

## Introduction

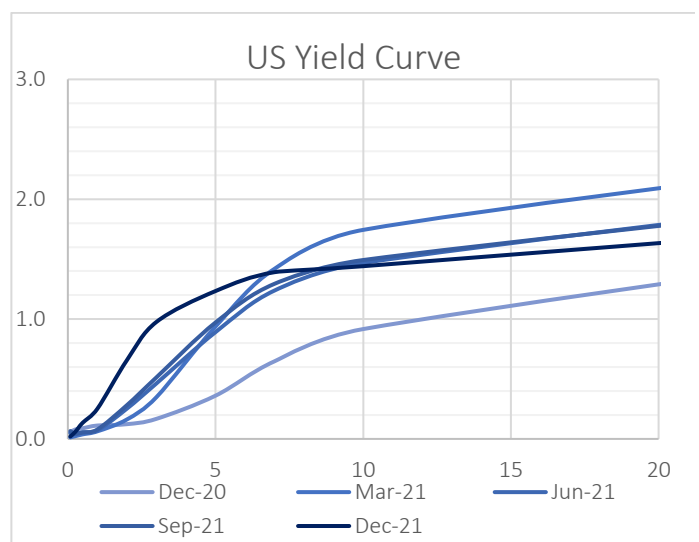
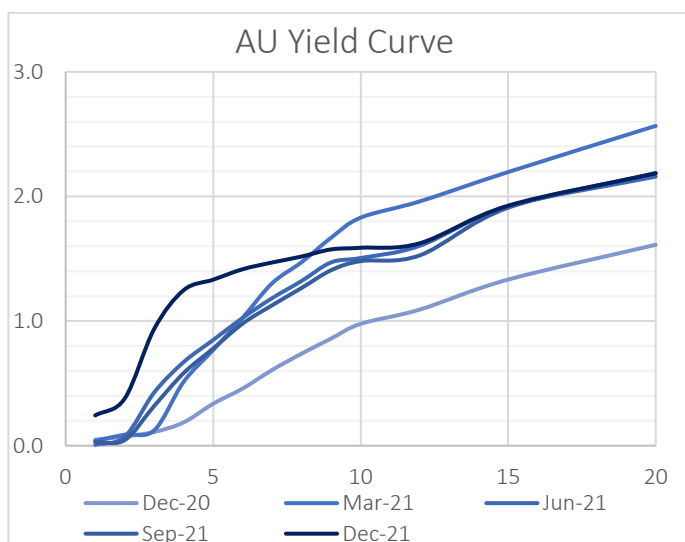
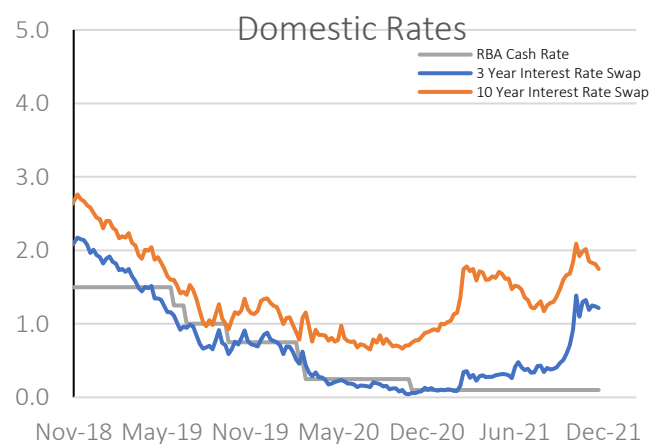
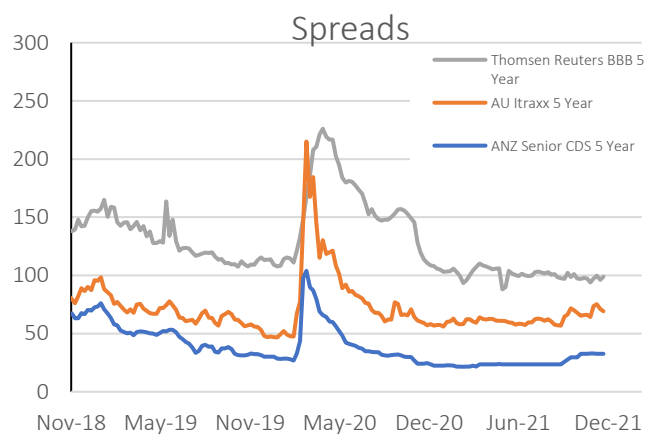
2021 was supposed to be the year of vaccines and international travel. Team Infradebt has updated its forecast. Now 2022 will be the year of more vaccines and international travel! Even without international travel, we have been very grateful for what 2021 has offered.

