



GOVERNMENT OF
WESTERN AUSTRALIA

Western Australia

The southern hemisphere's global hub for data centre operations

NOVEMBER 2022



Deputy Premier's foreword

Western Australia is gaining traction with international investors as the southern hemisphere's growing hub for data centre operations.

We are the nation's economic powerhouse and continue to strengthen our position as a global trade and investment destination, offering huge diversity across a wide range of industries. With a world-leading, digitally enabled economy, and a globally connected, safe and stable place to live and do business, Western Australia is a first choice for many investors.

The State's international connectivity, low latency and proximity to the Asia Pacific region, makes it a great place to invest. Occupying nearly one third of Australia's land mass, Western Australia is Asia's gateway to the nation and Perth is Australia's western capital and Indian Ocean window to the world. We share a similar time zone with 60% of the world's population, including China, Japan, South Korea and Indonesia, and have international subsea cables providing direct access to South East Asia, the Middle East, Europe and nationally to Sydney.

We have some of the best solar, wind, tidal and wave resources in the world, and are primed to play a central role in decarbonising the world's economies by becoming a reliable, ethical and cost-effective supplier of battery and critical minerals and clean energy products; and a significant producer, exporter and user of renewable hydrogen.



With an ambitious target of reducing coal fired generation capacity to 5% or less by 2040, we are on our way to supporting our target of net zero emissions by 2050. The Government's proactive policies and programs are also helping to improve environmental outcomes across a range of important areas such as waste management and recycling, pollution reduction and water management.

Growing the data centre industry in Western Australia will help diversify the economy, create jobs and also underpin the digital supply chain for a number of globally competitive, data intensive industries such as mining, oil and gas, space, health and defence. In addition, it will fast track the digital transformation of all sectors including government, strengthen our workforce capabilities in cyber security and digital technology, and enable data to be hosted onshore, ensuring sovereign security.

It's an exciting time for Western Australia, and we look forward to welcoming you and your business to our extraordinary State.

Hon Roger Cook MBA MLA
Deputy Premier; Minister for State Development, Jobs and Trade

Minister's foreword

Western Australia is on a trajectory to becoming the southern hemisphere's global hub for data centre operations, offering unparalleled opportunities underpinned by a safe and secure location, supportive government and capacity for renewable energy.

We are home to a range of cutting-edge industries in resources and energy, space, technology and defence, which are undergoing unprecedented growth driven by innovation in artificial intelligence, satellites, robotics, machine learning, predictive capabilities and sensors. This will continue to deliver large volumes of data and requirements for storage and analysis, driving data centre growth in the State.

Our societal and business reliance on data is growing exponentially as we move towards a digitalised world, fuelled even more by COVID-19. Greater importance has been placed on data centres to safeguard data, improve productivity and drive data intelligence for industry, whilst addressing global challenges and opportunities such as climate change, supply chains, security and sustainability.

Western Australia's highly skilled workforce is at the forefront of some of the biggest global scale digital projects ranging from powerful high-performance computing to support health and medical research; to co-hosting one of the world's biggest science projects, the Square Kilometre Array; and developing internationally renowned digital capability that enables predictive maintenance, autonomous and remote site operations in the resources



and energy sectors. In addition, we are leading world-class cyber security research and innovation, with a Perth-based national Cyber Security Cooperative Research Centre.

With a growing trend towards the development of sustainable data centres, Western Australia is an ideal choice. We are uniquely placed to be a global leader in industry led solutions towards a net zero emissions future by harnessing the State's innovation and wealth of natural and mineral resources.

There are many opportunities for data centre proponents to harness sites specific to their needs across metropolitan and regional Western Australia. We truly offer an attractive, unique and exciting investment proposition as the southern hemisphere's global hub for data centre operations. Western Australia is open for business.

Hon Stephen Dawson MLC
Minister for Innovation and ICT

Acknowledgement of Country

The Department of Jobs, Tourism, Science and Innovation acknowledges the Traditional Custodians throughout Western Australia and their continuing connection to the land, waters and community. We pay our respects to all members of Aboriginal and Torres Strait Islander communities and their cultures, and to Elders past, present, and emerging.

Why invest in Western Australia

Boasting a safe location, the nation's fastest growing tech driven workforce, world-class cyber security innovation and capacity for renewable energy, there's no shortage of potential in Western Australia.

