



DATA CENTRE GROWTH IN AUSTRALIA

SEPTEMBER 2024

This Research Report analyses the current state of the data centre market in Australia and offers insight into the growth of Data Centres as an asset class. Market factors are driving significant demand by occupiers and investors for Data Centres in major Australian property markets. However, some key challenges are facing the sector.

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INTRODUCTION

As an asset class, Data Centres have traditionally been considered a lesser relation to office, retail or industrial properties. However, given that IBM estimates that some 90 per cent of the world's data has been generated in the last two years and data generation is expected to increase exponentially every two years, there is increasing attention and demand from investors in off-site data storage facilities as an asset class.

As a result, demand across major Australian property markets for Data Centre facilities is increasing rapidly from both occupiers and investors. The scale of data generated in the last few years comes on top of the development of new technologies such as Artificial Intelligence (AI) and 5G, the growth of E-commerce, the necessity to ensure that sensitive data is highly secure, risk mitigation through the duplication of data storage in geographically diverse locations, and the need for companies to provide reliable and secure IT and data services to a workforce that is more likely to work from home. All these factors are driving a demand for data storage services, which in turn is leading to the necessity for developers to build bigger and more secure Data Centres.

When combined with a shortage of available land for development and limited international pipelines into and out of Australia, all these factors lead to growing demand for existing centres and increasing the value of any new developments. The data storage services industry generated revenue of \$5.2 billion for the 2023 financial year alone. This follows average annual growth of 5.6% over the previous five years. The sector is forecast to grow by an astounding 8.2% per annum over the next five years. As a result of all these factors, investors are looking more favourably on Data Centres as an asset class, with the potential for returns in the short to medium term to outpace more traditional property asset classes. The \$24 billion sale of Data Centre operator Air Trunk in early September 2024 highlights just how much demand there now is for the sector.

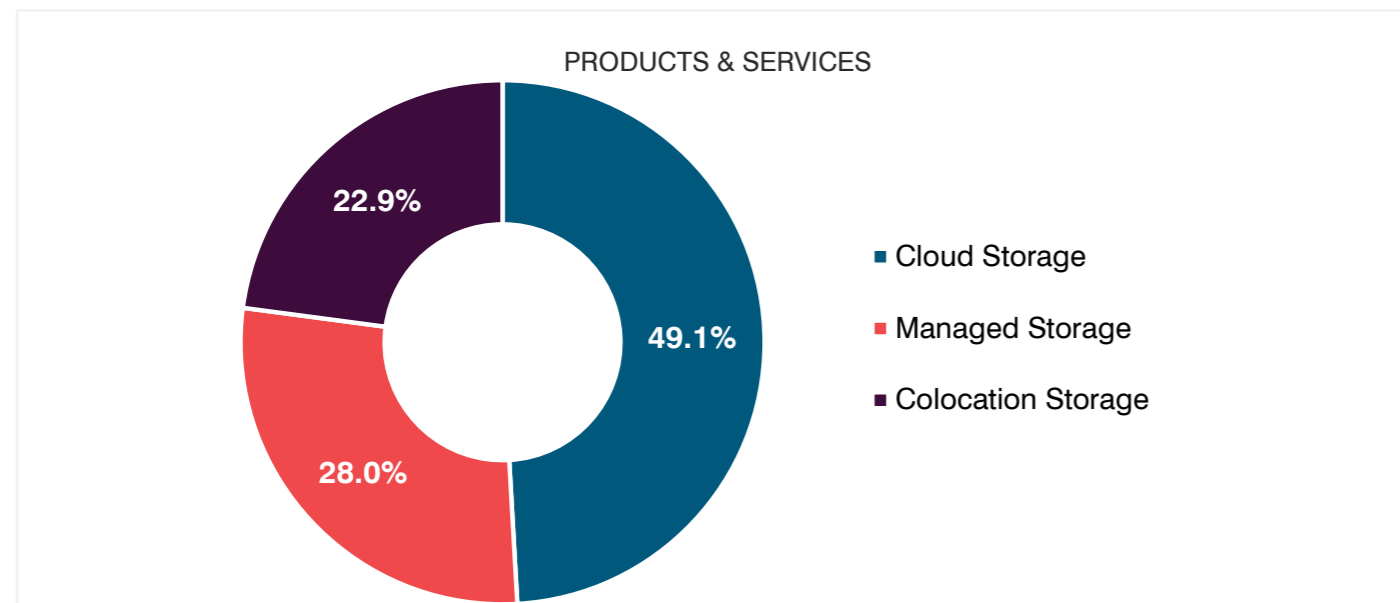
This Research Report will explore Data Centres as a property asset class and will cover an explanation of the various types of Data Centres, new developments, recent investments, as well as taking a look at future trends.

