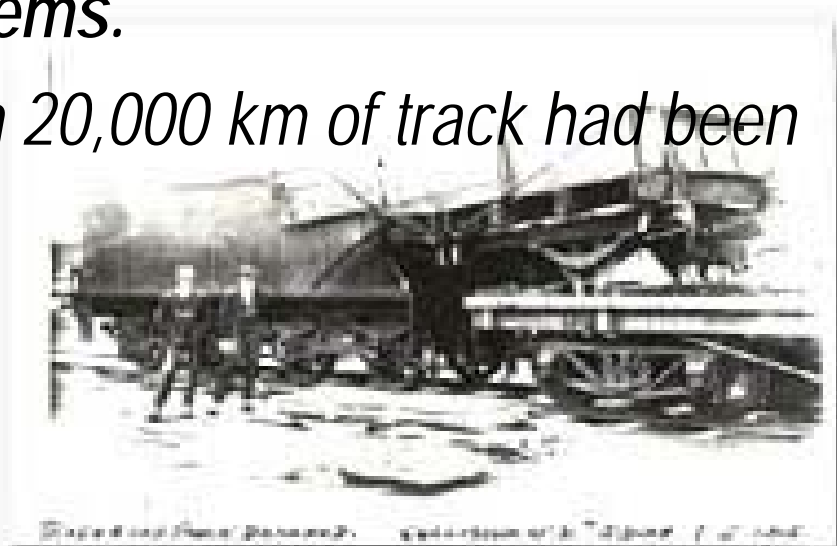
- AARNet has expressed its support for the vision of an NBN
- Network needs of the research and education sector dwarf the rest of the community

	2001	2009	2017
Most homes:	40-800 Kbps	1-20 Mbps	25-500 Mbps
Leading-edge homes	4-8 Mbps	100-200 Mbps	2.5-5.0 Gbps
Businesses	4-8 Mbps	100-200 Mbps	2.5-5.0 Gbps
Research centres	40-400 Mbps	1-10 Gbps	25-250 Gbps

- R&E growth projected over the next 8 years, ie the period covered by the NBN.
- State by State approach to the NBN development will diminish the value to the nation

There is a direct parallel to railways

- There is a direct and relevant parallel to the history of rail in Australia, which is most eloquently set out on the Australian Government's own web site:
<http://www.infrastructure.gov.au/rail/trains/history.aspx>
- *Sadly planners gave little thought to connecting their railways with the other rail systems.*
- *were 'linked' by rail and more than 20,000 km of track had been laid. Sadly, those who envisaged a nation had not contemplated a national rail network.*



AARNet has responded to:

- Digital Economy Future Directions Consultation Paper; a future directions paper include the role of stakeholders in ensuring that the Government's digital economy initiatives are maximised.
- Regulatory Reform for 21st Century Broadband;
- Regional Backbone Blackspots Program; a \$250 million investment to immediately address backhaul blackspots throughout regional Australia
- Public Interest Criteria for the re-issue of Spectrum Licences

