PNG Investment Week

Sydney – December 2024

BW Digital
Hawaiki Nui

Submarine Cables – What They Are & What They do?

How many cables are there?

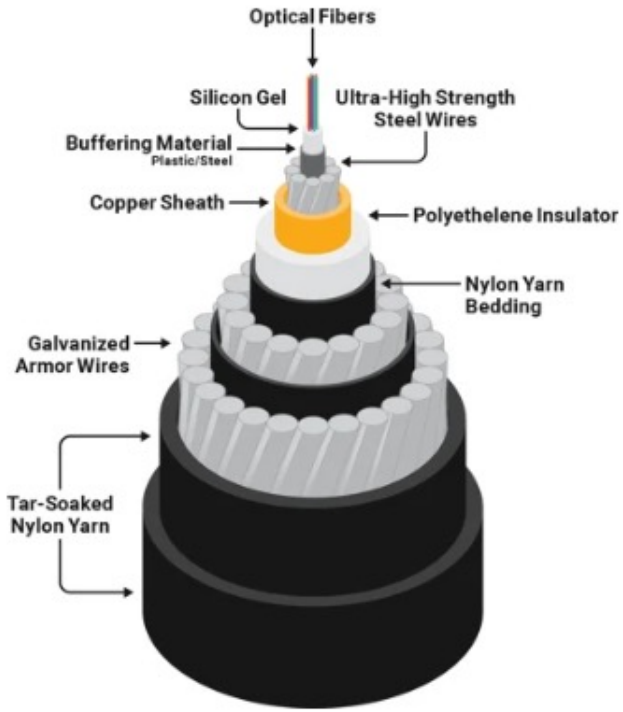
As of June 2024, we track more than **600 active and planned submarine cables**.

How do cables work?

Modern submarine cables use **fibre-optic technology**. Lasers on one end fire at extremely rapid rates down thin glass fibres to receptors at the other end of the cable. These glass fibres are wrapped in layers of plastic (and sometimes steel wire) for protection.

How thick are undersea cables?

For most of its journey across the ocean, a cable is typically as wide as a **garden hose**. The filaments that carry light signals are extremely thin — roughly the diameter of a human hair. These fibres are sheathed in a few layers of insulation and protection. Cables laid nearer to shore use extra layers of armouring for enhanced protection.



Parts of a submarine cable

https://www2.telegeography.com/submarine-cable-faqs-frequently-asked-questions

Submarine Cables – What They Are & What They do?

How many kilometres of cable are there?

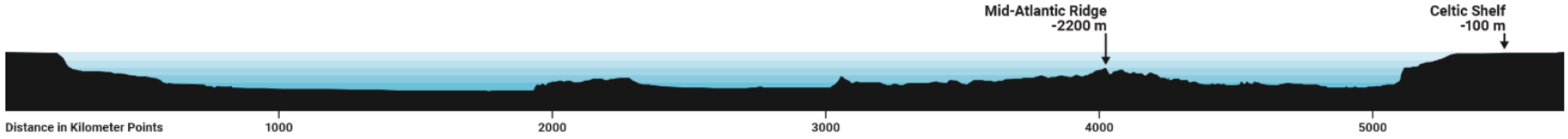
As of early 2024, we believe there are nearly **1.4 million kilometres** of submarine cables in service globally.

How much information can a cable carry?

Cable capacities vary a lot. Typically, newer cables are capable of carrying more data than cables laid 15 years ago. The new **Hawaiki Nui cable** will be capable of carrying **240 Tbps**.

Isn't Internet traffic carried by satellites?

It's hard to know exactly how much of all international traffic is still carried via satellite, but it's very small. Statistics released by U.S. Federal Communications Commission indicate that satellites account for just **0.37%** of all U.S. international capacity.