In this quarter's newsletter we add our two cents to the inflationary debate and what it means for infrastructure investors. Then, we move our focus to a new property/infrastructure sub-sector - Data Centres. The next article provides a perspective on debt versus equity investing. Finally, two years on from our first article on green hydrogen we provide an update on what has happened since.

As the year closes, team Infradebt would like to thank our investors for putting their faith in us to manage their capital and would like to thank new and existing investors for their continued support in what has been a successful year. To everybody, thanks for continuing to read our newsletter. We hope you and your families all have a safe Christmas/New Years, and we look forward to engaging with you again in 2022.

## Markets update

Interest rates have shot up in the last quarter of 2021. Markets had been see-sawing in deciding whether inflation was transitory or not. With US annual inflation rate jumping to six percent in Q4 2021, markets have anticipated that the 'normalisation' of interest rates is much closer than previously anticipated. 2022 is shaping up to be the year of the interest rate rise. This view was reaffirmed this week by the US Federal Reserve as they doubled the pace at which its scaling down bond buybacks. As a result, the yield curve has shifted upwards in the shorter end of the curve and remained flat at the longer end.



## New issuance and refinancing

Date	Borrower	Instrument	Size (\$m)	Term (Yrs)
September	Kanban Power Hub	Loan	275	5
September	Oaklands Hill Wind Farm	Loan	180	14
September	ElectraNet	Bond	350	7.3
October	Telstra Digicel Acquisition	Loan	1025	3/5/7
October	Metka EGN Projects	Loan	104	5
October	Australia Tower Network Acquisition	Loan	1250	3/5
October	North East Link Tunnel PPP	Loan	4204	10/20/31
October	Canberra Airport	Loan	400	3/5
November	TransGrid	Loan	25	12
November	Telstra	Loan	720	10
November	Spark Infrastructure Group	Loan	1245	3/5/7
November	Providence Asset Group Solar Portfolio	Loan	33	n/a
November	Royal Woman's Hospital	Loan	640	3/5
November	East Coast Rail	Loan	515	5
November	Melbourne Airport	Bond	700	10
November	EastLink Toll Road	Loan	1110	3/5/7/10
November	Aurizon	Loan	1450	2/3/5
November	IntelliHUB Acquisition	Loan	1446	5

## Equity and other news

- This quarter AustralianSuper has sold a 16.8% stake in Ausgrid to Dutch pension fund APG, retaining an 8.4% stake post the sale. IFM investors currently owns 25.2% and NSW government owns the remainder (49.6%).
- ACCC has approved \$32.6b takeover bid of the Sydney Airport.
- Brookfield and State Super is running an auction to sell 100 per cent of GeelongPort in Victoria. The final shortlisted parties were believed to include Australian infrastructure manager First Sentier and Palisade Investment Partners.
- Infrastructure Capital Group, First Sentier Investors and an Asia-based investor have submitted their final bids to acquire Elliot Green Power's 302 MW Australian renewable assets and development pipeline.
- Canadian pension fund OMERS have agreed terms to acquire a 49 percent of FRV Australia, a solar EPC and developer headquartered in Spain. FRV currently have more than 550MW of solar farms operating or under construction in Australia.