Regional Backhaul Blackspots

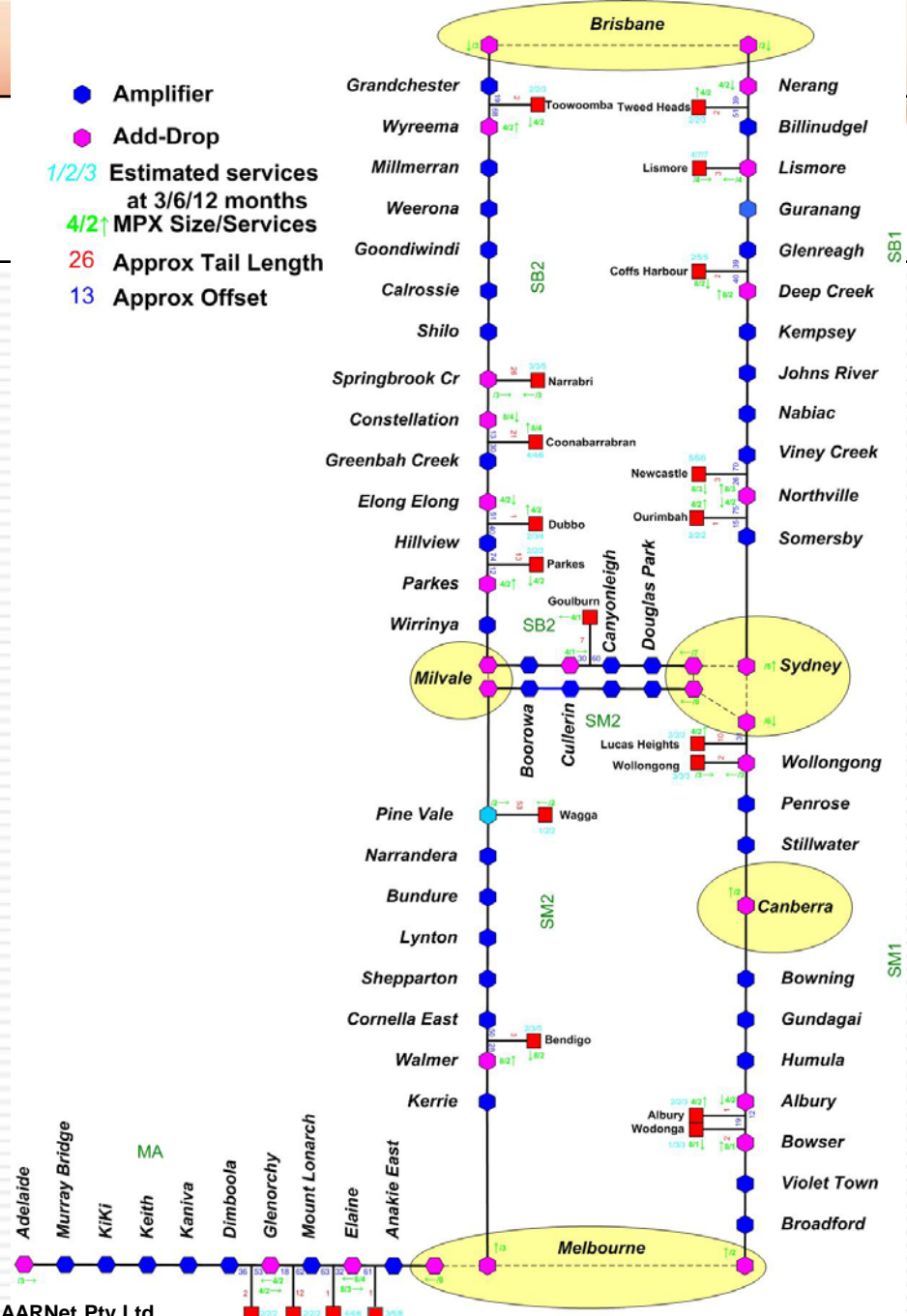
The initial priority locations to receive investment are:

- Emerald and Longreach, Queensland.
- Geraldton, Western Australia.
- Darwin, Northern Territory.
- Broken Hill, New South Wales.
- Victor Harbor, South Australia.
- South West Gippsland, Victoria.
- Competitive tender – construction to start by September
- Geraldton and Darwin are of interest to research and education

Recent Natural Disasters



- Amplifier
- Add-Drop
- 1/2/3 Estimated services at 3/6/12 months
- 4/2/1 MPX Size/Services
- 26 Approx Tail Length
- 13 Approx Offset



Each 'dot' on the diagram is a repeater hut or Controlled Environment Vault (CEV)



Threat to the Network - Bushfire



Threat to the Network - Bushfire



**Would a repeater-hut
(CEV) survive a
firestorm?**



Threat to the Network - Flood



Would a repeater-hut (CEV) survive a flash-flood or a long-term flood?



