

The NBN and Smart Infrastructure

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Australian Government
Department of Broadband, Communications
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Australian Research Council

NICTA Members



The University of Sydney



Queensland University of Technology



NICTA Partners

What is the NBN ?



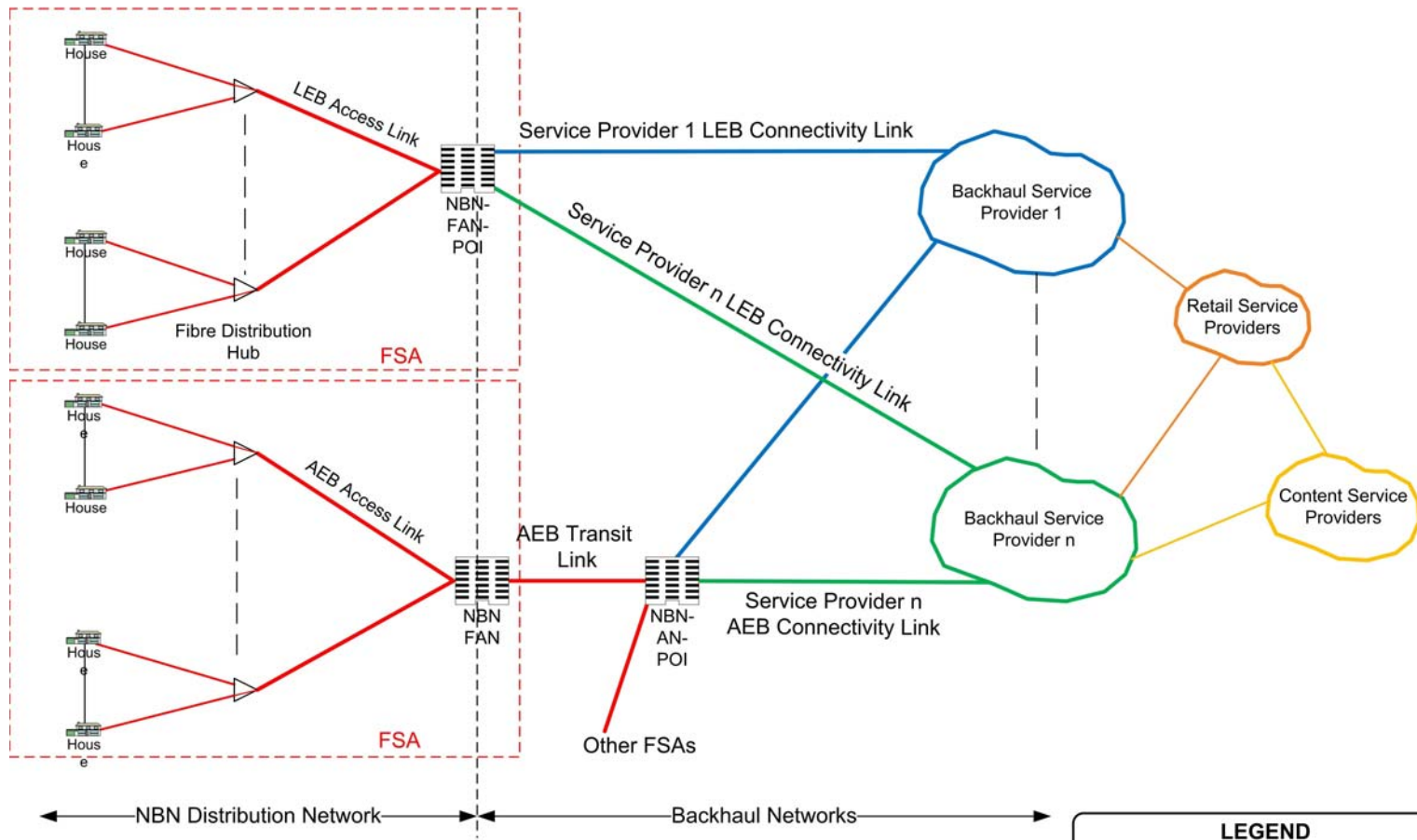
- Government owned company NBN Co chartered to:
 - Connect 90% of all Australian premises with optical fibre based services, providing 100 Mbit/s connectivity.
 - Connect remaining 10% with next generation wireless and satellite technologies
 - Timescale 8 years
 - Provide wholesale layer 2 services to RSPs who will on-sell layer 3 ISP access
- Early release sites are 3000 dwellings in parts of:
 - Brunswick (Victoria)
 - Townsville (Qld)
 - West Armidale (NSW)
 - Kiama Downs (NSW)
 - Willunga (South Australia)