Western Australia is seeing continual growth in demand for data centres' secure storage and processing capabilities from our cutting-edge industries including resources, defence, space and health; research organisations; educational institutions; and Government. This is driven by opportunities that cloud

adoption, investment in 'Internet of Things' technology and digital transformation present to improving productivity and efficiency.

Rapidly increasing data generation will continue to drive massive investment in digital infrastructure and data centre operations in Western Australia. According to CBRE, the data centre market in Australia is expected to grow 4.5% per year until 2026. Australia's digital competitiveness has also seen a massive surge, rising six places to number 14 out of 63 countries.



Cutting-edge industry driving need for data centre requirements.



Potential for renewable energy and a Western Australian Government target to achieve net zero emissions by 2050.



National hub for innovation in cyber security.



Availability of a range of private and Government owned land to suit the diverse needs of investors.



Well-trained, technologically savvy and highly motivated workforce.



Large scale demand management and water supply initiatives to meet the needs of people and industries.



Low latency and direct connectivity to Singapore, the Middle East and Europe.



Robust and transparent regulatory frameworks ensure projects meet the highest ESG standards.

Naturally beautiful and liveable

Western Australia is a great place to live, work and do business.

With a temperate climate and a wealth of natural, cultural and tourism destinations to enjoy, it's no wonder our capital city, Perth, consistently rates in the top 10 most liveable cities in the world by the Economist Intelligence Unit.

We are regarded as the country's most multicultural society. With only 10.5% of Australia's population, we have the nation's largest proportion of people who were born overseas at 32.2%. We are also home to the world's oldest continuous living culture, the Aboriginal people, who have shared their ancient traditions for more than 50,000 years. As Australia's first innovators and scientists, their traditional knowledge has helped shape our society and make significant contributions to the growth of Western Australia's scientific research, innovation and technology.

Western Australia's economy continues to thrive, thanks to a booming resources and export industry which is underpinned by the sector's digital capability and productivity. Our economic growth has averaged 4.1% per annum over the past two decades, which is higher than almost all OECD countries over the same period.

The Western Australian Government also acts predictably and in accordance with the law, ensuring legal certainty in administrative decision-making, and the strength of our WA Planning System helps deliver a streamlined process for potential investors, making us a reliable partner with low sovereign risk. Together with Australia's most affordable housing market and world-class health care, education and infrastructure, there's no better time to be welcomed to the State.



4.3%

Western Australia's domestic economy grew by 4.3% in 2020-21, the strongest of all Australian states, and one of the top performing economies in the world.



47%

Mining accounted for 47% or \$169.6 billion of Western Australia's gross state product.



\$223bn

Western Australia's exports grew to a record \$223 billion in 2020-21, accounting for more than half of Australia's exports.



30%

Around 30% of all ASX listed companies are headquartered in Perth.



\$361.8bn

Western Australia's gross state product was \$361.8 billion in 2020-21, 17.5% of Australia's gross domestic product.



100

Home to more than 100 resources and energy companies, with eight of the world's 14 largest international energy and mining companies having offices in Perth.

Cutting-edge industry driving data needs

In addition to traditional data intensive industries such as health, finance, technology and media, Western Australia also boasts growing digital capabilities in resources and energy, space and defence. These globally competitive industries are at the core of some of the world's most innovative tech driven projects, driving substantial demand for data processing, analysis and storage.

This demand is set to increase with significant future growth and use of digital technologies by these industries.

Resources and energy

Western Australia is one of the world's greatest mineral and resource provinces. The scale of its mining industry is nearly unmatched in the world, hosting six of the world's top 10 producing mineral projects.

This has presented a massive opportunity for the State to become a global leader in the development of next generation technology, from traditional software applications; to remote operations with expertise in remote asset management, autonomous operations, robotics, artificial intelligence (AI), remote sensing and systems integration; and 3D mine design. In fact, our mining industry is leading autonomous operations, with more than 400 autonomous trucks in operation, 40 autonomous blast-hole drilling rigs and the world's first automated heavy-haul, long distance rail system.

Innovative mining equipment, technology and services (METS) traditionally used to support the resources industry is also being utilised by other burgeoning industries in the State such as space, health, defence and IT, contributing to our diverse, digitally driven economy.