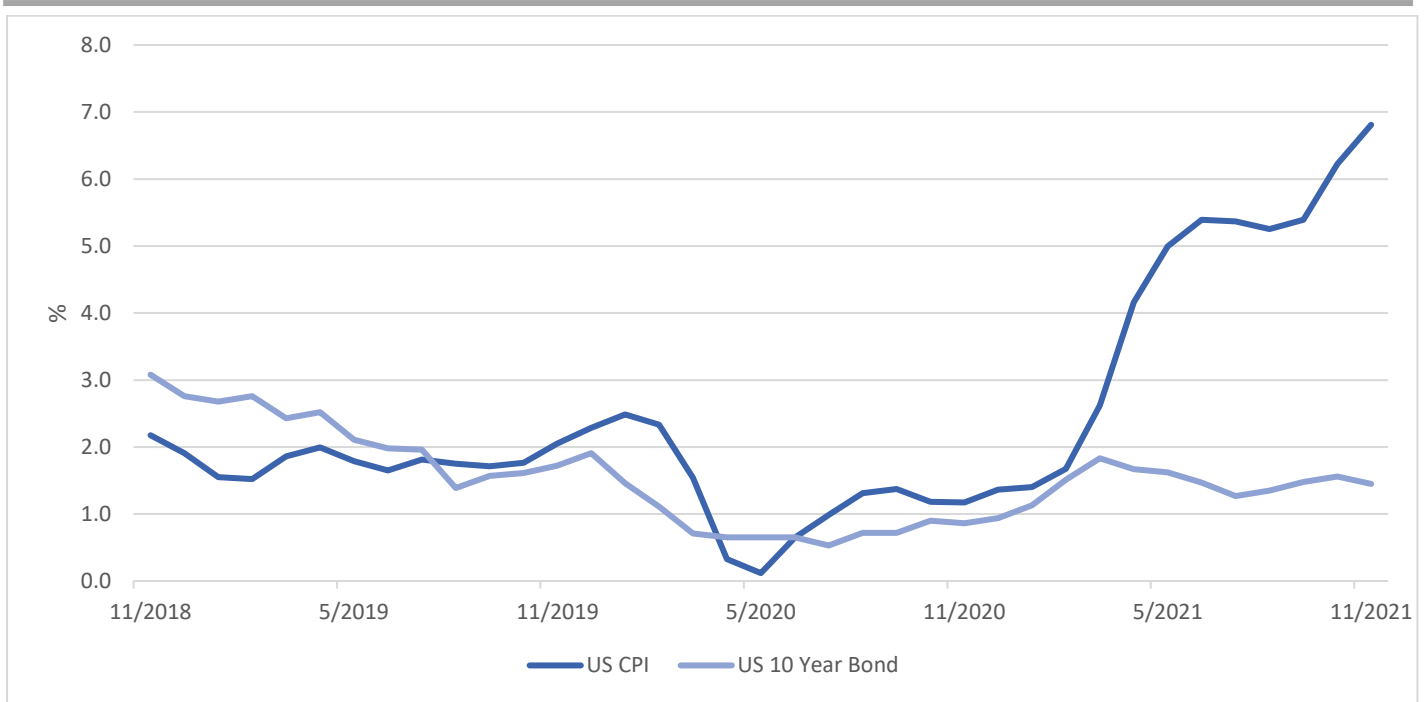
- Edify Energy has announced that it is selling its 150MW energy storage projects in the Riverina. The project includes three co-located BESS in NSW with 10-year offtakes.
- Aurizon have signed a \$2.35 billion deal to acquire One Rail Australia from Macquarie's MIRA and Dutch pension fund PGGM. The acquisition is currently under ACCC review.
- Brookfield is in exclusive discussions with Pacific Equity Partners to acquire a 50% stake in its smart metering business IntelliHUB following a 6 month auction process.
- Brookfield is set to sign a binding deal to Acquire AusNet Services for more than \$2.50 a share. The bid is expected to value AusNet's equity close to \$10 billion.
- In October, Telstra has acquired 100 per cent of Digicel Pacific, a telecommunications operator in South Pacific with a \$US1.33 billion support package from federal government. Telstra has contributed \$US270 million in equity.
- The Victorian government have kick-started the process to part-privatise the \$1.8 billion motor registry. Morgan Stanley is running the bidding process. Expressions of interest have been delivered in October with further rounds of bidding expected in coming months.
- Spark Infrastructure shareholder have approved a takeover bid by a consortium led by Kohlberg Kravis Roberts and the Ontario Teachers' pension fund. The deal has also been approved by Foreign Investment Review Board and is only awaiting NSW Supreme court approval. The consortium will gain access to Spark's \$17 billion of electricity network assets, including 49 per cent of SA Power Networks, CitiPower and Powercor.
- Shell and Infrastructure Capital Group (ICG) have agreed terms to acquire Meridian Energy's Australian assets for \$729m. Shell and ICG are expected to split the portfolio; Shell will take the power retailer, Powershop, while ICG acquires Meridian Energy Australia's wind and hydro generation assets and developments.
- Ontario Teacher's Pension Fund has acquired a stake in GreenCollar, joining Kohlberg Kravis Roberts on the share register. Green Collar is an Australian environmental markets investor, advisor and project developer.
- Axicom has received bids for its national portfolio of telecommunication towers. Axicom is jointly owned by Macquarie Infrastructure and Real Assets, Unisuper, UBS and Abu Dhabi Investment Authority.
- Beijing Capital Group has listed New Zealand's leading waste management provider, Waste Management NZ up for sale with an anticipated price of more than \$2 billion. Australia's Cleanaway Waste Management, Macquarie Infrastructure and Real Assets, Morrison & Co, Morgan Stanley Infrastructure Partners and Stonepeak Infrastructure are all expected to participate in the bidding process.
- Vopak have announced that they are selling their Australian fuel terminal business which includes sites at Port Botany and the Port of Darwin and is expected to be worth more than \$1 billion.

## Inflation

Inflation has been a tremendous focus for investors over the past few months. Lots of ink has been spilled by the pundits and we would be humble about our insights into a macro issue that is a key focus for fixed income (and equity investors) worldwide.

However, inflation is a key issue for infrastructure investors. First, many projects have inflation linked revenues and so a lift in inflation is a direct boost to cash flows and valuations/returns. Second, higher inflation would usually be expected to be associated with higher long-term interest rates and infrastructure asset valuations are very sensitive to long-term interest rates. Thus, inflation can be a positive and a negative.