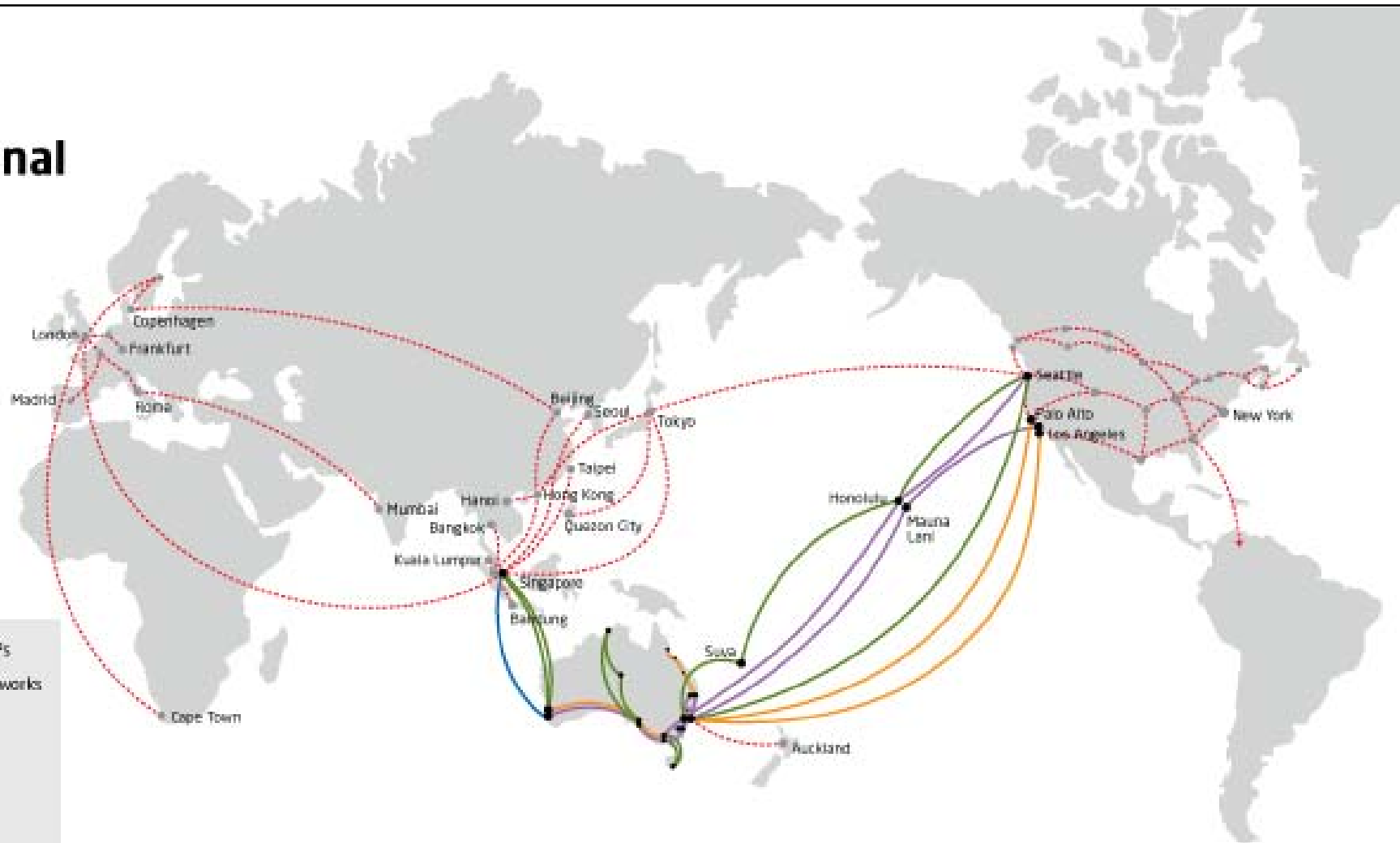
Threat to the Network - Flood

- CEV and equipment might not be touched by floodwaters, however...
- As was the case at Calrossie, near Goondiwindi
 - Mains power failure – not restored for more than 40 hours
 - Backup batteries only last so long (about 40 hours)
 - Mobilise a portable generator, but...
 - Safe access impossible until the floodwaters subside
- Nextgen fibre cut at Kempsey on 24 May
 - Un able to repair due to flood water.
 - Rerouted optical circuits Nth & Sth

International Update

- TEIN 3 In production
 - Upgrade Perth to Singapore from 4x STM-1s to 1x STM-4 & 2x STM-1s
 - Decommissioned Frankfurt PoP
 - Moved Singapore PoP from Kim Chuan into Global Switch
 - Expand commodity and peering in Singapore
- TEIN3 next phase tender released
 - Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka
 - Capacities from 45 Mbps to 2.5 Gbps
- TEIN Task Force - Australia, Korea, Japan & Malaysia
 - No TEIN 4 without major change to current arrangements

AARNet International Network



National Update

- Tasmanian & NT STM-1 capacity extended till 12/10
- Melbourne/Adelaide/Perth back up link about to be upgraded from STM-4 to STM-16
- Continuing domestic peering success
 - Microsoft connected
 - 10G upgrades to Equinix, Akamai & a BIG content source
 - **Improved performance**
 - **Very large savings on international transmission**