Space

With more than 60 years of experience in the space industry, Western Australia is heavily involved in major space projects from hosting and processing data from the \$3 billion Square Kilometre Array, to providing critical support for NASA, the European Space Agency (ESA) and private sector space missions.

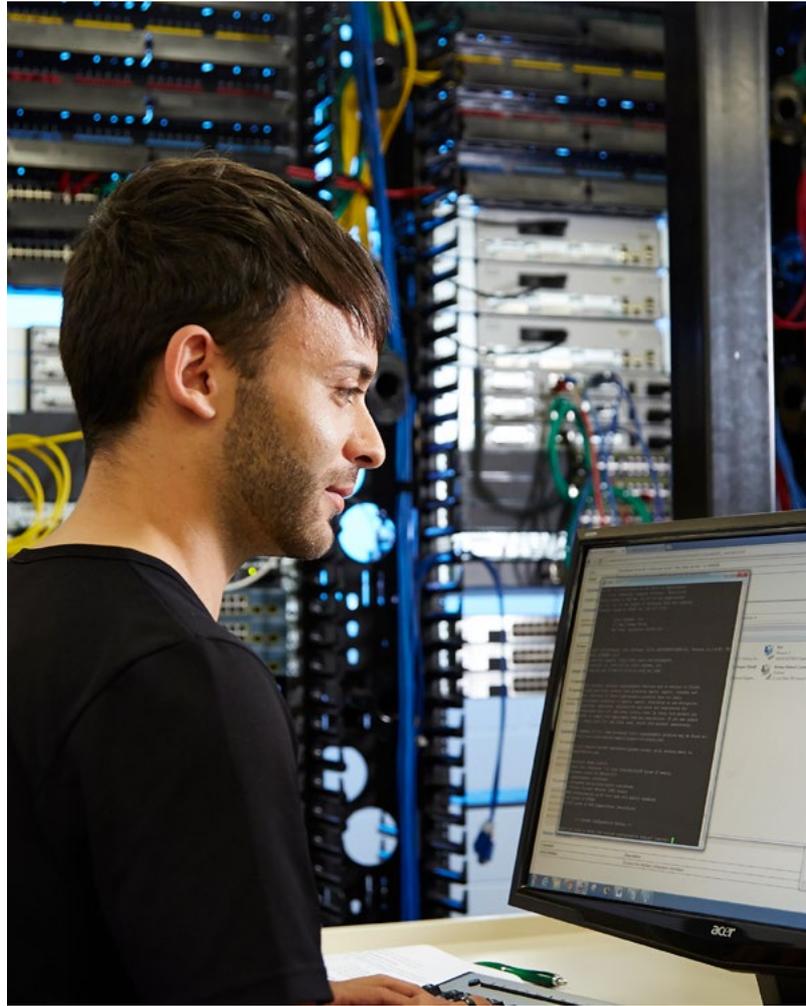
With more than 100 international and Australian space organisations, the State provides space mission, communication and situational awareness services; deep space and planetary insight; end-to-end Earth observation and space data analytics solutions; and technology transfer across space and terrestrial sectors. Western Australia also hosts a large number of ground stations (including optical) for the downlink and/or uplink of large volumes of data for ESA (New Norcia deep space ground station), Swedish Space Corporation, Inmarsat, Capricorn Space, and LeoLabs West Australian Space Radar.

In addition, the State is developing significant capabilities and world-class expertise through the Western Australian-based Australian Space Automation, AI and Robotics Control Complex; Australian Remote Operations for Space and Earth (AROSE) entity; and the Australian Space Data Analysis Facility.

Defence

The State's defence industry supports the maritime and the naval capabilities of the Australian Defence Force (ADF), while building industry capability in the cyber, space, land and air domains. The Western Australian Government together with local industry also supports the ADF in building a program which looks to adapt remote and autonomous technologies from Western Australia's resources sector for defence application or relevance.

Western Australia hosts significant defence space infrastructure and facilities, including the Australian Defence Satellite Communications Station, the joint US-Australian Space Surveillance Telescope and the C-Band Space



Surveillance Radar System located at the Naval Communications Station Harold E. Holt in Exmouth.

The Perth-based Australian Marine Complex houses the nation's largest marine industry and leads the construction of patrol, mine warfare and hydrographic vessels. The State is also looking into the potential of developing a Large Vessel Dry Berth to further grow its shipbuilding capability and capacity.

