INITIATION REIT ▪ Singapore

Keppel DC REIT

(KDCREIT SP)

Banking on Singapore's position as global data centre market leader

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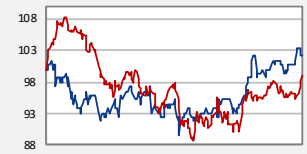
- Keppel Data Centre REIT to be a key beneficiary as Singapore remains strongly anchored as a global data centre market leader.
- Demand resilience in data storage facilities such as data centres due to exponential growth in global data volume. Data stored within data centres globally is forecasted to increase at a CAGR of 29% from 2016-2021.
- We anticipate rental revenue to grow 14%/4.1% YoY in FY19/FY20 primarily led by full year contributions from KDC5 and near term contributions from ICDC 3 East.

Buy (Initiation)			
Price as of 4 Apr 19 (SGD)	1.48	**Performance (Absolute)**	
12M TP (S$)	1.62	1 Month (%)	0.7
Previous TP (S$)	-	3 Month (%)	11.6
Upside, incl div (%)	14.3%	12 Month (%)	7.4
Trading data		**Perf. vs STI Index (Red)**	
Mkt Cap ($mn)	2,001		
Issued Shares (mn)	1,352		
Vol - 3M Daily avg (mn)	4.2		
Val - 3M Daily avg ($mn)	6.1		
Free Float (%)	74.53		
Major Shareholders		**Previous Recommendations**	
Keppel Corp Ltd	25.4%		
Sumitomo Mitsui	4.8%		
TMB Asset Management	2.6%		



Financials & Key Operating Statistics

YE Dec SGD mn	2017	2018	2019F	2020F	2021F
Gross revenue	139.1	175.5	199.8	208.0	219.7
Net property income	125.1	157.7	179.5	186.8	197.3
Distributable income	82.3	96.1	116.2	117.9	127.1
DPS (SGD cents)	7.1	7.3	7.7	7.9	8.5
DPS growth (%)	16.0	2.8	5.7	1.5	7.7
Div Yield (%)	5.0	5.4	5.2	5.2	5.6
P/NAV (x)	1.0	1.1	1.1	1.1	1.2
Price / Book (x)	1.5	1.3	1.3	1.3	1.3
NPI Margin (%)	90.0	89.8	89.8	89.8	89.8
Net Margin (%)	50.5	83.2	67.2	65.4	66.2
Gearing (%)	31.0	29.9	29.2	29.0	28.5
ROE (%)	6.4	10.1	8.8	8.9	9.3

Source: Company Data, KGI Research

Investment Thesis

Singapore to remain as a data centre (DC) market leader. Singapore's 370 MW IT power supply for data centres is the largest in the world. We view Singapore's strong network infrastructure, diverse connectivity regional markets, and stable, pro-business environment to continue anchoring the city's position as a top DC market leader. The near term completion of 4 subsea cable linkages and the government's smart nation initiatives continue to supplement both the demand and supply sides of the equation. Near term data centre space supply looks to be on the upward trajectory taking into account Facebook's first DC in the region, but occupancy rate is forecasted to increase from 84% as of end 2018 to 87% in 2022 on the grounds of strong demand.

Exponential growth in global data volume. We expect demand resilience in data storage facilities such as data centres due to demand for cloud computing and consumer internet traffic. According to Cisco, global internet traffic will increase threefold from 2017 to 2022, while global data-sphere will increase fivefold by 2025. As with the growing trend of data creation, maintenance and subsequently, analytics, data stored within DCs globally is expected to increase at a CAGR of 29% from 2016 to 2021.

Yield accretive acquisitions to pave the way for growth. We anticipate rental revenue to grow to S$199.8mn/S$208.0mn in FY19/FY20, up 14%/4.1% YoY from FY18 (S$175.6mn). This is due to full year contributions from KDC5 (SG) and near term contributions from ICDC 3 East (AU) which we expect to commence operations by 3Q20. Ten out of fifteen DCs owned by Keppel DC REIT (KDC,KDCREIT) were fully leased out as of end FY18. We see organic growth opportunities as pockets of rental spaces remain vacant in Basis Bay DC (occupancy: 63.1%) and KDC Dublin 1 (occupancy: 61.1%). Going forward, yield accretive acquisitions will be key in paving the way for growth. Viable near-term acquisitions would include Almere DC2 (NL) and KDC 3 (SG).