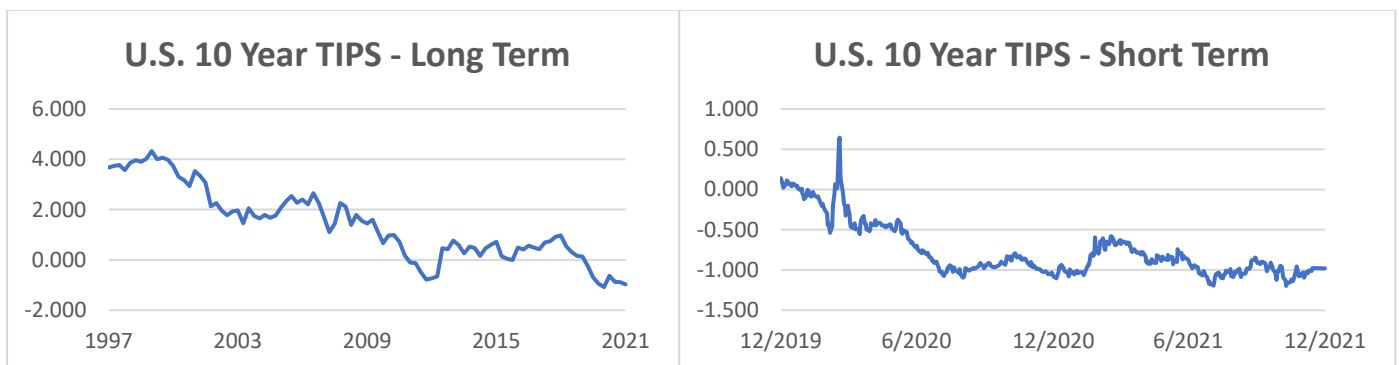
The net position will depend on whether what it adds to the cash flows is larger or smaller than the loss from higher rates.



Source: Refinitiv Eikon

The bond market’s behaviour implies they think inflation is transitory. That is, inflation is high at the moment, but this will pass (and quite possibly these effects will continue for several years – which might seem like a long time for an equity day trader, but isn’t in the context of the 30 year cash flow profile of the typical infrastructure asset). The market is betting either:

- Inflation is actually short lived – that is it trails off in the next 12 months as the supply chain bottlenecks from the reopening from Covid unwind; or
- Inflation continues for a longer period, but this forces the Fed’s hand so that they substantially raise interest rates through 2022 and 2023 and this rapid tightening in monetary policy (and perhaps an induced recession) results in much lower inflation down the track – such that average inflation over the next 10 years is actually quite low.



Source: Refinitiv Eikon

The key message from the market is that long-term real interest rates are expected to remain negative. That is any increase in inflation will be basically matched by nominal interest rates. The market is not predicting a fundamental shift in inflation/interest rate regime. Provided this is sustained, this is a fundamentally supportive backdrop for infrastructure investors.

Watching long bond rates (both nominal and real) over the months ahead would give an insight to whether the market is changing its view. However, this is not very helpful from an investor’s perspective. If 10 year rates blow out then for an illiquid asset class like infrastructure it is going to be too late to avoid the carnage.