Thanks to our world-class innovations from our mineral and space sectors such as remote autonomous systems, advanced sensors and communications, computing, and world leading testing and range facilities, we are well positioned to maximise opportunities from the security pact between Australia, USA and the UK (AUKUS) including to expand cooperation on cyber, artificial intelligence, quantum technologies and undersea capabilities.

Leader in cyber security and protection of data

Western Australia is at the forefront of innovation in cyber security. Four of Western Australia's five universities offer comprehensive cyber security courses as well as environments for the development of cyber security applications and solutions, helping to build a workforce of cyber capable digital graduates.





Edith Cowan University (ECU) in Perth is a world-leader in cyber security research and education, recognised by the Australian Government as an Academic Centre of Cyber Security Excellence. It is home to:

- » **The national Cyber Security Cooperative Research Centre**, which helps grow Australia’s capability in cyber security and deliver solutions to ensure the safety of Australian businesses online. The centre partners with leading global organisations such as INTERPOL to tackle cyber security issues.
- » **The WA AustCyber Innovation Hub**, which accelerates cyber capability, innovation and commercialisation across critical infrastructure, cybercrime and big data.
- » **The southern hemisphere’s largest university Security Operations Centre**, which provides students with real world training in monitoring, detecting and responding to cyber security threats.

Cyber security is also a key focus of the Western Australian Government’s strategy to drive digital transformation in the public sector and improve services to the community.

With such strong cyber security credentials, Western Australia is well placed to meet the data security needs of data centres. In addition, the State’s political stability, regulatory and legal regime, effective government and geographically stable land mass, make it a reliable and safe location for data centre developments.

Skilled workforce building a culture of innovation

As the world changes through the explosion in digital technologies, Western Australia's world-class educational institutions, including top rated universities, TAFEs and schools, are committed to building capabilities in science, technology, engineering and mathematics (STEM) to secure a digitally skilled workforce for the future. Currently, 75% of jobs in the fastest growing industries require STEM skills, and 90% of jobs will require people with these skills in the next two to five years.

Supported by the education and training system, technology employment in Western Australia was the fastest-growing

in the country, expanding by nearly 16% in 2021-22, almost double the national average. The annual growth of the State's tech workforce over the next five years is estimated to be 5.4%, on par with the rest of the nation.

Our universities are delivering the next generation of state-of-the-art courses ranging from cyber security, data science and information technology, to creative technologies, industrial automation engineering, data analytics and computer science. It's no wonder we are a major centre for international education, with students travelling from across Asia to Perth.



Western Australia is also home to innovation hubs and research centres which encourage collaboration between businesses, industry and academia to build the skills and capabilities needed for the digital sector, and advance industry growth in the State.

Some of these include:



The WA Data Science Innovation Hub, which ensures Western Australia is at the forefront of the digital revolution by increasing the awareness, uptake, education and training of data science.



The University of Western Australia's Data Institute, which enables data intensive industries and government to access expertise in applied data science and understanding of ethical and socially acceptable uses of data.



The MTPConnect WA Life Sciences Innovation Hub, which focuses on medical technology, biotechnologies, pharmaceuticals and population health data to grow Western Australia's life sciences sector.



The WA Creative Tech Innovation Hub, which supports the creative tech industry across Western Australia, including gaming, experiential and immersive technology, software development, product design, advertising, film and media.

Our skilled workforce is already at the forefront of some of the worlds' most innovative and advanced technological, industrial and scientific projects. For example, Perth-based Pawsey Supercomputing Research Centre, one of two Tier 1 high performance computing facilities in Australia, has become a National Quantum Supercomputing Innovation Hub. Through its partnership with Quantum Brilliance, Pawsey is hosting the world's first room-temperature diamond-based quantum accelerator. DUG Technology in Perth also operates the most powerful supercomputer in the southern hemisphere and plans to build the world's first carbon-free HPC campus powered by renewable energy in Geraldton. Its patented immersion cooling solution for its hardware also reduces power consumption by up to 51%.

Digital technology is fundamental to businesses, the workforce and the economy. A key focus for Western Australian Government is to ensure our workforce is ready to meet the skills and capabilities required for the growth in the digital sector. Together with industry, we are working on initiatives such as skilled migration, training and education, and upskilling and reskilling more people into technology roles.