Valuation & Action

We initiate coverage on KDCREIT with a BUY call and a target price of S$1.62, representing an upside of 14.3%, inclusive of a forward dividend yield of 5.2%. Our DDM valuation uses a cost of equity of 6.7% and terminal growth rate of 1.5%.

KDC currently trades at a FY18/FY19 P/B ratio of 1.3x/1.4x, a premium over industrial S-REITs which are trading at an average forward P/B ratio of 1.2x. Nonetheless, peers may not be directly comparable given that KDC is a pure-play data centre REIT and as such, justifies a price premium. The nearest comparable would be Mapletree Industrial Trust with a 16% revenue exposure to the data centre segment, which also trades at an above average forward P/B ratio of 1.4x.

We would like to highlight that KDC ranks top 2 amongst all S-REITs for total annualised returns (capital gains + dividend yield) since listing at 17.9%.

Key Risks

We anticipate the risk of potential negative rental reversions within Singapore DCs as local supply stock is expected to double between 2017 and 2020. Other short to mid-term risks would include redevelopment works ramping up additional DC supply, exchange rate risks and new government regulations.

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Singapore to remain as a data centre market leader

According to "Cushman & Wakefield's Data Center Risk Index", Singapore came on top amongst Asian countries in terms of favourable operational environment for data centres. The criterion within consideration includes energy cost, internet bandwidth, ease of doing business, political stability and likelihood of natural disasters.

Top countries within the rank had obvious climate advantages that could be a reason for cheaper electricity cost (derived from renewables) and cooler temperatures to facilitate system cooling. In contrast, Singapore may have made it within the ranks due to strong network infrastructure, diverse connectivity to major APAC markets, and a stable, pro-business environment. Also, the island is known to be well sheltered from national disasters.

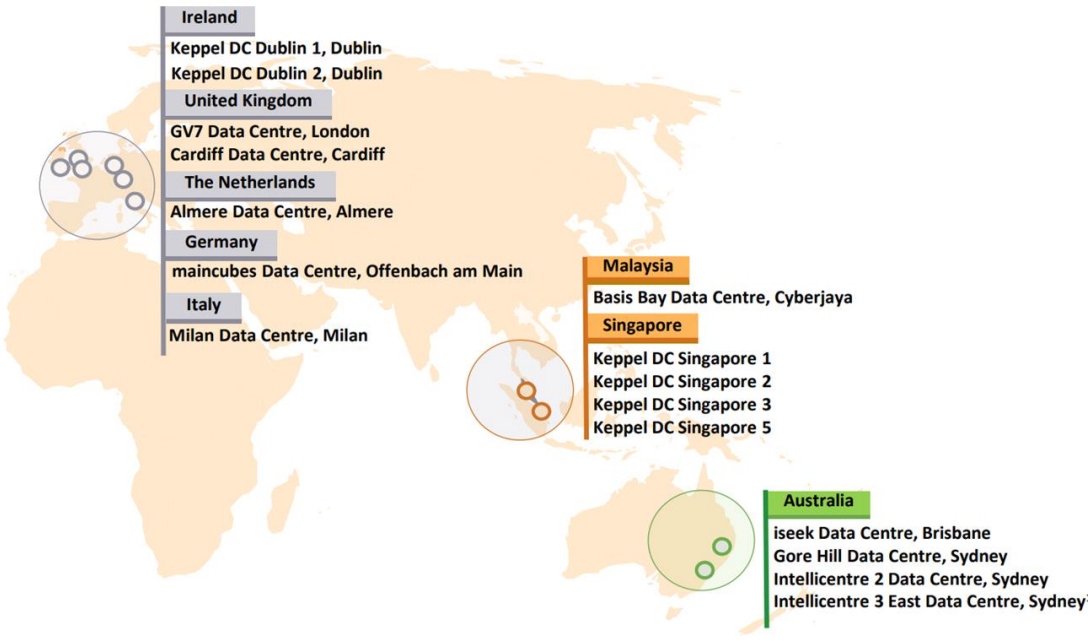
Figure 1: Asian DC Location Ranking by Cushman & Wakefield, 2017