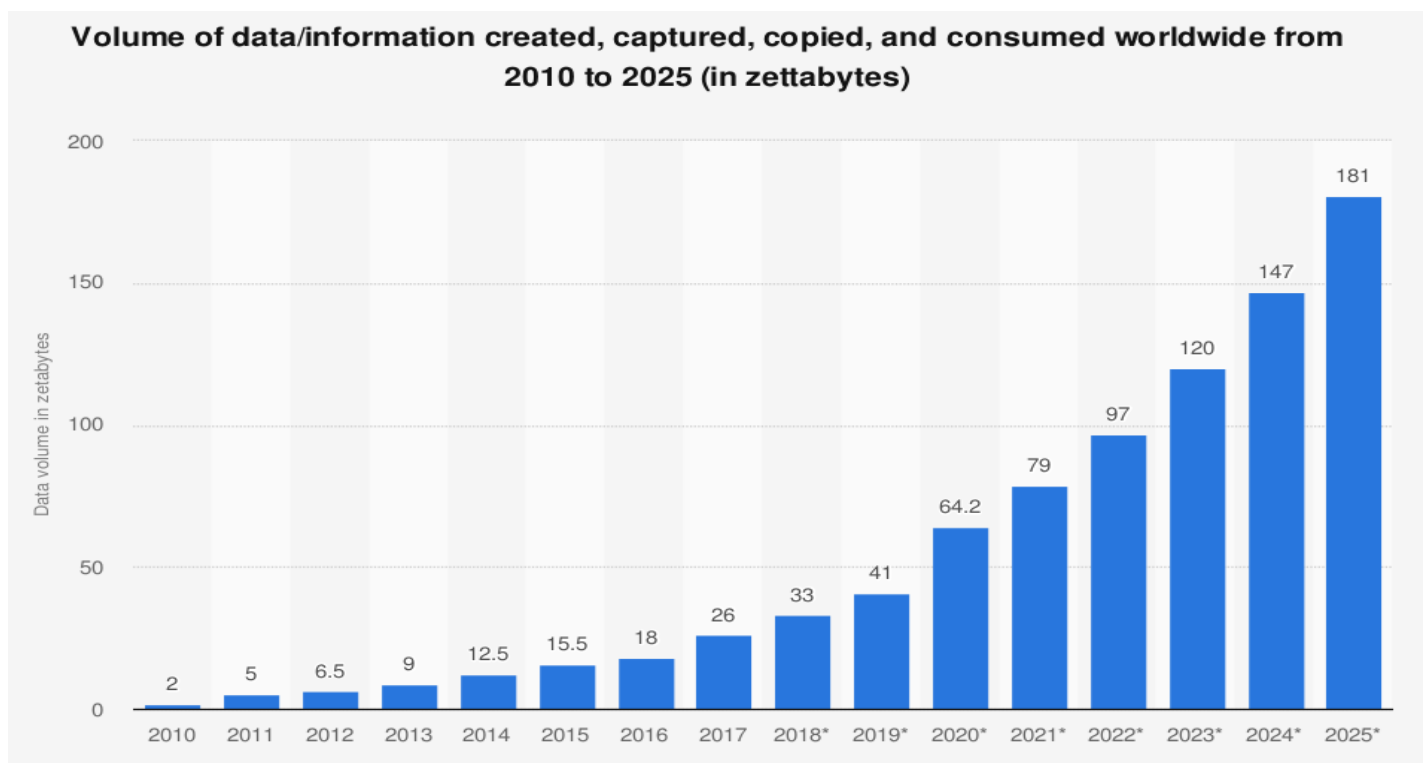
Thus, a key question is whether we can form a judgement today on the likelihood of the market sustaining its view. This is a difficult judgement. Ultimately it turns on what are the key drivers that have caused real interest rates to be so low in the first place and whether there a fundamental change in those drivers.

Global growth has been anaemic since the GFC. Central banks have chosen (or had to) maintain very low interest rates in an attempt to boost growth. This has brought forward consumption and resulted in large debt build ups. High debt means that increases in interest rates will slow growth more rapidly than in the past.

Within this context, it is hard to see the environment that would allow central banks to lift short term interest rates to meaningfully above inflation and sustain that on a long-term basis.

## Are data centres infrastructure?

Did you know that over 90% of the world’s data was created in the last 18 months to two years? That’s all electronic data ever created. The demand for data storage is growing at a rapid rate as the cloud computing megatrend continues. Covid-19 has accelerated this demand with people continuing to work from home post lockdowns.



Source: Seagate; Statista estimates

Technology business models have evolved significantly over the last two decades. Increasing internet connectivity speeds have allowed computing resources to be aggregated in the “cloud” rather than at the user’s premise. Technology services are now being delivered at a lower cost and “as a service” at an increasing rate. Everything from software applications, streaming entertainment and backend databases are moving to the cloud. Computing resources are cheaper at scale compared to at a single user’s premises. With increasing connectivity in our daily lives (fixed wireless and 5G) this trend is unlikely to end anytime soon.