Best practice Environmental, Social and Governance (ESG) standards

Western Australia's robust and transparent regulatory frameworks ensure projects in the State meet the highest ESG standards.

The Western Australian Government provides a fair and effective governance environment that is the foundation for economic growth and a free, prosperous society. It generates confidence that government policies and initiatives are embedded in the principles of equality and equity, and designed to deliver strong economic, social and environment outcomes.

Western Australia's commitment to a clean energy future and net zero by 2050 further bolsters the State's position as

a high ESG jurisdiction. Government is working with all sectors of the economy to reduce carbon emissions and is transitioning the State's energy networks to allow for full renewable penetration.

From a social perspective, Western Australia continues to build on our strong foundations in health and education while ensuring those requiring assistance are best supported to reach their potential. There is also a strong focus on providing increased opportunities for Aboriginal people, greater recognition of cultural heritage and striving to reduce inequalities through policy and program implementation.

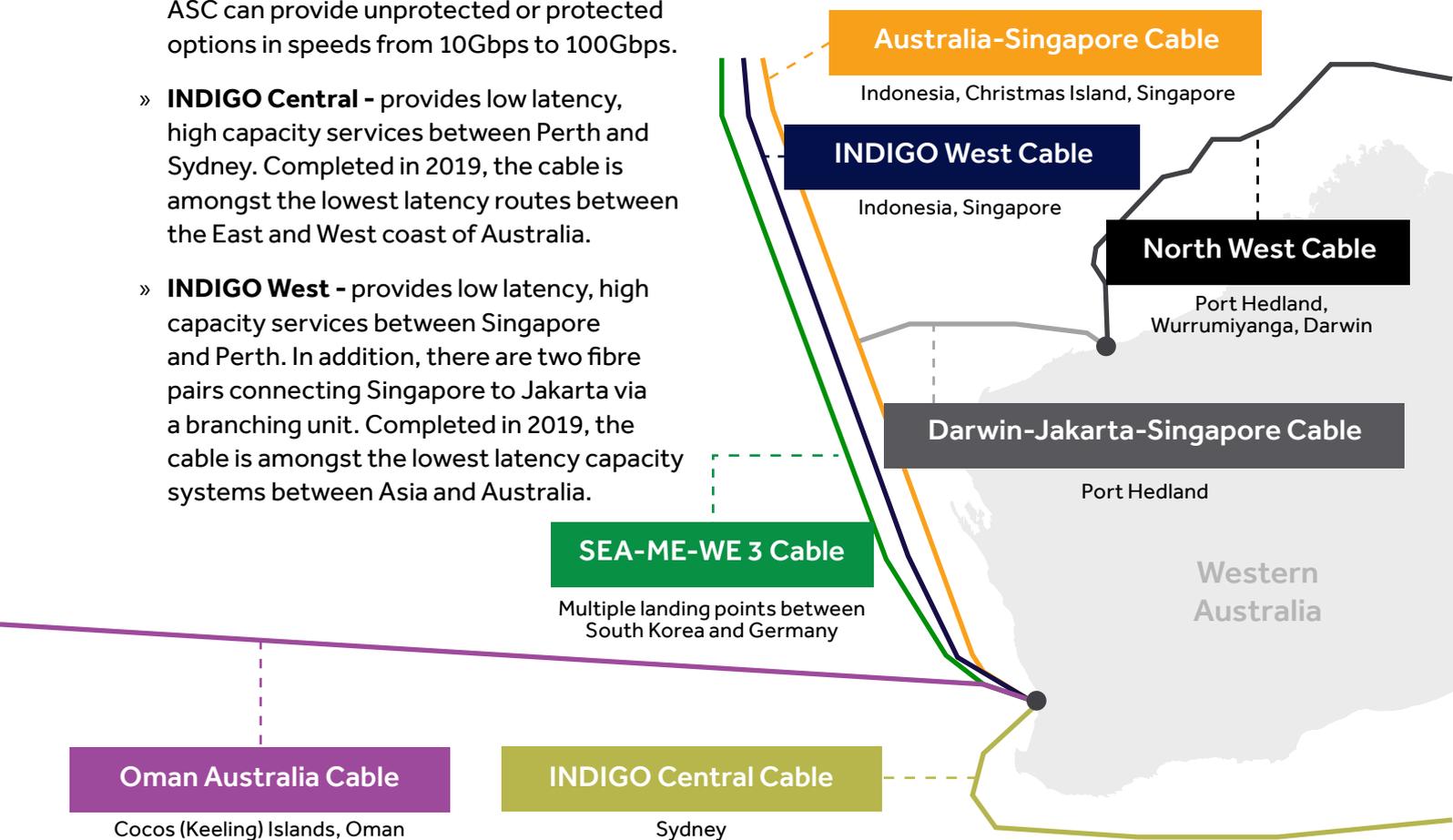
Reliable connectivity

Perth's proximity to the Asia-Pacific region and direct connectivity through four international subsea cables offers low latency connectivity to Singapore, Jakarta, the Middle East and Europe. The fibre optic network within the State also continues to grow.

Served by four international submarine cable routes and a national Perth – Sydney submarine cable route, Western Australia is an attractive investment location for global vendors planning expansion and plays a critical role in the development of digital economies across the regions.

- » **Australia-Singapore Cable (ACS)** - high-capacity and low-latency submarine fibre optic cable system between Perth and Singapore, with connections to Christmas Island and Indonesia. Operated by Vocus, the ASC can provide unprotected or protected options in speeds from 10Gbps to 100Gbps.
- » **INDIGO Central** - provides low latency, high capacity services between Perth and Sydney. Completed in 2019, the cable is amongst the lowest latency routes between the East and West coast of Australia.
- » **INDIGO West** - provides low latency, high capacity services between Singapore and Perth. In addition, there are two fibre pairs connecting Singapore to Jakarta via a branching unit. Completed in 2019, the cable is amongst the lowest latency capacity systems between Asia and Australia.