2016 Rank	Index Score (100 = BEST)	Country	Electricity Cost (per KWH)	Int. Bandwidth (Megabyte/Sec)	Ease of doing business	Corporate Tax
1	100.00	Iceland	6	10	14	9
2	96.21	Norway	11	7	7	23
3	90.26	Switzerland	8	5	16	6
4	90.19	Finland	13	8	8	9
5	89.92	Sweden	22	4	6	14
6	85.07	Canada	4	16	10	22
7	**84.50**	**Singapore**	**23**	**11**	**1**	**4**
8	83.23	Korea, Rep.	2	1	2	16
9	79.81	United Kingdom	30	14	4	13
10	78.73	United States	3	15	5	36

Source: Cushman & Wakefield, KGI Research

Singapore's position as a global DC leader had been reinforced with the construction of Facebook's first DC in the APAC region. Singapore was also chosen by global DC operator, Digital Realty, as its regional headquarters.

Figure 2: KDCREIT owns 15 DCs across APAC and Europe



Source: Company

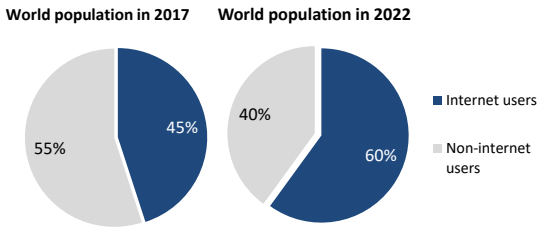
Exponential growth in global data volume

According to Cisco, global internet traffic will increase threefold from 2017 to 2022, while global data-sphere will increase fivefold by 2025.
This takes into account the entire spectrum of functions within the data sphere, from data centres to intermittent points (cell towers), to endpoints such as consumer PCs, smartphones and Internet of Things (IoT) devices.

We expect data creation and usage to be driven by:
(1) An increase in global internet users & internet traffic
(2) Greater number of connected devices per capita
(3) Wider adoption of social media networking within regions with lower penetration rates
(4) Cloud computing demand rapidly gaining momentum

(1) An increase in global internet users & internet traffic. According to Cisco, global internet users will grow at a CAGR of 5.9% from 2017 to 2022. Number of global internet users is expected to increase from 3.4 billion in 2017 to 4.8 billion in 2022.

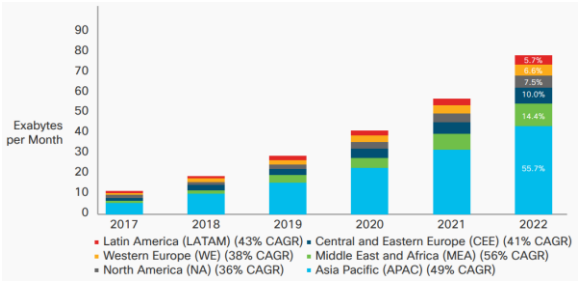
Figure 3: Global internet users as a percentage of total world population is expected to increase from 45% to 60%



Source: Cisco, KGI Research

Global internet traffic is also expected to grow exponentially compared to the number of additional new internet users. Internet traffic is anticipated to grow at a CAGR of 26% from 2017 to 2022, led primarily by developing regions within EMEA and APAC. From the perspective of individual users, this could mean that monthly total data usage will increase from 16 GB per capita in 2017 to 50 GB per capita by 2022.