## What are data centres

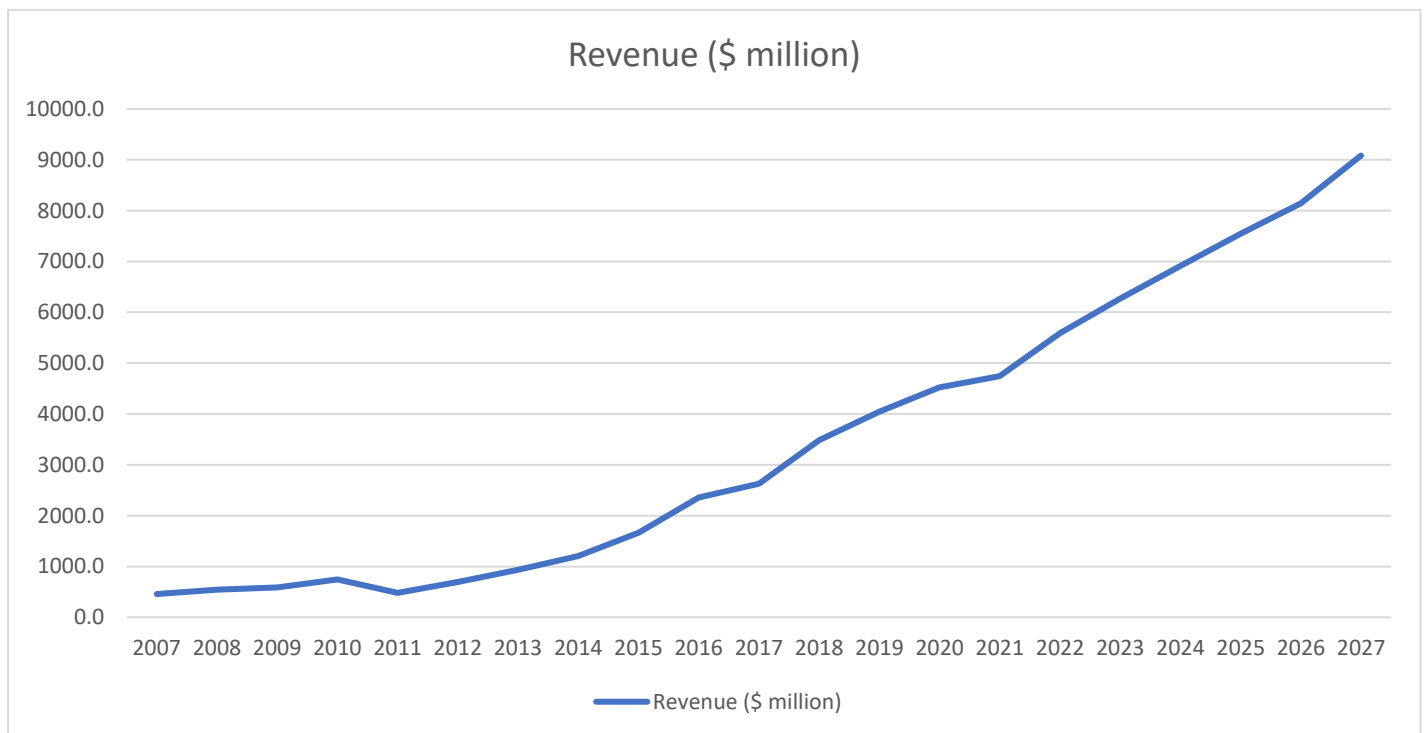
Any organisation that uses or creates data has the need for a data centre (aka file server) at some point in time. Traditionally these data centres were on premises and the organisation’s internal IT infrastructure team would maintain them. With the amount of data being produced increasing significantly and continuously changing dynamics of the IT ecosystems, organisations have moved their data centres to large scale co-location, cloud, enterprise and managed service data centres. These are the modern-day data centres we hear about in the news every day. On the outset, they may seem complex structures, but put simply, they are a physical facility leased by multiple customers to house their data.

Data centres offer their equipment to customers who don’t want to, or cannot, invest in setting up the same facility for private use. The client pays based on consumption and has the added advantage of being able to scale up quickly if their demands increase. Data centre operators determine fees based not only on the square footage each customer uses but also the amount of electricity used or provisioned. Electricity usage is a critical cost driver, both from the direct use by servers, but also because every KWh of power consumed translates into waste heat and, hence, an air-conditioning requirement.

The datacentre service provider will be responsible for the maintenance and upgrade of all the equipment. Also providing other services including access to broadband, interconnectivity with other customers, security and onsite professional services.

In other words, data centres offer the combination of interconnection with high-speed enterprise access to data and an ecosystem that will enable scalable and agile infrastructures, bringing the customer and its applications to the network.

There is a huge growth potential for the industry, with Australia, revenues alone are projected to grow from \$4.7 billion in 2021 to \$9.1 billion by 2027, that’s close to a 100% growth in revenue in six years.



Source: IBISworld

## Infrastructure, Property or IT.....or all three?

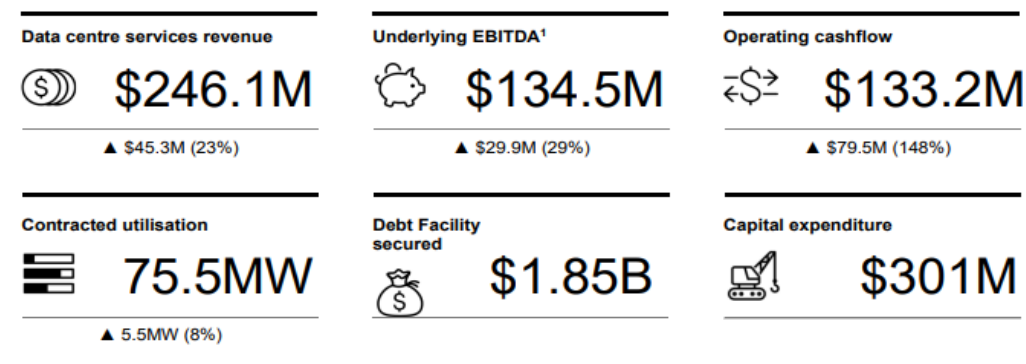
One of the key characteristics of data centres that sets them apart from their real estate peers is the higher demand for and emphasis on power — both the immediate need to run and cool thousands of servers as well as the backup power on hand that can seamlessly keep those servers running for up to a week or more, should the primary power source go down. To give some perspective, on a global scale, data centre power consumption amounted to about 416 terawatts, or roughly 3 percent of all electricity generated on the planet.