- » **Oman Australia Cable** - the express undersea cable directly connects to Muscat, Oman and Perth, and is privately owned and operated SUB.CO. The cable, which went live in September 2022, has been touted to offer the lowest latency path between Australia and Europe, Middle East and Africa (EMEA).
- » **SEA-ME-WE 3 (South-East Asia, Middle East, Western Europe 3)** - a submarine cable linking 39 cable landing stations in 33 countries and four continents, including Asia, Australia, Africa and Europe. The cable system was supplied by ASN and Fujitsu and officially put into service in 1999. The SEA-ME-WE 3 consortium comprises 92 telecom operators.



Renewable and sustainable

With a growing trend towards sustainable operations, Western Australia is an ideal location for data centres with an abundance of affordable, low-emissions energy sources and expanding renewable energy capacity.

As part of the Western Australian Government's Climate Change Policy, the State is committed to delivering on its international obligations under the Paris Agreement to achieve net zero emissions by 2050.

The State boasts a large land mass, abundant sunshine, and consistent winds and waves, which provide a natural advantage for companies seeking to decarbonise their operations.

The State's major power system, the South West Interconnected System (SWIS), is on

a trajectory towards being able to meet up to 100% of demand from renewable energy sources. On average, renewables currently account for around 37% of electricity generated in the SWIS, through utility-scale wind and solar projects and a high penetration of residential rooftop solar; with more than one in three households having rooftop solar in the State. This is set to grow as more renewable energy projects come on board. Renewable energy is also being used to power many of Western Australia's off-grid mining and mineral processing operations.

Western Australia is also primed to play a central role in decarbonising the world's economies as a significant producer, exporter and user of renewable energy.



Water availability

The Western Australian Government is focusing on sustainable ways to utilise our water sources to meet the needs of our people and industries.

Western Australia was the first State in Australia to develop large scale demand management and water supply initiatives. This has enabled significant diversification in water supply sources to be achieved over the past 20 years, removing reliance on streamflow to dams. The present mix of water sources in Perth include desalination, groundwater and surface dams.