Example Trans-Atlantic cable route seabed profile

https://www2.telegeography.com/submarine-cable-faqs-frequently-asked-questions

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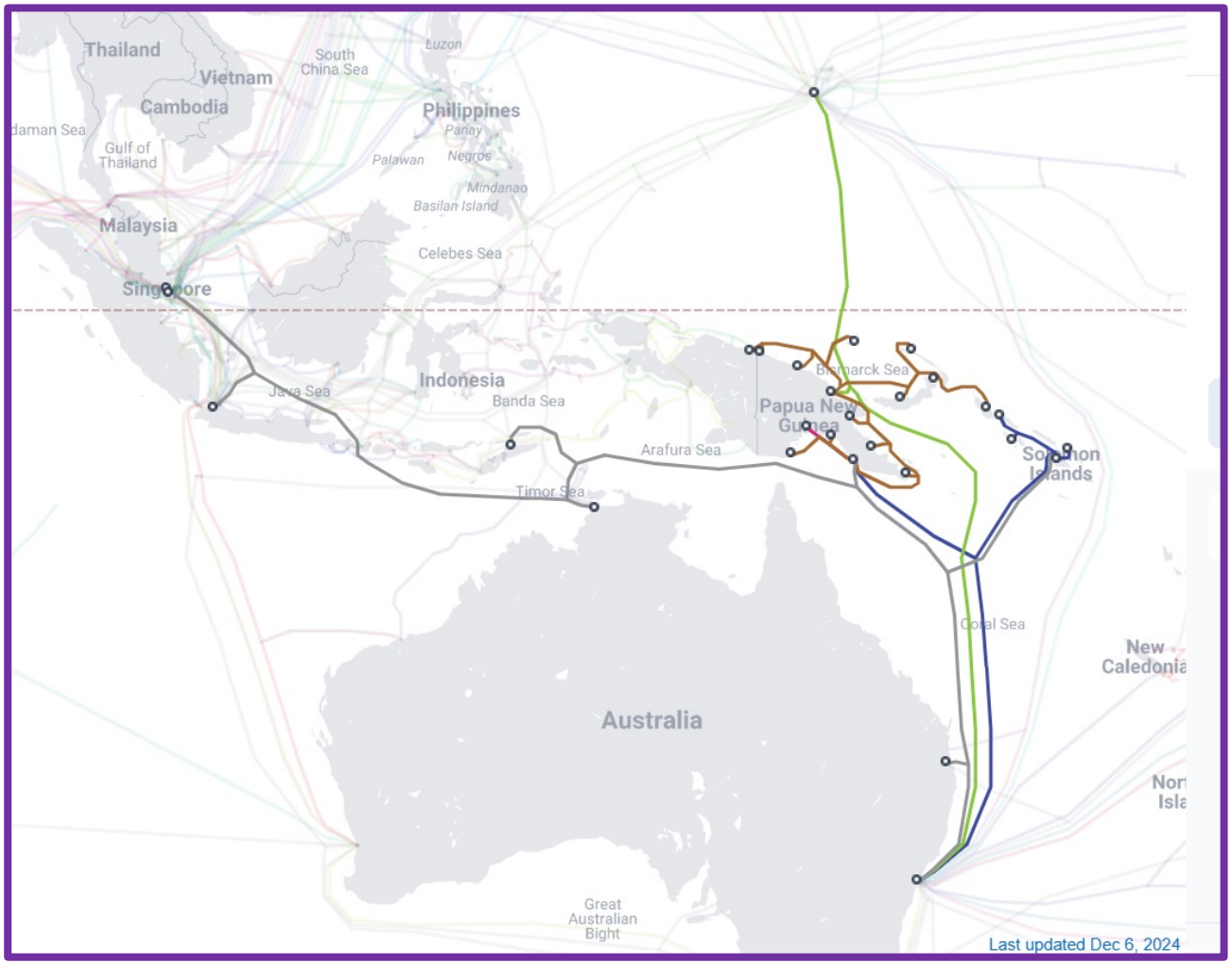
PNG Submarine Cables – Focus on International



Coral Sea (CS2)

Connectivity to Sydney
RFS 2020
1 FP for PNG

PIPE

Connectivity to Sydney & Guam
RFS 2009
1 FP for PNG

Hawaiki Nui 1A

Connectivity to Singapore, Sydney, and Indonesia
RFS 2027
Minimum 2FPs for PNG (1 to Singapore and 1 to Sydney)

Google system

???