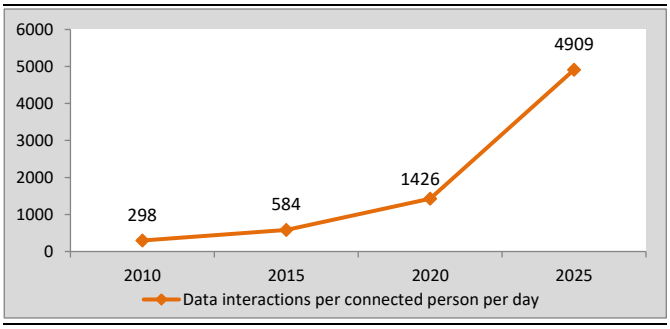
Figure 4: Global Mobile Data Traffic Forecast by Region



Source: Cisco, KGI Research

(2) Greater number of connected device per capita. Globally, the average number of connected devices per capita will grow from 2.4 in 2017 to 3.6 by 2022, led by smartphone penetration and M2M (machine to machine) devices such as home automation and smart cars. Growth in IoT devices would mean greater the number of endpoints for data creation and collection through increased digital interactions.

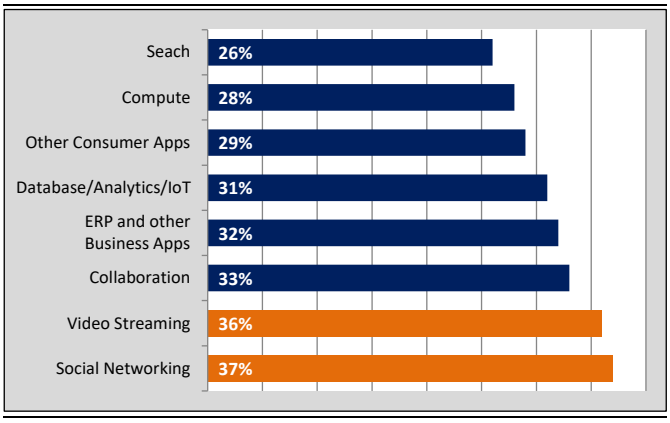
Figure 5: IDC predicts the average person will have nearly 5,000 digital interactions per day by 2025, up from the 700 to 800 or so that people average today



Source: IDC, KGI Research

(3) Wider adoption of social media and networking within regions with lower penetration rates. Tech savvy and young consumers will continue to drive demand for digital products and services globally. We expect the adoption rate for social media users and mobile social users to narrow between APAC and other regions such as America and Europe. According to Jones Lang LaSalle, APAC's penetration rate for internet users and social media users were both at 48% compared to over 70% and 60% in America. We expect the consumer trend gap to narrow between APAC, Europe and America in the future. According to Cisco, data creation and usage attributed to video streaming and social networking will be key contributors of stored data within DCs in the future.

Figure 6: End users attributing to stored data within DCs, ranked by 6 year CAGR growth (2016-2022)



Source: Cisco, KGI Research

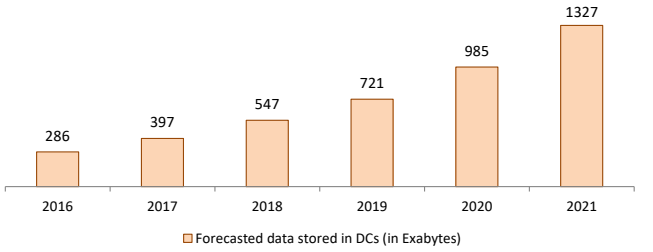
(4) Cloud computing demand rapidly gaining momentum. The global cloud infrastructure market is estimated to have grown by over 40% in 2018 and is expected to continue expanding at a CAGR of over 25% in the next five years. This is supported by the rapid growth in data creation and storage needs on the back of ongoing digital transformation trends. By 2021, 94% of workloads and compute instances will be processed by cloud DCs offering better performance, higher capacity, and greater ease of management.

The natural need for data centres to grow.

Data centres are at the crux of providing data storage, processing, analytics, and networking to the growing number of connected devices, users, and business processes in general.

As with the growing trend of data creation and maintenance, data stored within DCs globally is expected to increase at a CAGR of 29% from 2016 to 2021.