DATA CENTRE OVERVIEW

A Data Centre is a facility that is designed to facilitate the electronic storage and retrieval of information. Data Centre storage providers enable businesses to upload, download, backup and access their systems and files on secure servers. IBISWorld estimates that there are around 1,389 data storage establishments operating in Australia, with the majority in Sydney, Melbourne and Canberra. All Data Centres contain servers as well as other network infrastructure. These servers run virtualisation software and above that is the cloud application programming interface (API).

There are three main types of Data Centre storage. These are:

- **Cloud storage** which stores digital data on multiple servers. The operator is responsible for ensuring the clients' data is available, accessible, and secure. Demand for this type of storage continues to grow.
- **Co-location storage** where the industry operator provides physical storage space for a client's own server. The co-location facility provides the power, cooling and physical security. This type of storage facility has been decreasing its share of revenue over the past five years as firms increasingly gain confidence in cloud storage.
- **Managed storage** facilities enable clients to lease an entire server and an industry operator for their use. This enables the client to select their own operating system and hardware. This storage type offers more control and security for the client.



Source: IBISWorld, M3 Property

The majority of Data Centres currently operate as Cloud Storage facilities (49.1%), with Managed Storage (28.0%) and Co-location storage (22.9%) currently attracting fewer users. However, it is worth noting that Co-location storage, where a Data Centre operator leases space on secure servers to clients, is increasing in demand, with several new co-location Data Centres currently under construction in Sydney, Perth and Melbourne, with further Data Centres proposed in various locations across Australia, including regional locations.

Data Centres are generally certified by the US based Uptime Institute which sets standards on the level of redundancy and resilience provided by the facility. These are classified into Tiers with the higher Tier offering a greater redundancy and uptime availability of the data centre. As the redundancy increases, the hours of downtime per year decrease. The most secure facilities are built to Tier IV standards.

The different Tiers are listed below:

Tier I - Basic Capacity

- Providing 99.671% uptime availability.
- Offers limited protection against physical events.
- Single-capacity components and a single, non-redundant distribution path.

Tier II – Redundant Capacity

- Providing 99.741% uptime availability.
- Provides improved protection against physical events.
- Has redundant capacity components and a single, non-redundant distribution path.

Tier III – Concurrently Maintainable

- Providing 99.982% uptime availability.
- This type of data centre protects against virtually all physical events.
- Provides redundant capacity components and multiple independent distribution paths.
- Each component can be removed or replaced without disrupting services to end users.

Tier IV – Fault Tolerant

- Providing 99.995% uptime availability.
- Provides highest level of fault tolerance and redundancy.
- Redundant capacity components and multiple independent distribution paths enable concurrent maintainability.

Many Australian corporations are following counterparts in the USA and Europe and starting to move from an in-house Data Centre model to a Co-location Data Centre model. Many telecommunication and service sector companies still operate legacy in-house Data Centres, but they are starting to move to more efficient and secure Co-location Data Centres. A Co-location Data Centre is a facility that is usually operated by a third-party operator for multiple operators. The operator leases space on servers as opposed to physical space and provides the power infrastructure for running their clients' IT equipment.

There are three main types of Co-location Data Centres. These are Hyperscale Co-location Centres; Wholesale Co-location Centres; and Retail Co-location Centres.

