

Do Not Put All Our Eggs in One Basket

A federated sovereign AI and community compute proposal

Inquiry	Senate Environment and Communications References Committee: Artificial intelligence and data centres
Submitter	Luke Nathan Hayes
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Introduction. My name is Luke Nathan Hayes. I am a private citizen living on Minjerribah and the operator of [Strange but True: Tech, Art and Ideas That'll Help](#), an existing sole-trader practice combining practical technology and AI support, art, media, events, business development and grant writing. I am also developing Ready S.E.T. Co, meaning Sustainable Employment and Training, as a proposed community-owned cooperative. I nominate [the Ballow Road site in Dunwich](#) as one possible location for a community-scale AI compute, learning and disaster-resilience pilot. This submission continues the civic-infrastructure argument in my earlier [Submission 2 to the Local Government Funding and Fiscal Sustainability inquiry](#).

Central proposition

- Australia should not treat AI infrastructure as synonymous with hyperscale data centres.
- We need a federated compute continuum from personal devices, through neighbourhood edge systems and serious community-scale compute, to state, national, hyperscale, quantum and future orbital systems.
- The missing middle should be built as shared national infrastructure for capability, resilience, sovereignty and public learning.

1. Why the current framing is incomplete

The inquiry asks about regulation of data-centre growth, government dealings with global AI companies, and impacts on communities, industries, water, energy and the environment. My perspective is that these questions cannot be answered well if the data centre is treated as the natural unit of AI infrastructure.

Australia needs the whole stack. Personal computers and smartphones can run private models. Neighbourhood edge systems can support sensors, local communications and disaster kiosks. Community-scale racks can run larger models, fine-tuning, simulations, digital twins, rendering, local research and shared training. State and Commonwealth systems can coordinate larger public-interest workloads. Hyperscale facilities remain valuable for frontier training and elastic capacity. Quantum and orbital systems may add specialised capability later.

The Commonwealth has already created a useful opening. Its Data Centre Expectations apply to hyperscale and large AI-compute developments, but not to small-scale edge or on-site enterprise systems. They also expect major operators to contribute to Australian skills, research, local capability, energy transition, water responsibility and community benefit. The National AI Plan recognises resilient connectivity and distributed processing. CSIRO has already demonstrated the architectural principle through Vetra at Pullenvale, which it describes as sovereign, trusted AI computing at the edge, integrated with core and cloud capability. [1]-[4]

The policy gap is therefore the missing middle: serious local compute that is more capable than a personal workstation but physically, educationally and operationally accessible to communities.

2. What the missing middle should look like

I propose approximately one serious local node per 10,000 people as a starting planning ratio, then adapt it to geography, Country, population density, language, universities, hospitals, industry, energy, disaster exposure and existing facilities. This is a coordinate, not a rigid formula.

The nodes should be vendor-neutral and generation-flexible. Some may use current GB200 or GB300-class NVIDIA systems. Others may use AMD Instinct or Helios systems, H100, H200 or A100-generation equipment, refurbished systems, Australian-designed accelerators, Chinese or other international equivalents, or smaller modular clusters. A community does not fail the sovereignty test because its hardware is one or two generations behind the frontier.

A local node can support: schools and TAFEs, universities, hospitals, councils, Indigenous organisations, local developers, small businesses, filmmakers, artists, environmental monitoring, digital twins, robotics, citizen science, emergency management and locally hosted open models. It also creates a resilience layer between personal devices and distant clouds. During a cyclone, fibre cut, cyberattack, grid failure or telecommunications outage, essential maps, models, identities, resource information and communication services should not disappear at once.

Sovereignty is broader than physical location. It includes data custody, keys, permissions, model weights, software, workload portability, network and energy dependence, maintenance skills, recovery and the practical ability to change providers. A foreign-owned service can strengthen Australian sovereignty when it expands our options. An Australian server room can weaken sovereignty when nobody can inspect, repair, move or replace it.

3. Build familiarity through a network-led pilot

Australia should not select a few random councils and leave them alone with complicated hardware. The first cohort should be recruited through networks that already know how to convene, teach and spread practice: local government associations, chambers of commerce, high schools, TAFEs, universities, hospitals, libraries, Indigenous developer pathways, girls-in-code organisations, maker communities, creative industries, research institutions and technically capable community organisations.

I propose three or four deliberately different early adopters in every state and territory. Each site should receive a serious rack or equivalent cluster, professional power and cooling, secure networking, a visible community AI laboratory, a digital twin of the installation, and a just-in-time learning package using XR and simulation.

The rollout cycle should be: identify, qualify, train, install, experiment, document, and teach the next cohort. While the first sites are learning what one rack can do, the next sites should already be preparing. Every pilot should publish reusable operating playbooks, workload examples, energy and cooling data, failure reports and lessons learned.

The first cohort should answer practical questions: Which workloads belong locally? Which should remain personal? Which should move to national or cloud systems? Who gets access? How is time allocated? What data should never leave? What skills were missing? What broke? What surprised people? What public benefit justified the infrastructure?