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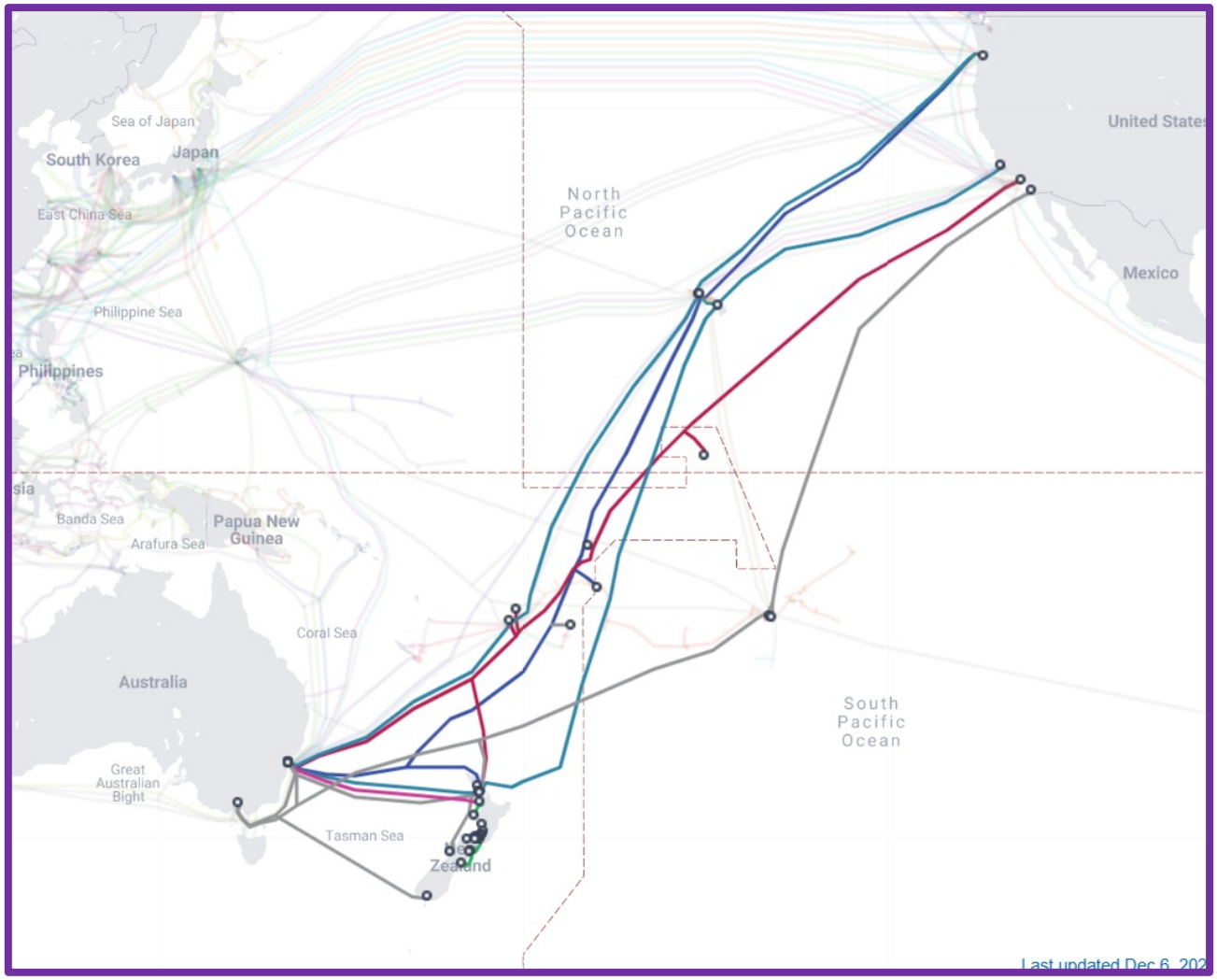
New Zealand Submarine Cables - Focus on International