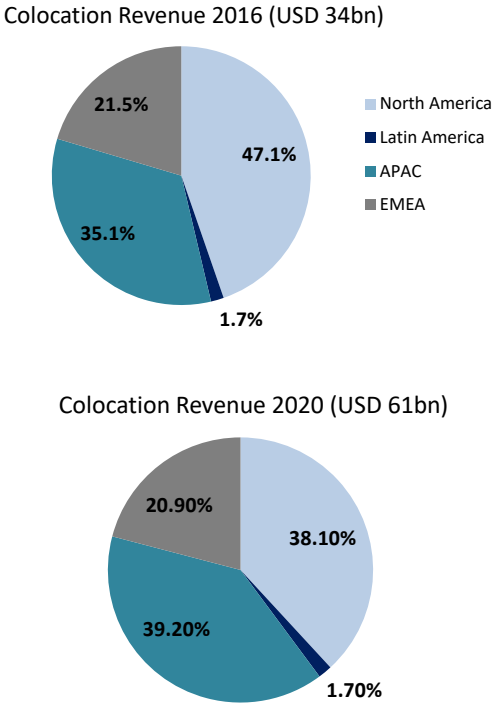
Figure 7: Forecasted data stored in DCs globally (in Exabytes)



Source: Cisco, KGI Research

The big 4 global DC hubs (Singapore, Hong Kong, Sydney and Tokyo) are within geographical proximity to APAC, the primary driver of global DC demand.

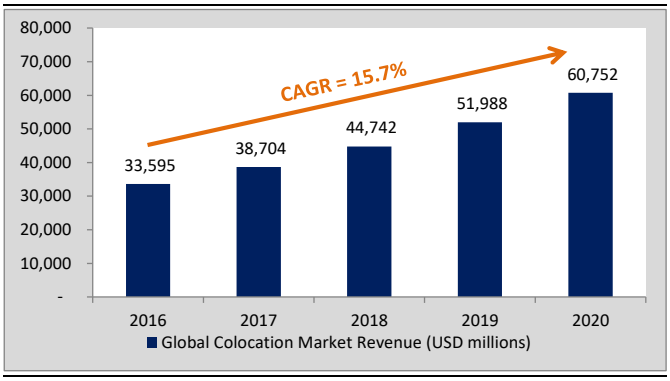
Figure 8: APAC forecasted to lead global colocation revenue in 2020.



Source: Cisco, KGI Research

We will continue to see more data, more cloud utilization and the greater need for data storage, processing and analytics. DCs will see greater utilization from cloud based enterprises and enterprises with big data business needs.

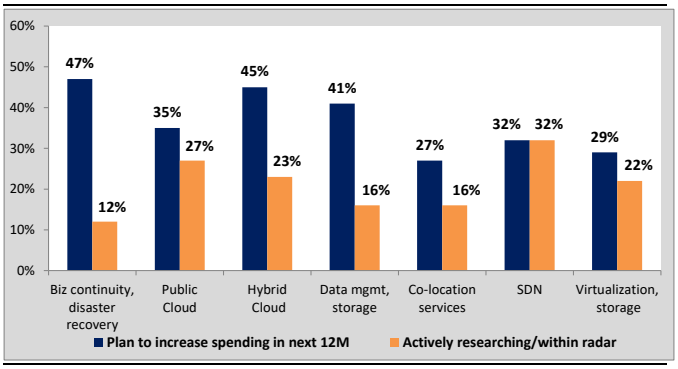
Figure 9: the global colocation market is expected to grow at a CAGR of 15.7%



Source: Jones Lang LaSalle, KGI Research

The efficient and effective use of data centre technology such as data analytics, cloud service provision, and cybersecurity tools and can add to the agility, success, and competitiveness of a business. We expect greater expenditure on data related services and cybersecurity by governments and corporates going forward.

Figure 10: Which option best describes your current activity for each of the following technology initiatives? CIO Tech Poll Results, 2018



Source: IDG, KGI Research

Yield accretive acquisitions to pave the way for growth.

We anticipate a growth in rental revenue from S$175.6mn in FY18 to S$199.8mn in FY19 due to full year contributions from KDC5 (SG) and near term contributions from ICDC 3 East (AU) which will be operational by 2020. This translates to a forecasted forward dividend yield of 5.2% for FY19.