A Hyperscale Co-location Centre indicates a facility that requires large power requirements of multiple megawatts (at least 2MW) and is leased to cloud providers of large technology companies with high demands for scalable power, storage, and cooling.

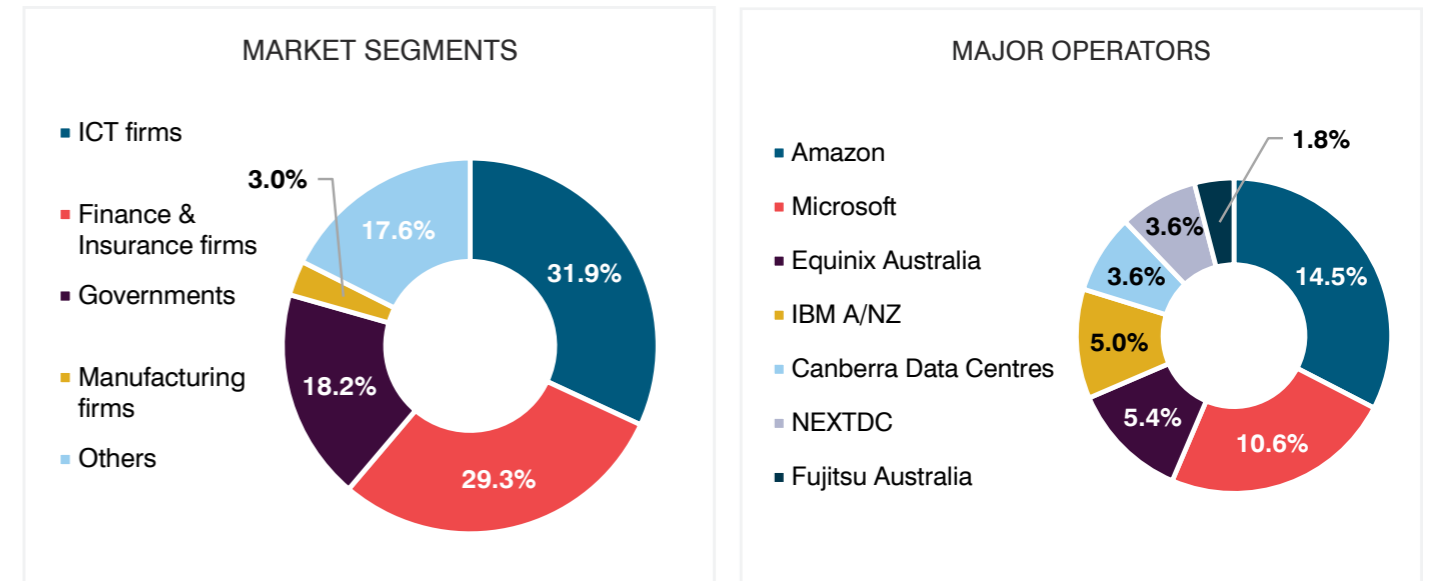
A Wholesale Co-location Centre indicates a facility with power requirements between 500 kilowatts and 2 megawatts in size leased to clients with lower demands than a hyperscale facility. Finally, a Retail Co-location Centre indicates a facility with lower power demands of less than 500 kilowatts, generally leased to clients with lower requirements than a Wholesale or Hyperscale facility and with less customisation privileges.

There are currently around 135 operational Co-location Data Centres in Australia, with a number of new centres under construction. Most of Australia's Co-location Centres are built to Tier III standards, but some of the Hyperscale Centres are built to Tier IV standards.