When considering the real estate aspect, well we all know how the saying goes in property investing... “location, location, location”. Data centre success and occupancy has been correlated with the location of the data centre. Data centres close to the operations of the customers are preferred due to connectivity speed as well as the ease of access by the internal IT team. Bringing data centres close to consumers also speeds response times (aka latency). As a result, data centres in major business hubs have seen higher occupancy rate as well as better margins.

In order to achieve those margins, there are two main profitability factors to consider, controlling costs and achieving scale. Large companies benefit from significantly reduced marginal costs, with fixed costs shared across a greater number of customers. Additionally, the number of employees required to manage each server declines as the size of a data centre increases. These economies of scale favour larger companies, increasing the industry's market share concentration. Change in the industry is quite rapid, major companies have been re-investing profits to keep up with the highest speed servers and network architecture, as well as employing techniques that enhance energy efficiency and reduce the carbon footprint of their data centres.

At an individual project level, careful consideration needs to be given to the forward-looking EBITDA projections. Simplistically, a good infrastructure project has high upfront capital expenditure, some form of ‘moat’ (monopolistic style barriers to entry) stable revenues, and high operating margins throughout the life of the project. Datacentres can definitely deliver attractive operating margins. For example, Next DC delivered an FY21 operating margin of 55%.

In FY21, NEXDC achieved a number of key performance milestones:



Source: Next DC Annual Report

The revenue profile of a data centre consists of varying contract lengths. However, companies focus on securing long-term credit-worthy clients to help to help boost their own credit profile. Looking at Next DC, we observed that 43% of the Next DC’s revenue was from two clients (weighted average contract length unfortunately was not revealed). This adds another level of complexity in valuing data centre projects as the differing contract lengths of customers, their credit profile, and the contractual terms are key inputs to finding the correct valuation for the project or level of debt each project can sustain.

Similarly, the operational complexities of continued technological investments and expansions, makes a data centre less like an infrastructure project (where generically the bulk of capex occurs at the start of the project life) as there is



a constant need for continuing capex to maintain relevance and competitiveness in the market – again Next DC in the infographic provides an example of the continuing capex spend.

In summing up, data centres present some unique features and risks for investors / debt financiers compared with other asset classes. Whilst they share many characteristics with traditional infrastructure, they also have a number of non-infrastructure characteristics. We believe data centres are still in the early stages of an emerging sector, valuation models are expected to evolve and mature with time as they factor in the multi-faceted nature of this asset class.

## Left tail right tail

At InfraDebt we are not tied to investment labels. At the end of the day, all investing is investing. We believe the most important thing is a laser like focus on risk vs reward trade-offs and understanding the distribution of outcomes. Life never turns out like the base case!

An interesting comparison is the difference between debt investing versus equity investing. In our day to day work we are constantly assessing the relative risk and return profiles of each component in the capital structure as well as the overall unlevered valuation of a project.

Debt is typically characterised as having a capped return profile with senior security over a business. If a business performs better than expected there is no increase in the debt return. If a business does worse than expected, there is a risk that debt will suffer a loss. Even worse, if the business becomes insolvent equity will throw the keys over to the debt investors!

Debt owns the downside risk and none of the upside. Hence it makes sense for debt investors to be attuned to the downside risks. A core tenet is not to lend more than the unlevered value of a business so that you can recover your capital in the event of default. Naturally, debt investing attracts the “permabear” crowd!

On the flip side, equity returns are completely uncapped with the possibility of earning outsized (multi-bagger!) investment returns if right tail events occur. The maximum return is potentially unlimited, and the maximum loss is your initial cost base. Those equity investors are an optimistic bunch of people.

Jokes aside, when does it make sense to invest in the equity? When you believe market participants (and debt investors) are mispricing the fundamental value of the project and in particular the quantum and probability of right tail outcomes. Right tail outcomes are very broad but wrapped into this concept is the competitive position of a business. See our previous article on investment moats!

When does it make sense to invest in the debt? When you believe the views of the market (and equity investors) are overly optimistic or have unrealistic views on the probability of future cashflows. Debt investors can take advantage of the unreasonable assumptions of equity whilst maintaining a conservative cost base that is less than the “true” value of a business.

Given we are Infrastructure investors we can apply these concepts to our asset class. In general, there are two generic types of infrastructure investing, “core” versus “non-core”. “Core” is code for real assets with high barriers to entry. These assets are usually monopolies with deep moats and long tenor cashflows. “Non-core” assets are more price takers and are generally priced as such.