Hawaiki

Connectivity to Sydney & US
RFS 2018
2 FPs for NZ (1 to US and 1 to Sydney)

TGA

Connectivity to Sydney
RFS 2018
2 FPs to Sydney

Southern Cross

Connectivity to Sydney & US
RFS 2000
2 FPs for NZ (1 to Sydney and 1 to US)

Southern Cross NEXT

Connectivity to Sydney & US
RFS 2000
2 FPs for NZ (1 to Sydney and 1 to US)

Honomoana

Connectivity to Sydney, French Polynesia & US
RFS: 2026
32FPs for NZ (16 to Sydney and 16 to FP/US)

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Comparison - PNG & New Zealand

PNG

Population
10.5m

Area
463,000 sq km

GDP
$33 bn

Broadband Penetration
32%

No. of International FPs on Submarine Cables – Existing
2

No. of International FPs on Submarine Cables – Future
2 + Google System (?)

New Zealand

Population
5m

Area
269,000 sq km

GDP
$253 bn

Broadband Penetration
96%

No. of International FPs on Submarine Cables – Existing
8

No. of International FPs on Submarine Cables – Future
32

As a rule of thumb, every 10% growth in Broadband penetration enables ~1% growth in GDP

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Hawaiki Nui 1.A – Potential Branches to PNG

Landing Sites:

1. Port Moresby
2. LNG Plant
3. Kerema
4. Daru

Cable Route Key:

- Hawaiki Nui 1A
- Branching Unit
- Port Moresby
- LNG Plant
- Kerema
- Daru

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SUBMARINE CABLE SYSTEMS - HAWAIKI & HAWAIKI NUI

Hawaiki

15,000 km submarine cable linking Australia, New Zealand, American Samoa, Hawaii, and the US West Coast

67 Tbps	Design Capacity
2018	Start of Commercial Service
2025	New Branch to Tonga

Hawaiki Nui 1

10,000 km submarine cable linking Singapore, Indonesia and Australia

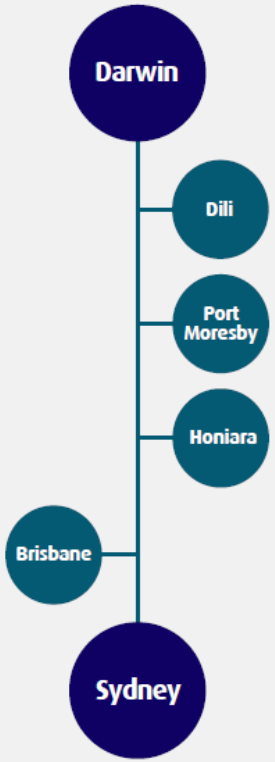
240 Tbps	Design Capacity
Optional Branches	To Island Countries
2027	Expected Completion

BW Digital Campus at NDP

Digital ecosystem combining connectivity, data storage and value-added services for Cloud and AI workloads

Over 55,000 sqm	Land Area in Nongsa Digital Park, Batam
120 MW IT	Data Centre
Nongsa-Changi Cable	For direct connectivity to Singapore
2025	Expected Completion