As competition between DC providers heat up in Singapore, we anticipate more yield accretive acquisitions for overseas DCs currently held by sponsor, Keppel Data Centre. Viable near-term acquisitions would include Almere DC2 (Netherlands), which is within close proximity to Almere DC, an existing property held by KDCREIT, or the remaining 10% interest stake in local asset, KDC 3.

Future developments within the pipeline held directly or indirectly by sponsor, Keppel T&T would include:

(1) Greenfield data centre leased out to Microsoft cloud provider Azure which is scheduled for completion by 2020 in Johor, Malaysia
(2) IndoKeppel Data Centre 1, a 105,300 square feet data centre in Indonesia, anticipating completion by 1H20.
(3) Joint development of data centres under cooperation agreement with Huawei, Xiangjiang Science & Technology and DC operator Cloud Engine Network Technology.

Figure 11: Almere DC 2, an existing DC held by indirect sponsor, Keppel Data Centre, situated within close proximity to KDCREIT's Almere DC 1

Source: Company, KGI Securities

Figure 12: Artist's impression of IndoKeppel Data Centre 1

Source: Company, KGI Securities

Valuation

Our DDM valuation derived target price of S$1.62, representing an upside of 14.3%, inclusive of forward dividend yield of 5.2%. We have assumed the following assumptions for our valuation.

Revenues: We expect rental revenue to grow from S$175.5mn to S$199.8mn/S$208.8mn for FY19/FY20 driven by rental contributions from two new acquisitions, KDC5 and ICDC 3 East. Guidance was not given for when ICDC 3 East will commence operations since development work is carried out by master lessee, Macquarie Telecom.

Operating Statistics: Portfolio occupancy will remain status quo amongst all properties for all forecasted years. Without factoring in new lease renewals, portfolio WALE will improve from 8.3 years reported in 4Q18 to 8.6 years for FY19 mainly attributed to the extended lease expiry for ICDC 3 East at 20 years. Our calculated portfolio occupancy stood at 93.6% for FY19, factoring in KDC5 and ICDC 3 East, compared to the last reported figure at 93.1%.

NPI Margins: NPI margins estimated to remain the same at 89.888% for our forecast. We anticipate an upward correction going forward due to an enlarged portfolio valuation base.

Income available for distribution: Without factoring in fair value changes to property valuations going forward, our forecasted income available for distribution increased to S$116.2mn/S$117.9mn for FY19/FY20 compared to S$96.1mn for FY18.

Capital Expenditures: With the exclusion of future acquisitions, we have factored in capex of S$30mn/S$76.2mn for FY19/FY20. The higher capex for FY20 is primarily driven by development costs for IC3 East (estimated at S$26.2mn - S$36.3mn), renewal of land leases for KDC2 (SG) which will be expiring in July 2021, as well as asset enhancement initiatives for KDC Dublin 1 (IRE).

DPU: We derived a DPU of 7.7 Scts/ 7.9 Scts for FY19/FY20 based on a pay-out ratio of 90%.

Cost of Equity: We used a cost of equity of 6.72% and a conservative terminal growth rate of 1.5%.

Figure 13: Dividend Discount Model

Fiscal year ending: December 31	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26
Distribution per unit (SGD cents)	7.32	7.74	7.85	8.46	8.67	8.89	9.11	9.34	9.48
YoY Growth (%)		*5.7%*	*1.5%*	*7.7%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*	*1.5%*
Terminal value per unit (SGD cents)								182	
Cost of equity	6.72%								
Target price (SGD$)	**1.62**								
Capital Appreciation	*9.1%*								
Forward Dividend Yield	*5.2%*								
Upside/(Downside)	***14.3%***								

Source: IDG, KGI Research

Figure 14: Operating Statistics (2015A-2021F)