“Core” cashflows tend to be long tenor and often linked to economic growth. Lenders view these assets as “safe” and debt costs are low. We think these types of assets make great equity investments. Given the state of valuations this is a consensus view!

“Non-core” tends to have less durable and volatile cashflows and should be “cheaper” on a risk adjusted basis. This volatility makes the investment susceptible to the whims of lenders who may demand rectification of covenant breaches should they occur.



We think debt investments in non-core infrastructure provides significant opportunity for investors. Given the competitiveness in capital allocation to the infrastructure asset class, debt investment in non-core allows investors the opportunity to benefit from the (irrational?) optimism of equity whilst providing a defensive position against a volatile less durable business. Sometimes debt even earns outsized returns! 😊

## Green Hydrogen Two Years On

Infradebt first featured green hydrogen in our newsletter two years ago (see Q4 2019). Green hydrogen seemed an over the horizon issue then, there has been a lot of talk and some action in Australia since. This article recaps our key conclusions from 2019 and updates the outlook (and key issues for investors) based on what we know now.

### Hydrogen Recap

Hydrogen is the most abundant element in the universe. What makes it attractive in the 21<sup>st</sup> century on earth is that it is a fuel that when burned produces water rather than CO<sub>2</sub>. Above and beyond this obvious climate change benefit, hydrogen is also quite flexible. It can be burned and, hence, is useful for industrial processes which rely on heat (such as steel or cement making) and it can also be passed through a fuel cell (or burned in a turbine) to produce electricity or power transport.

The key challenge with hydrogen is cost. Currently, most hydrogen is produced by the steam reformation of natural gas (which produces lots of CO<sub>2</sub>). Green hydrogen – produced by the electrolysis of water – is very expensive. It is expensive due to the cost of electrolyzers and the input electricity (and electrolysis is an inefficient process – with significant energy loss through waste heat). Furthermore, given that most hydrogen won't be used where it is produced, there are further costs from compression/liquification or conversion to ammonia (which is easier to transport) and then transportation.

The National Hydrogen Road Map indicated a current supply cost for green hydrogen of approx. \$6/kg. This equates in a \$/GJ – which is how Australian's quote gas prices – to \$50/GJ, or in \$/MWh – which is how we quote electricity prices – this is \$180/MWh. This is very expensive and wouldn't be commercially viable.

Back in 2019, the Infradebt view was that hydrogen didn't make sense for stationary energy. Turning electricity into hydrogen and then back into electricity is fundamentally inefficient. Anything that can be powered directly from electricity should be. While falling electricity costs will make hydrogen a lot cheaper to produce, it doesn't improve hydrogen's competitive position for the purposes of electricity generation and supply.

Our view then, at it remains today, is the opportunity for hydrogen is in segments that can't be electrified (think heavy transport etc). The opportunity for Australia is that we have massive low-cost renewables potential. This is an opportunity to replace jobs/export income lost from the inevitable decline in coal/gas exports with hydrogen exports (or exports of minerals processed with our cheap hydrogen).

### What's Happening Now

In the last two years there has been tremendous activity in the hydrogen space. According to the CSIRO's HyResource website there are 18 projects operating or under construction and they are tracking a total of 84 projects in various stages of development. That is an enormous amount of activity for a process that generates a gas fuel at 5-10 times the price of its fossil fuel equivalent.

These projects are being developed largely by the private sector, but usually with government/university grant funding or involvement. The sheer number of projects shows both the private sector and government are treating the potential for hydrogen seriously.

### Infradebt's hydrogen outlook

We still believe hydrogen has an important role in hard to abate sectors like long distance/heavy transport and sectors that need direct heat energy (eg steel) not just electricity.

In our mental model of the changes required to hit net zero by 2050, we see renewable electricity and electrification as the low hanging fruit. Thus, we expect the 2020s to be focused on electricity generation, with hydrogen not to hit its stride until the 2030s or 2040s. Interestingly (or perhaps perversely) the government's policy agenda seems to be trying to do this in reverse.

While rapid rollout of green hydrogen would be a wonderful thing for the planet, there are a couple of concerns for investors. First, early projects will be less efficient and more expensive than later projects. While technological progress is fantastic for society, this competitive dynamic is a challenge for early investors in what are long-lived projects (and a key reason for government support).

Second, while costs will come down over time, even after these initial trial projects, costs will be well above fossil fuel cost parity. Thus, there is a challenging intermediate decade or two, where hydrogen needs to scale up while being more expensive than fossil fuels.

This seems quite uncertain in a country without a carbon price. If hydrogen is to be an export industry – it seems paradoxical for Australia to build a green hydrogen export industry – which is inherently built on the assumption that foreigners will value emissions externalities differently to ourselves.

Perhaps this is the ultimate form of 'relying on the kindness of strangers'.