Fibre to the Premises (FTTP)



- Nothing is set in stone – my best guess is:
- Uses Ethernet Gigabit passive optical network technology
- Will build Fibre Service Areas (typically 3000 dwellings) connections using GPON (passive split optical fibre)
- One typical configuration is 128 way split with up to 10km range.
- Connects an Optical Network Termination (ONT) at the dwelling and a Fibre Access Node (FAN) in an “exchange”
- The FAN is either directly connected to a point of inter-connect (POI) (fibre backbones of existing carriers) or the data is carried on an NBN co link to the nearest POI.
 - A POI is where there is a choice of two or more competing back-haul providers, existing ISPs and/or carriers.
 - There will be 200 across Australia.
- NBN co has contracted NextGen Networks to build back-haul black spot fill-in networks to ensure competitive backhaul in all areas.

Wholesale products



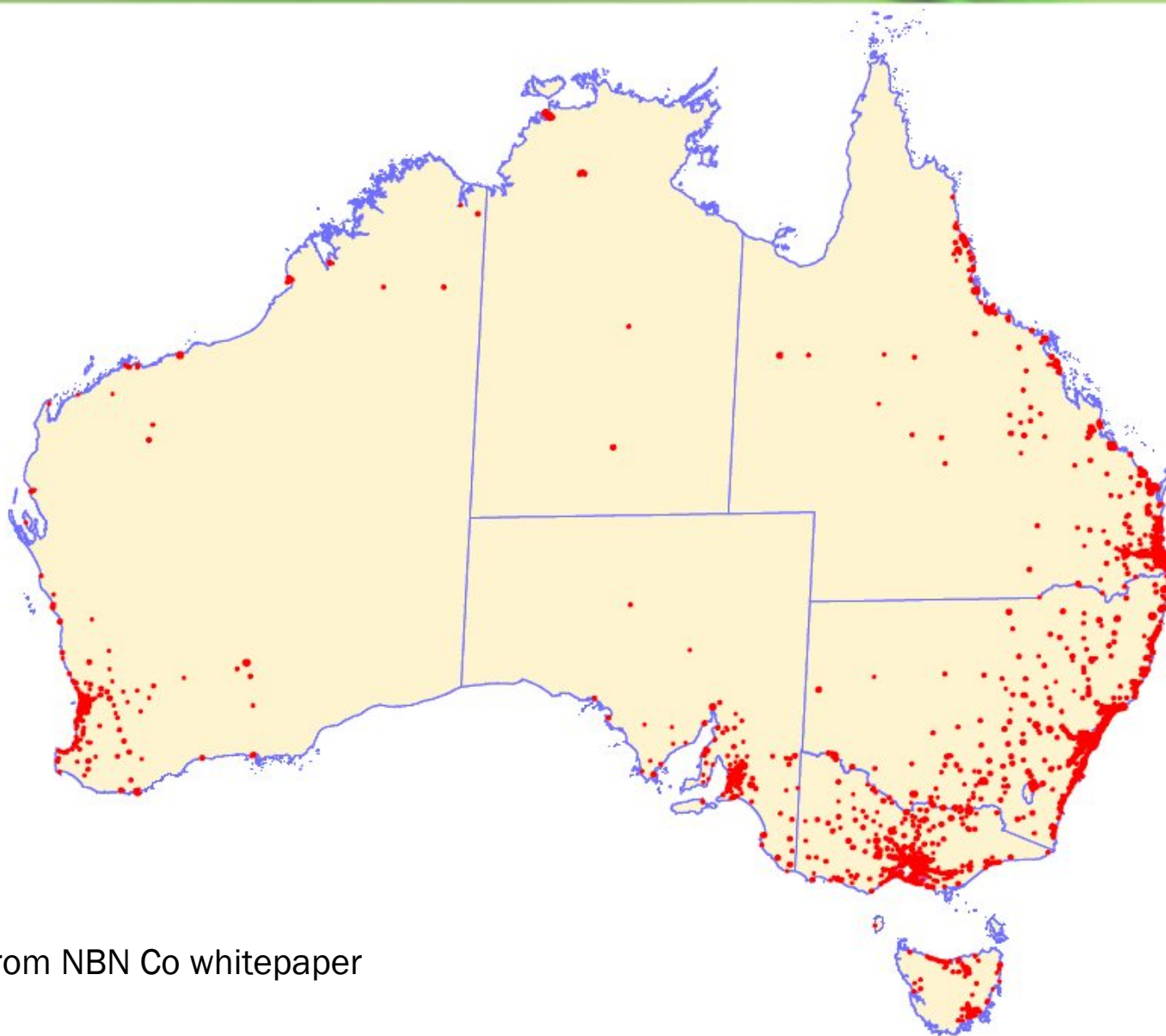
LEGEND	
AEB	– Aggregated Ethernet Bitstream
AN	- Aggregation Node
FAN	– Fibre Access Node
FSA	– Fibre Service Area
LEB	– Local Ethernet Bitstream
POI	– Point of Interconnect