DATA CENTRE DEMAND DRIVERS

The services provided by Data Centres are in demand from a range of clients, including government bodies, Information and Communication Technology Companies (ICT Companies), finance and insurance companies, and manufacturing firms. A number of factors are driving demand for Data Centre facilities including:

- Growth of the information, media, and telecommunications sector. This sector requires large amounts of data and storage of sensitive information, and they are therefore a key data centre client in Australia,
- Increased expenditure on computer software and a shift to online cloud applications,
- Increased government requirement for secure data and information storage,
- Increasing population resulting in a greater number of internet connection requirements,
- The rapid evolution of ChatGPT and the widespread adoption of Artificial Intelligence Generated Content (AIGC) is poised to serve a wide range of industries. These developments are fuelling demand for Data Centres to transform from mere storage and data processing facilities into facilities with integrated services incorporating numerical and intelligent capabilities.
- Introduction of other new technologies including 5G plus improvement in network infrastructure to support more mobile applications.
- Significant increase in E-Commerce, which has grown to 13.9% of all retail transactions and is forecast to grow to 18% of transactions in 2024.
- Increasing outsourcing storage requirements from businesses as they shift away from in-house server systems towards outsourced data storage systems which can be scaled up or down.
- Changing work practices including increased number of staff working flexibly requiring data to be available remotely to the office, in a timely, secure, and reliable manner.
- Increasing understanding of businesses about the value of big data, need for security and continuity of systems and information.
- The need to provide closely located data stores to reduce latency and provide immediacy for end users.
- The “always connected” nature of the world, with increasing availability and demand for data-intensive products, such as video streaming.



Source: IBISWorld, M3 Property

The major operators of Data Centres in Australia include Amazon (14.5% of facilities), Microsoft (10.6%), IBM A/NZ Holdings (5.0%), Equinix Australia (5.4%), NEXTDC (3.6%), Canberra Data Centres (3.6%) and Fujitsu Australia (1.8%).



SYDNEY STANDS ALONGSIDE SINGAPORE, BEIJING, SHANGHAI, AND TOKYO AS AMONG THE LARGEST AND MOST IMPORTANT DATA CENTRE CLUSTERS IN THE ASIA PACIFIC (APAC) REGION.

EXISTING DATA CENTRE LOCATIONS

There are about 135 operational Co-location Data Centres in Australia. Most Co-location Data Centres are located in metropolitan areas, with the most located in Sydney (35 centres), followed by Melbourne (32 centres), Brisbane (20 centres), Perth (18 centres), Adelaide (15 centres) and Canberra (15 centres). Most of these centres have been developed to at least Tier III standards.

SYDNEY

Sydney stands alongside Singapore, Beijing, Shanghai, and Tokyo as among the largest and most important Data Centre clusters in the Asia Pacific (APAC) region. Sydney currently has the highest concentration of Data Centres in Australia, with an estimated 41% of established Data Centres of all types located in the city, and is a direct result of the availability of direct physical pipelines to the rest of the world, as well as the size of the market. There are currently 773 megawatts of supply across 78 centres. Of these, 35 facilities are Co-location centres.

Sydney's Data Centre inventory is growing rapidly with more than half a Gigawatt of live power capacity and an increase in the total Data Centre inventory of 30% compared with 2022 following the completion of a number of new Data Centres. Sydney does have more vacancy than the other key APAC markets due to the significant amount of supply that has come online in the past two years. However, the market has absorbed 99 megawatts of capacity over the past two years, significantly more than other APAC markets during the same time.

Pricing and rent for Co-location Data Centres in Sydney are among the most competitive in the APAC region but remains attractive for new clients to lease space. Some pressure on pricing is expected over the medium term as there are plans in the pipeline to double the existing market supply.

The main locations of centres in Sydney are in the Northern Corridor of Data Centres which stretches from St Leonards and Artarmon in the North, through Lane Cove and up to Macquarie Park to the North West. There is also a cluster of Data Centres in the CBD and Fringe and in Southern Sydney centred on Mascot.

MELBOURNE

Melbourne has the second largest number of Data Centres in Australia. There is currently about 218 megawatts of supply across 50 centres. Of these 32 are Co-location centres.

Melbourne doesn't yet have the status of the Sydney market in the APAC region as it remains as smaller market. However, close to three quarters of new Data Centre supply currently under construction is in Victoria, with most of that located within the Melbourne region.

CANBERRA

Given that the Federal Government is located in Canberra and government agencies are among the top three users of Data Centres, it is not surprising that there are 15 Hyperscale Data Centres within the ACT.