	Keppel DC 1	Keppel DC 2	Keppel DC 3	Keppel DC 5	Basis Bay DC	Gore Hill DC	ICDC 2	Iseek DC	ICDC 3 East	Cardiff DC	GV7 DC	Almere DC	KDC Dublin 1	KDC Dublin 2	Milan DC	Maincubes DC
Location	Singapore	Singapore	Singapore	Singapore	Cyberjaya, MSIA	Sydney	Sydney	Brisbane	Sydney	Cardiff, UK	London, UK	Almere, NL	Dublin	Dublin	Milan, IT	Offenbach, DE
Lease Type	Colocation	Colocation	Colocation	Colocation	Colocation	Triple-net/Colocation	Triple-net	Double-net	Triple-net	Triple-net	Triple-net	Double-net	Colocation	Colocation	Double-net	Triple-net
Land Tenure	Leasehold, 2025	Leasehold, 2021	Leasehold, 2022	Leasehold, 2041	Freehold	Freehold	Freehold	Leasehold, 2040	Freehold	Freehold	Leasehold, 2183	Freehold	Leasehold, 2041	Leasehold, 2997	Freehold	Freehold
No. of clients	17	4	2	3	1	3	1	1	1	1	1	1	17	4	1	1
NLA (sq ft)																
2016A	109,711	37,098			48,680	90,955	87,930	12,389		79,439	24,972	118,403	68,118		165,389	126,800
2017A	109,721	37,098	49,433		48,193	90,955	87,930	12,389		79,439	24,972	118,403	68,118	25,200	165,389	126,800
2018A	109,721	37,098	49,433	97,781	48,193	90,955	87,930	12,389		79,439	24,972	118,403	68,118	25,127	165,389	97,043
2019F	109,721	37,098	49,433	97,781	48,193	90,955	87,930	12,389		79,439	24,972	118,403	68,118	25,127	165,389	97,043
2020F	109,721	37,098	49,433	97,781	48,193	90,955	87,930	12,389	86,000	79,439	24,972	118,403	68,118	25,127	165,389	97,043
2021F	109,721	37,098	49,433	97,781	48,193	90,955	87,930	12,389	86,000	79,439	24,972	118,403	68,118	25,127	165,389	97,043
Occupancy (%)																
2016A	85%	100%			100%	100%	100%	100%		100%	100%	100%	56%		100%	100%
2017A	85%	100%	100%		63%	100%	100%	100%		100%	100%	100%	57%	87%	100%	100%
2018A	87%	100%	100%	84%	63%	100%	100%	100%		100%	100%	100%	61%	91%	100%	100%
2019F	87%	100%	100%	84%	63%	100%	100%	100%		100%	100%	100%	61%	91%	100%	100%
2020F	87%	100%	100%	84%	63%	100%	100%	100%	100%	100%	100%	100%	61%	91%	100%	100%
2021F	87%	100%	100%	84%	63%	100%	100%	100%	100%	100%	100%	100%	61%	91%	100%	100%
KDC's Interest (%)																
2016A	100%	100%			99%	100%	100%	100%		100%	100%	100%	100%		100%	100%
2017A	100%	100%	90%		99%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%
2018A	100%	100%	90%	99%	99%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%
2019F	100%	100%	90%	99%	99%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%
2020F	100%	100%	90%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2021F	100%	100%	90%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
WALE (years)																
2016A	3.2	4.3			0.5	7.9	18.6	9.5		14.5	10.1	11.7	2.4		11	15
2017A	4.1	3.3	4.4		4.5	7.3	17.6	8.5		13.5	9.1	10.7	1.9	10.7	10	15
2018A	3.2	2.6	3.4	2.8	3.5	6.4	16.6	7.5		12.5	8.1	9.7	1.7	9.7	9	14.3
2019F	2.2	1.6	2.4	1.8	2.5	5.4	15.6	6.5		11.5	7.1	8.7	0.7	8.7	8	13.3
2020F	1.2	0.6	1.4	0.8	1.5	4.4	14.6	5.5	20	10.5	6.1	7.7	-	7.7	7	12.3
2021F	0.2	-	0.4	-	0.5	3.4	13.6	4.5	19	9.5	5.1	6.7	-	6.7	6	11.3
Property Value (S$m)																
2016A	279	176	208		35	220	49	35		60	68	138	81		57	129
2017A	286	166	224		31	204	51	34		62	68	144	77	109	59	135
2018A	287	169	231	317	28	208	54	35		65	64	139	77	105	57	136
2019F	287	169	231	317	28	208	54	35		65	64	139	77	105	57	136
2020F	287	169	231	317	28	208	54	35	49	65	64	139	77	105	57	136
2021F	287	169	231	317	28	208	54	35	49	65	64	139	77	105	57	136