From NBN Co whitepaper

- Will 100 Mbit/s be symmetrical?
- Will it support smart meters etc?
- What happens if I don't want FTTP?
- Who does battery backup?
- What is the definition of a RSP?
 - Who can buy layer 2 from NBN Co.
- Will NBN Co sell directly to government?
 - Currently no, but legislation permits this to change.
- NBN Co has said it will provide dedicated 1Gbit/s fibre connectivity to big customers.
- Will connections, fibre terminations be available in public places or in our infrastructure?
- On backhaul breakouts every ~100km – but not available

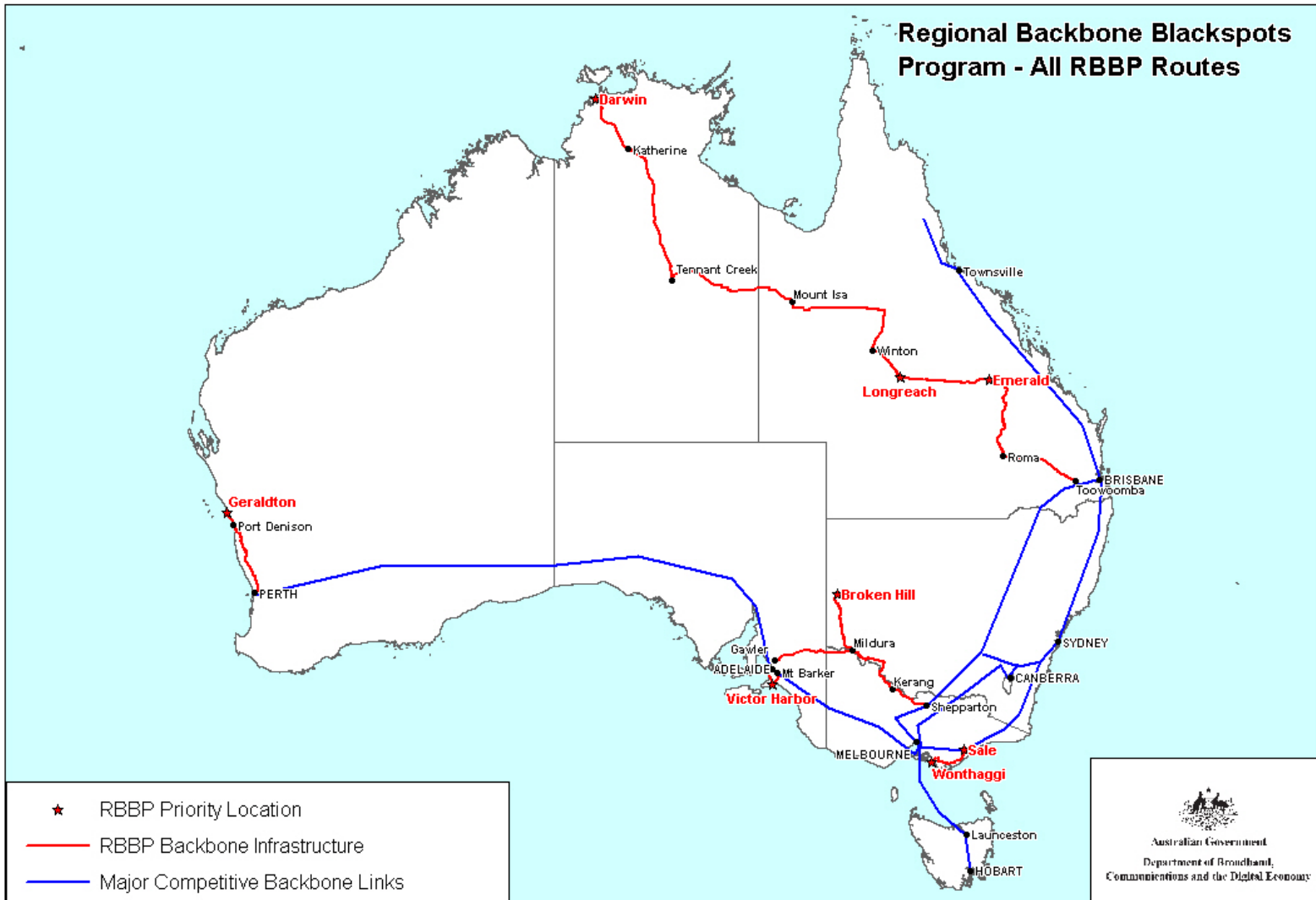


Fibre Coverage



From NBN Co whitepaper

Black-spots



The other 10%

- Wireless technology - TBC !!
 - Could use digital dividend spectrum
 - Could use next generation WiMax
 - Could use 4G or LTE