Hawaiki Nui 1.A - Connectivity & Landing Sites



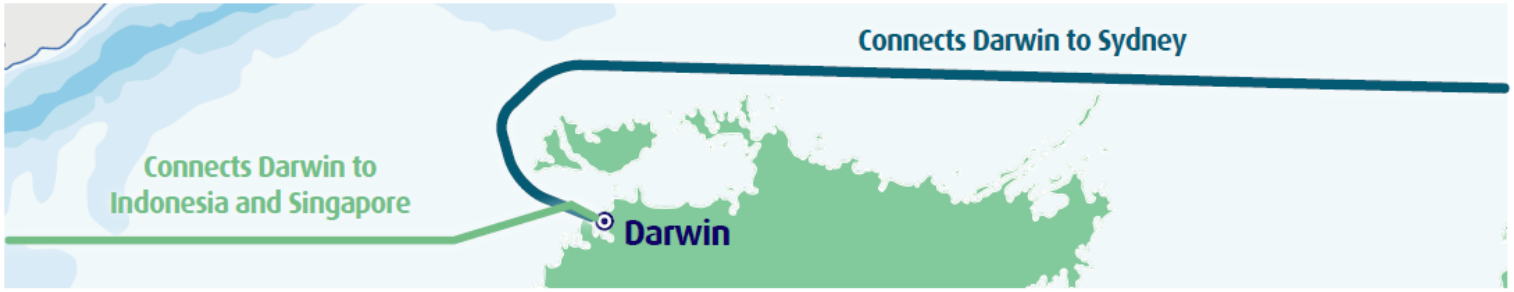
Australian Landing Sites

- HDD landing in Southern Cable Protection Zone
- Landing infrastructure diverse from Hawaiki Cable
- PFE and SLTE to be hosted in Equinix data centre

- Landing in Southport
- Backhaul between Gold Coast and Brisbane

- Landing in Darwin CBD
- Backhaul to main data centres

Focus on Darwin



- Darwin landing strengthens system power and optical resilience
- Express route Sydney - Singapore also available

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Hawaiki Nui 1.B - Connectivity & Landing Sites

Indonesian and Singaporean Landing Sites

- Landing in Tanjung Pakis
- Diverse backhaul routes to Jakarta DC ecosystem

- Landing in Nongsa Digital Park
- Diverse backhaul routes to Nongsa DC ecosystem

- Landing in Changi
- Diverse backhaul routes to Singapore DC ecosystem

Expected Latencies

	Brisbane	Darwin	Jakarta	Batam	Singapore
Sydney	10ms	54ms	88ms	96ms	96ms
Brisbane	-	47ms	81ms	89ms	89ms
Darwin	-	-	36ms	44ms	44ms
Jakarta	-	-	-	12ms	12ms
Batam	-	-	-	-	1ms

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BW Digital

We Develop, Build and Operate Digital Infrastructure in the Asia-Pacific Region

Delivering Energy for the World Today

Consolidated interests in maritime logistics and energy infrastructure

Finding Solutions for Tomorrow

Investing in renewables, sustainable technologies for the circular economy

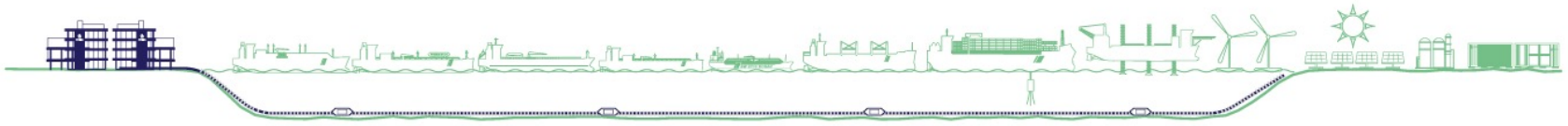
BW Digital is a subsidiary of BW Group, a global energy and maritime group controlling 7 listed companies with a combined market capitalisation of ~US$11 billion, in addition to 10 private companies.