OTHER CENTRES

Brisbane currently has 20 Co-location centres. However, more are likely to be built over the next decade. Developers are also targeting Perth as a location for Data Centres.

DATA CENTRE PIPELINE

In line with the increasing demand for storage space, there are a number of new Data Centres currently under construction. There is currently an estimated 183,000 sqm of space under construction across Australia, with most of the new centres located in Sydney or Melbourne. Of the estimated 183,000 sqm under construction, close to three quarters of the new supply will be in Melbourne.

As demand within the data economy for high-quality development grows, the pace that Data Centres are transforming from mere storage and data processing facilities into integrated services incorporating numerical and intelligent capabilities continues to increase. Despite the pace of Hyperscale Co-location Data Centre development over the past few years, Australia is still in the early stages of this transformation. There are a number of significant new Hyperscale Co-location Centres planned for the next five years, with some tech giants committing to spend billions of dollars on development. These commitments to new developments underscore the growing importance of Data Centres in supporting the digital infrastructure of the future.

Among the more significant developments planned are:

- A \$5 billion commitment from Microsoft to increase and enhance their cloud computing and AI capacity by over 250% in the next two years, with plans to construct nine new generation data centres that will power cloud computing and enhance cybersecurity for local businesses. This includes plans to construct a new 190 megawatt Data Centre at Kemps Creek in Sydney, plus three new centres in Melbourne and another in Canberra.
- Major global Data Centre operator Equinix is expanding two facilities in Sydney and Melbourne. These are the SY5 Data Centre in the suburb of Alexandria in South Sydney and ME2 Data Centre in the suburb of Fishermans Bend in Melbourne respectively.
- Other notable projects include Next DC's M3 Data Centre in West Footscray in Melbourne and GreenSquareDC's WAI1 Data Centre in Perth.

Should all the planned and proposed Data Centres be completed, they will add an additional 1.7 Gigawatts of power capacity across Australia by 2029. The Sydney market alone will increase by 314 megawatts by 2026, taking Sydney's total capacity over 1 Gigawatt of power capacity. By 2029, Sydney's capacity is expected to double from the current 773 megawatts to more than 1.4 Gigawatts of power capacity. The massive increase in capacity across Australia is expected to be absorbed by increased demand from gaming, content streaming, AI and Internet of Things (IoT) applications.

While a number of the Hyperscale Co-location centres currently under construction or planned will be in city fringe markets such as Artarmon, many of the next generation centres will be located in the outer metro areas such as Melbourne's Derrimut where land values are lower. Some facilities will even be constructed in regional areas providing further risk mitigation through de-centralisation. Developers are already sourcing greenfield sites of 10 to 12.5 hectares with potential for upgrading internet and power access for construction of the next generation of Hyperscale Co-location centres.

DATA CENTRES UNDER CONSTRUCTION

Centre	Location	Owner	Centre Type	Tier	Area (sqm)	Power (mw)
Kemps Creek Data Centre	Kemps Creek, Sydney	Microsoft	Hyperscale Co-location	N/A	95,355	190 MW
IC3 Super West	Macquarie Park, Sydney	Macquarie Data Centres	Hyperscale Co-location	Tier III	11,700	45 MW
WAI1	Belmont, Perth	GreenSquareDC	Hyperscale Co-location	Tier III	40,000	96 MW
Woods Road Data Centre	Truganina, Melbourne	Microsoft	Hyperscale Co-location	N/A	N/A	N/A
Garden Drive Data Centre	Tullamarine, Melbourne	Microsoft	Hyperscale Co-location	N/A	N/A	N/A

INVESTMENT

The strongest sign of the health of the Data Centre sector is the \$24 billion sale in early September 2024 of most of the shares in Australian founded Data Centre operator Air Trunk, which operates 11 Hyperscale Co-location Data Centres across the Asia Pacific. The shares in Air Trunk have been acquired by a fund managed by US investment manager Blackstone and the Canada Pension Plan Investment Board. The company founder and CEO Robin Khuda will retain a part share in the company, but the deal will see Macquarie Asset Management and Canadian pension fund The Public Pension Investment Board will divest the 88% share of the company that they had originally acquired in 2020. Of the 11 centres that are part of this transaction, there are four in Australia, with three located in Sydney and one in Melbourne.