Commercial Availability

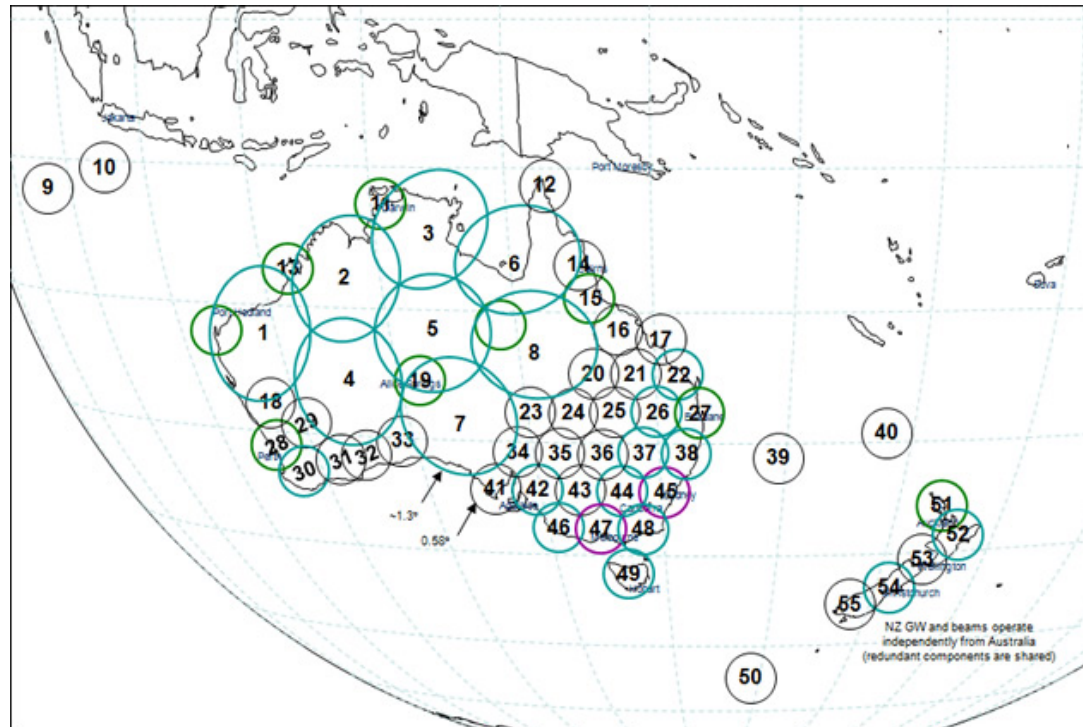
CDMA EV-DO Rev B (2010)
CDMA UMB (no commitment,
may be bypassed in favour of LTE)
WiMAX 16m (2012)
3G HSPA+ (late 2009)
3G LTE (2011)
4G (2015+)

Throughput



The other 1-2%

- Satellite to 171,000 premises at nominally 12 Mbit/s download and 2 Mbit/s upload (peak information rate)
- Approx 5 times faster than the current best but price ?



Coverage of proposed K-Comm satellite

- Can get up to 1Gbit/s
- Great metro coverage
- Highways and freeways not covered by PON based fibre
 - Breakout difficult
- New high speed wireless coverage will help on highways
- For remote areas, affordable high speed satellite coverage should eventuate.

- CONCLUSION
 - Need to lobby for coverage of public spaces and important transport corridors