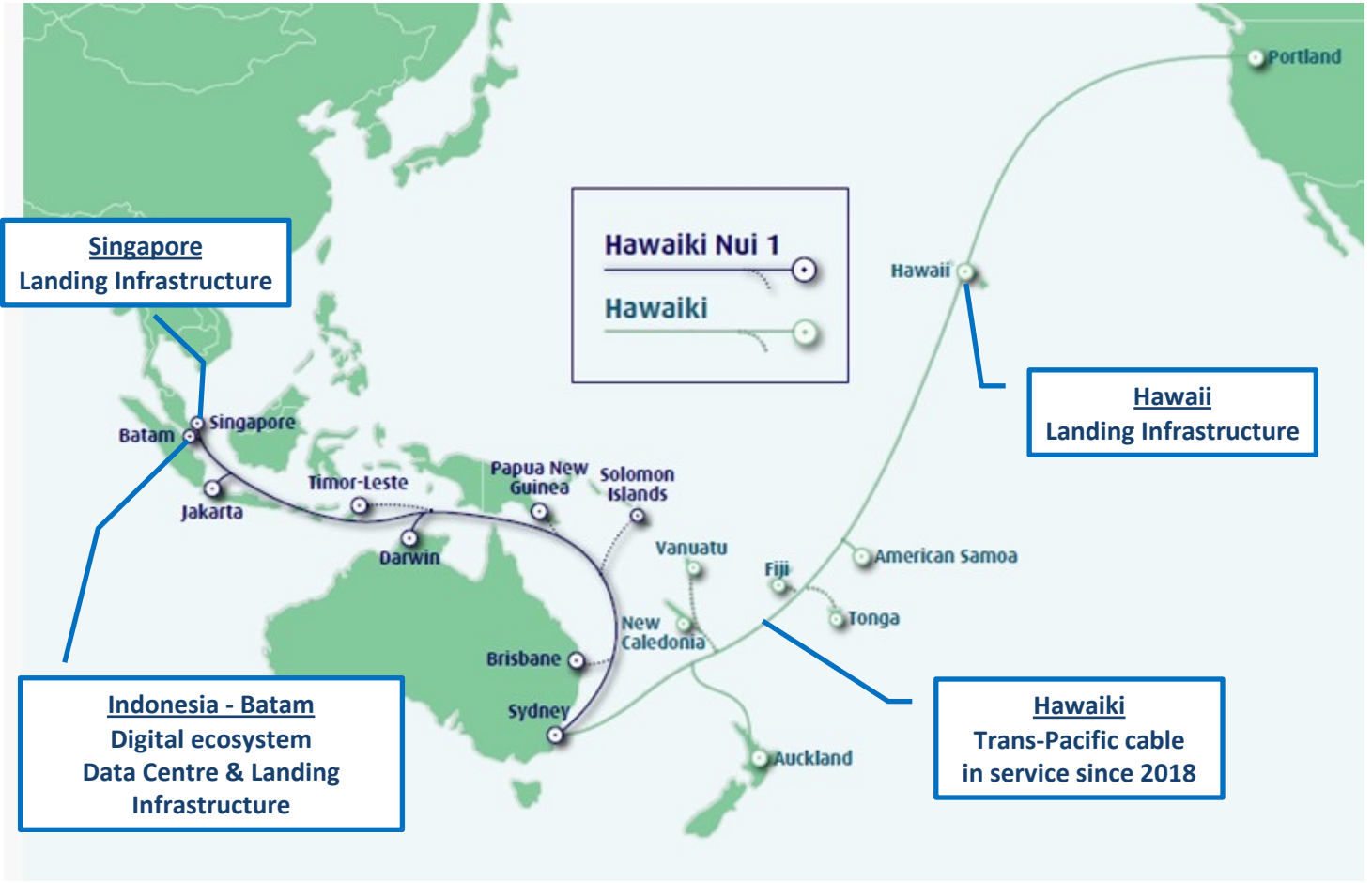
Privately-owned and carrier-neutral, BW Digital develops, builds and operates digital infrastructure in the Asia-Pacific region.

Headquartered in Singapore, BW Digital has offices in New Zealand, Australia and the US.

Our vision is to create a sustainable digital ecosystem combining connectivity, data storage and value-added services for cloud and AI workloads.

Our customers include all US Hyperscalers, US and ANZ largest Telcos, R&E organisations, Enterprises, etc.





- **SUBMARINE CABLES**:
  - **Hawaiki** connects Australia, New Zealand and the USA since 2018
  - **Hawaiki Nui 1**, our new cable project, will connect Australia, Indonesia and Singapore**,** incl. Sydney-Darwin (1a) and Darwin-Jakarta-Batam-Singapore (1b), with an RFS planned in 2027
- **HAWAII**: following the acquisition of 21-acre of land in Kapolei (next to the existing Hawaiki CLS), BW Digital is developing cable landing infrastructure, incl. a potential PV farm
- **INDONESIA:** following the acquisition of 5.5ha of land in Nongsa Digital Park (on the Indonesian island of Batam), BW Digital is developing a campus of digital infrastructure, incl. connectivity, data storage and computing power embedded in an up to 120MW data centre

THANK YOU!