Access to land

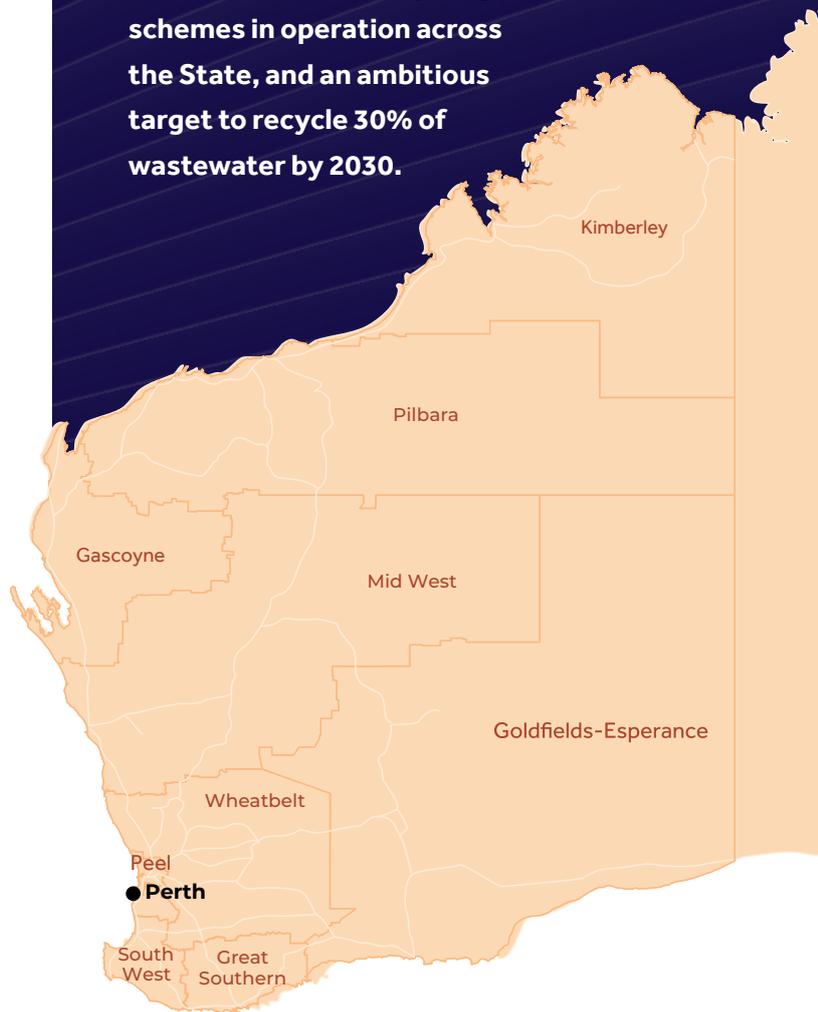
As the largest State in Australia covering 2.5 million square kilometres (approximately 10 times the size of the United Kingdom, seven times the size of Japan or four times the size of Texas), Western Australia has large expanses of land, low population density and favourable environmental conditions for data centre sites.

We also have the capacity to support data centres of different scales, ranging from edge data centres to mid-scale commercial and hyper scale operations across metropolitan Perth and regional Western Australia.

Western Australia has a transparent land ownership system and international companies can own the land. Alternatively, land can be leased either short term or long term.

We understand each prospective data centre operator has its own unique site selection criteria, with energy infrastructure, water and fibre optic capacity being vital components. Private and Government owned land may be available to meet your specific needs. Privately held land is

Through sophisticated wastewater system and treatment practices, a steadily increasing amount of recycled wastewater is being reused in various ways. In fact, **113 treatment plants are operated across the State. Over the last decade the total volume of recycled water has increased by almost 70%, with more than 70 recycling schemes in operation across the State, and an ambitious target to recycle 30% of wastewater by 2030.**



available through normal commercial processes. If you need to access Government held land, the Western Australian Government is committed to working with you to help address your needs. In addition, there are a number of specialist companies that can assist you with site selection.

How we can help

The Western Australian Government will make your entry into Western Australia as seamless as possible, and actively support efforts to accelerate the development of industry to meet its goals.

The Department of Jobs, Tourism, Science and Innovation is your first point of contact. Through a network of local and international offices, we can help you navigate the Western Australian investment ecosystem.

We can help with:

- » Case management of specific large-scale data centre proposals.
- » Identification and facilitation of access to industrial land and assistance with site visits.
- » Facilitation services to help you navigate our project approvals process efficiently and effectively.
- » Identification of relevant public and private contacts to assist with your enquiries.
- » A dedicated point of contact for your business or project.
- » A guide to working in Western Australia (business registration, property, visas, banking, employment standards and Australian tax) to accelerate investment.
- » Access to relevant and timely market intelligence to assist you to develop your market entry strategy.
- » Advice on business support grants, funding, incentives and projects.

For more information on how we can help contact us at investandtrade@jtsi.wa.gov.au.



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