In a further strong sign of the growing importance of Data Centres as a property sector, there have been two significant sales of Data Centres within the Sydney metro area at Artarmon and Macquarie Park in the first half of 2024.

The largest of these sales was the \$184 million acquisition of a newly completed Data Centre at 3 Broadcast Way in Artarmon, Sydney by NextDC in April 2024. The sale includes purchase of the site and a recently completed core and shell Data Centre development. The centre offers 13.5 MW capacity across 4,000 sqm of data hall space. When announcing the purchase, NextDC noted that the centre now known as S6 Sydney Data Centre is Australia's first data centre designed exclusively for AI factories and sovereign AI. The centre sits alongside NextDC's existing S3 Sydney Data Centre at 2 Broadcast Way Artarmon.

The second largest sale was the \$174 million acquisition of the Intellicentre 2 and Intellicentre 3 Data Centres at 21-23 Talavera Road in Macquarie Park by Macquarie Technology Group in April 2024. Macquarie previously leased these centres from the Singapore listed Keppel DC REIT. Macquarie has commenced construction of a third data centre on the site to be known as IC3 Superwest. Once completed, there will be three Data Centres on the site with a total capacity of 63 MW.

Other sales in recent years include the Optus Ultimo Data Centre at 549 Harris Street, Ultimo, which was sold by Fortius Funds for \$56 million to Optus Fixed Infrastructure Pty Ltd (who previous leased the facility) in July 2022.

Traditionally, many of the transactions involving existing Data Centres occur through equity investment in the sector. Assets generally trade at a cap rate of 5.25% to 6.25%.

According to the PwC ULI Emerging Trends in Real Estate Asia Pacific 2021 report, Data Centres were the favoured alternative property sector in the 2020 survey in terms of investment intentions. Data centres are generally considered to be long-term investments, with occupant turnover being very low and tenants generally committing for long-term leases.

Other major transactions over the last few years include:

- The sale of the Fujitsu-occupied Data Centre at 16 Mulgool Road, Perth for \$39 million to Centuria Industrial REIT in July 2024.
- Centuria REIT acquiring the Telstra Data Centre in Clayton Victoria for \$416.7 million in August 2020 via a sale and leaseback arrangement with Telstra at a yield of 4.20%.
- Charter Hall acquiring the Telstra Exchange building in Pitt Street, Sydney, in December 2020 at \$281.5 million reflecting a yield of 4.75%.

There are currently no Australian registered Real Estate Investment Trusts focusing on the acquisition of Data Centres. Most Data Centres are held by institutional investors due mostly to the high barriers for entry for other investor types due to construction and running costs. However, strong projected returns are making listed REITs look at the sector again, and there remains the opportunity for a REIT to be established providing access to the Data Centre sector for smaller investors.

DATA CENTRE MARKET STRENGTHS AND WEAKNESSES

STRENGTHS

1. Explosion in the number of centres.
2. Older warehouses may be able to be repurposed.
3. Some types of Data centres can be built almost anywhere, which does reduce the competition from other asset classes.
4. Increasing need for high-security data centres from multiple sectors increasing demand for sector.
5. Development of AI driving improvements in security capabilities.

WEAKNESSES/CHALLENGES

1. Energy intensive.
2. Sustainability challenges.
3. Sourcing appropriately zoned land for development with access to steady power supply and data networks.
4. Competition for space with other asset classes – particularly in areas zoned industrial due to relative lack of new greenfield land being released by state governments. Industrial facilities such as distribution warehouses compete for the same land.
5. High construction costs.
6. Security issues.
7. High entry costs for investors – there is no sector specific REIT currently.

OPPORTUNITIES

1. This is the option for industrial land owners to build cold shell facilities aimed directly at the Data Centre industry.
2. Increasing returns provides potential for a sector specific REIT to be established.
3. Potential for massive returns for investors as the demand for Data Centres explodes.