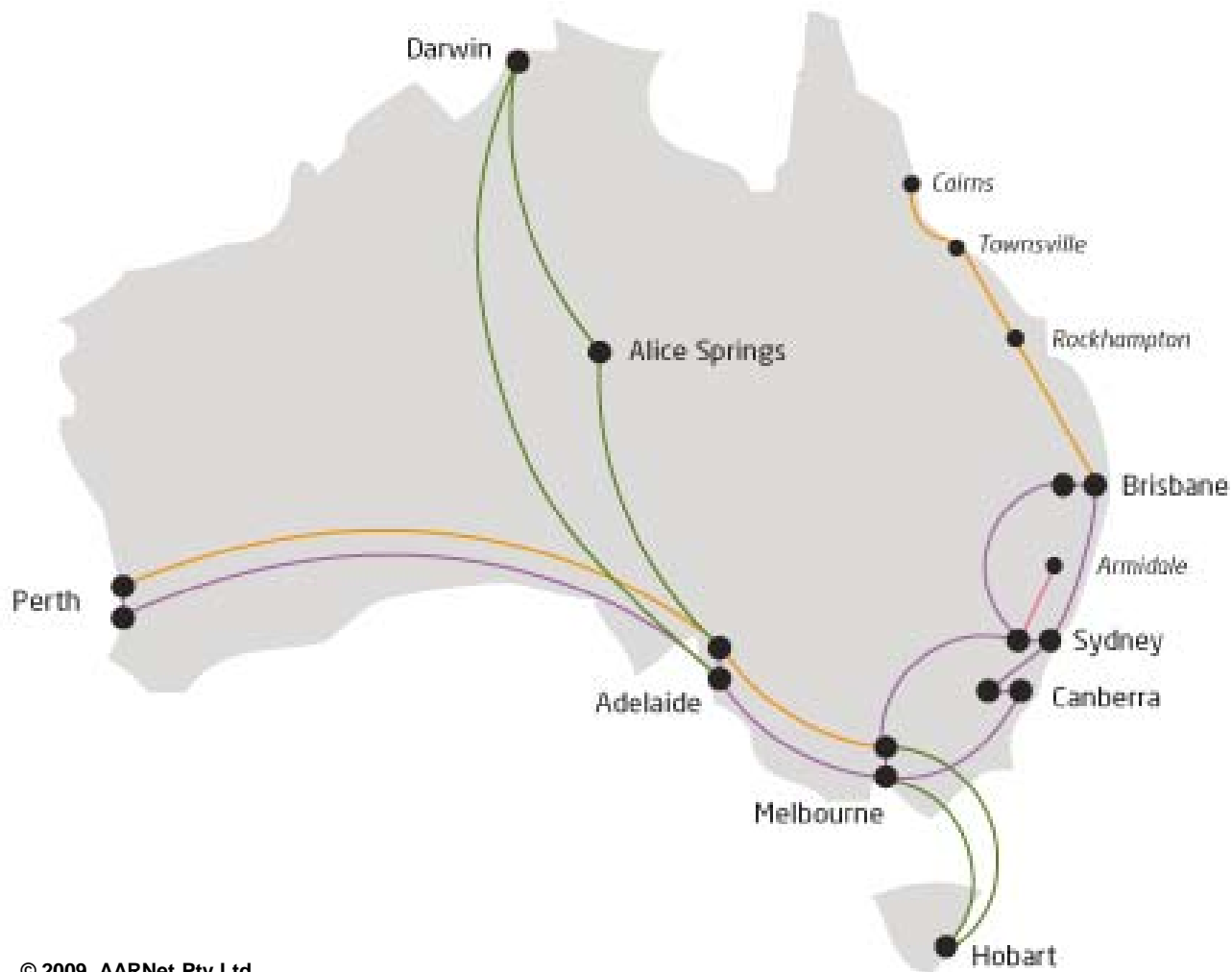
National Update -cont

- 10G customers
 - ANU, UNSW x2
- 10G pending
 - ANU 2nd , UQ, CSIRO/iVEC Perth, UniMelb
- 10G DWDM Optical ring in Sydney
- 1st Stage of 10G DWDM Mitchell link – Parks/Orange/Bathurst
- 10G Optical circuits
 - CSU x 2, CSIRO
 - 10GEN4R CSIRO
- Continuing major fibre civil works projects

AARNet National Network

KEY

- Other R&E POPs
- ⋯ Other R&E Networks
- AARNet POP
- < 155Mbps
- < 622Mbps
- < 1Gbps
- < 2.5Gbps
- < 10Gbps



AARNet Charging for 2009 & 2010

- Fixed Option due to commence on July 1st no longer offered.
- Instead, no Excess Traffic be levied for the remainder of 2009.
- Trial of unmetered Off Peak conducted from July 1st to the end of 2009.
- Depending on the outcome of the trial, consideration be given to extending unmetered Off Peak traffic in 2010
- Off Peak trial will be between 8:00pm and 8:00am each day
- Off Peak traffic wont contribute to 2010 Off Net Subscriptions

AARNet – Draft Carbon Emission Strategy

1 - AARNet Carbon Emissions Strategy

1. Measure (& Audit)

- Measure AARNet's Carbon footprint
- Understand impact of legislation & regulatory requirements
- Implement ongoing reporting & audit process

2. Reduce

- Plan and implement practical carbon emission reductions and ongoing policies

3. Offset?

- Evaluate the use of carbon offsets for the balance of AARNet's carbon emissions to achieve "Carbon Neutral" status.

2 - Enable our Member Strategies

- Collaborate with our members and other stakeholders, using network as an enabler of carbon emission reduction.
- Participate in selected projects in the sector

3 - Innovative Network Applications

- Identify opportunities to deliver significant GHG reduction projects, domestically or internationally, using innovative network applications

APAN 29 Sydney 7-11 Feb 2010

- AARNet hosting APAN 29
- Asia Pacific Advanced Network Conference
- Intercontinental Hotel Sydney
- Great opportunity to attend APAN for 'local' cost

www.apan.net



Thank you



Questions?

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