The Ballow Road proposal in Dunwich is one candidate, not a claim of approval. An island site can test local operation during disrupted connectivity, environmental and coastal models, community training, renewable energy integration, backup communications, public access and respectful pathways for First Nations data governance. The point is to learn in one real place and make the next site easier.

4. Resource impacts and capability transfer

A distributed network does not make energy, cooling or water impacts disappear. It changes how they can be designed. Nodes can be matched to available generation and useful heat loads. Aquatic centres, hospitals, industrial precincts and community wellbeing facilities can reuse heat that would otherwise be

rejected. Remote sites can prioritise microgrids, batteries and satellite communications. Hardware and workloads can be sized to actual local need instead of copying the same frontier rack everywhere.

Government agreements with hyperscalers and global AI companies should require capability transfer, not only construction investment. That should include Australian engineers and researchers, apprenticeships, access for startups and not-for-profits, open technical interfaces, workload portability, local maintenance capability, support for community pilots and a cascading pathway for previous-generation equipment into public and regional use.

5. AI alignment through human self-alignment

The deeper public value is not merely compute. It is Australians learning how intelligence infrastructure works and deliberately expressing what they want it to serve. Communities could use local tools to reflect on lessons from the past, values needed in the present, virtues they hope to cultivate in the future, and what Joyful Responsible Abundance means at the scales of self, family, community, Country, town, nation, company, AI and planet. The purpose is not one imposed values vector. The differences are part of the useful alignment data.

I call this a Protopian Gambit. Protopia means continual improvement rather than a perfect final society. A gambit is a deliberate opening move made because it creates more possibilities later. The local node should solve useful problems now while building skills, trust and infrastructure for larger future capabilities. GAJRA Earth, the Global Association for Joyful Responsible Abundance, is my proposed voluntary connection layer for communities that wish to share experiments without surrendering local sovereignty.

6. Scale and recommendations

For planning, I use an all-in allowance of A\$6 million for a frontier-class node with compute, storage, power, cooling, networking, security, a community laboratory, XR training and initial support. A 32-site first cohort is approximately A\$192 million. A 100-site learning network is approximately A\$600 million. These are working policy allowances, not vendor quotations.

The longer Protopian Gambit is deliberately provocative. My supplied cities dataset contains approximately 41,549 places with a recorded population of at least 9,000. At A\$6 million each, a frontier-everywhere thought experiment is about A\$249.3 billion, or A\$264 billion using a rounded 44,000 places. That sits in the same broad order as the A\$268 billion to A\$368 billion public estimate for the nuclear-powered submarine program. The programs are different. The comparison asks what else humanity might count as security infrastructure: distributed intelligence, education, science, cultural understanding, disaster resilience and peaceful capability. [5]

Recommendations to the Committee

- Define Australian AI infrastructure as a federated compute continuum, not only a data-centre sector.
- Launch a 24 to 32 site early-adopter program across every state and territory, with deliberately varied hosts and environments.
- Make just-in-time XR learning, public access, open playbooks and knowledge transfer part of every funded installation.
- Require major data-centre and AI agreements to preserve portability, vendor diversity, Australian maintenance skills, research access and community benefit.
- Develop national standards for personal, community and First Nations data sovereignty, permissions, interoperability, offline operation and recovery.
- Maintain a shelf-ready expansion program so future public investment can build productive sovereign capability rather than being designed during the next crisis.

Do not put all our eggs in one basket. Build the interfaces between the baskets.

Implementation map

Federated compute continuum. Each layer remains useful on its own and interoperable with the others.

Personal and household	Private AI, local memory, personal data, keys and permissions.
Neighbourhood and edge	Disaster kiosks, sensors, mesh communications and low-latency services.
Community missing middle	Shared rack or cluster, local models, digital twins, simulation, training and public access.
State and Commonwealth	Public-interest workloads, research, coordination, evaluation and sovereign backup.
Hyperscale commercial	Frontier training, global models and elastic capacity with portability and competition.
Quantum and future orbital	Specialised capability connected through Australian-controlled interfaces and permissions.

Pilot cycle: identify -> qualify -> train -> install -> experiment -> document -> teach the next cohort

Minimum public reporting: workloads and utilisation; energy, cooling, water and heat reuse; participation and skills; data governance; failures and recovery; community outcomes; and recommendations for the next site.

Selected sources

- [1] [Senate inquiry: Artificial intelligence and data centres](#)
- [2] [Australian Government National AI Plan](#)
- [3] [Expectations of data centres and AI infrastructure developers](#)
- [4] [CSIRO Vetra: sovereign, trusted AI computing at the edge](#)
- [5] [Parliamentary Library: AUKUS submarine cost and opportunity cost](#)
- [6] [Luke Nathan Hayes, Submission 2: Local Government Funding and Fiscal Sustainability](#)
- [7] [Strange but True](#)
- [8] [Ballow Road pilot concept](#)