THREATS

1. Sourcing Sustainable Power. Changing power networks in Australia, with limited federal commitment to long term sustainable power supply.
2. Approval issues. Data centres put a lot of pressure on power supply. In some international markets several deals have been pulled after resident's protests forced local authorities to rule against development permit applications.

CHALLENGES

While there is increasing demand for Data Centre facilities from both users and investors, there are key challenges facing the sector. The three main challenges are shortage of available land in the major centres, access to steady power supply and data networks and high construction costs.

The primary challenge is finding suitable land for new developments with adequate access to power. There is a limited supply of appropriately zoned land within the major centres, with limited greenfield land being released by State Governments. The available land is also sought by developers looking to develop new logistics and distribution warehouses as well as new Data Centres. The competition among developers for the available land drives up land prices. One solution that the sector is looking at to solve the issue of land shortage is to build Tier III and Tier IV Co-location Centres in regional areas where land is in greater supply, especially in centres with access to renewable power supplies. This has the further benefit of decentralisation of the network and risk-management from the threat of natural disasters.

As demand continues to soar for Data Centres, and greenfield land within or on the fringe of the major centres becomes harder to source, many industrial land owners and developers are becoming open to the idea of building powered cold shell facilities aimed at the Data Centre sector in order to obtain exposure to the asset class.

However, the advantage of building in the major cities is the access to power supply. Power supply remains a challenge for the sector, especially as larger and more energy intensive centres are built. Data centres consume a huge amount of power and sourcing sufficient - preferably renewable - power is a top priority for Data Centres. While many industries struggle to reduce their carbon footprint, the Data Centre industry has many opportunities to do so, including adopting immersion cooling, artificial intelligence to better manage Data Centre workloads, building in locations with access to renewable energy supply, and sourcing renewable materials for use in construction.

Access to renewable energy sources will be a key focus for Data Centre operators. This means that locations close to large-scale renewable energy sources are likely to be favoured, which could result in markets such as Perth and Queensland with access to these energy sources attracting more new Data Centre development.

One of the key challenges with building new centres is the cost of construction, which has increased significantly as the size and amount of power needed for the newer Tier III and Tier IV centres increases. Furthermore, there have been issues around long lead times off the back of a shortage of labour and some materials supply constraints. Recent reports have suggested that two to three years ago, a five-megawatt data storage centre would cost between \$15 and \$20 million to construct. Now a new facility may be over hundred megawatts and this requires a whole new level of investment. The average cost of building a data centre in Australia currently ranges from \$13.40 to \$15 per watt, which is an increase of around 4 to 5% compared to a year ago, making Australia one of the costliest markets in the APAC region for building Data Centres. Estimates provided by Turner & Townsend in their 2023 Data Centre Cost Index show that the cost of constructing a Data Centre in Sydney increased from \$13.80 per watt in 2022 to \$14.10 per watt in 2023, while in Melbourne costs increased from \$13.10 to \$13.40 in the same period. However, while the costs of construction are increasing, the potential investment returns to developers and investors ensures that investment in larger, more efficient centres is worthwhile.



CONCLUSION

There is no doubt that the Data Centre sector is rapidly maturing as an asset class and will continue to boom in the coming decade. With data generation predicted to explode over the next few years and AI technologies developing rapidly, access to secure data storage and integrated cloud computing facilities will become increasingly important. While the sector faces challenges, particularly around the cost of construction and access to sufficient power, it is well placed to meet these challenges through adopting advanced energy saving technologies and locating centres on the edge of major metropolitan areas or in regional centres.

Australia is in the early stages of progressing from self-managed Data Centres to more advanced Hyperscale Co-location centres, many of which are being built to the highest Tier IV standards. Australia's major metro areas are seeing significant activity in the sector. Sydney is already an important Data Centre market within the Asia Pacific region and Melbourne's Data Centre sector is developing rapidly and becoming a more significant market, with a significant increase in capacity predicted for both markets in coming years. Other centres such as Perth and Brisbane will also see the development of a significant Data Centre sector.

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