Revenue by geographical region (S$m / %)

	Singapore	Australia	Ireland	UK	Others	Total	Singapore	Australia	Ireland	UK	Others	Total
2016A	40.7	28.3	10.9	6.5	12.8	99.1	41%	29%	11%	7%	13%	100%
2017A	69.4	27.0	14.1	10.6	18.0	139.1	50%	19%	10%	8%	13%	100%
2018A	85.8	30.4	22.6	10.8	25.9	175.5	49%	17%	13%	6%	15%	100%
2019F	101.7	32.4	24.4	10.8	30.6	199.8	51%	16%	12%	5%	15%	100%
2020F	101.7	36.6	24.4	10.8	34.5	208.0	49%	18%	12%	5%	17%	100%
2021F	101.7	48.2	24.4	10.8	34.5	219.7	46%	22%	11%	5%	16%	100%

*Source: KGI Research * Grey areas represent the absence of a property during the corresponding financial year**

Peer Comparison

We compare KDCREIT to other Singapore listed industrial REITs and global REITs in the operations of data centres. We highlight that Mapletree Industrial Trust may be the most direct peer within the S-REITs sector, indirectly owning 14 data centres in US, with a 16% portfolio exposure to the data centre segment. Most other Singapore listed S-REITs own a diversified portfolio of industrial assets across segments such as business parks and flatted factories.

This may be the reason why KDCREIT (forward FY19 P/B ratio = 1.4x) is trading at a premium compared to other local industrial REITs (average P/B ratio at 1.2x). Forward dividend yield at 5.2%, is however, still comparable to local peers such as Mapletree Logistics Trust (5.4%) and Ascendas REIT (5.4%).
Other global players such as Equinix do not fall under a REIT structure and are not as comparable from a dividend yield and P/B ratio stand point.

Figure 15: Local and global peer comparables

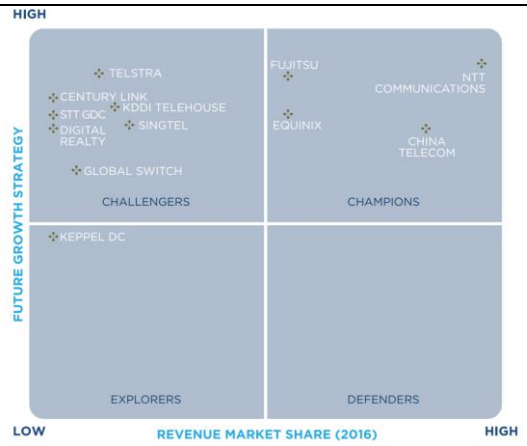
Company Name	Last Price (local $)	Currency Adj. Market Cap (US$ m)	Dividend Yield (%)		Gearing (%)	P/B (x)		6M Average daily trading volume (S$ '000)	YTD Price Performance (%)	1YR Price Performance (%)	1YR Total Returns (%)
			FY18	FY19F		FY18	FY19F				
KEPPEL DC REIT	**SGD 1.48**	**1,479**	**5.4**	**5.3**	**32.4**	**1.3**	**1.4**	**4,485**	**9.6**	**24.5**	**12.4**
SINGAPORE LISTED INDUSTRIAL REITS											
ASCENDAS REAL ESTATE INV TRT	SGD 2.95	6,783	6.1	5.4	35.1	1.2	1.3	29,505	14.8	11.0	14.0
MAPLETREE INDUSTRIAL TRUST	SGD 2.11	3,152	5.8	5.7	30.5	1.4	1.4	6,934	10.5	13.6	13.1
MAPLETREE LOGISTICS TRUST	SGD 1.47	3,936	6.2	5.4	39.7	1.1	1.3	13,932	16.7	29.4	18.4
FRASERS LOGISTICS & INDUSTRI	SGD 1.16	1,736	6.4	5.8	35.4	1.1	1.3	6,660	12.6	13.0	12.6
AIMS APAC REIT MANAGEMENT LT	SGD 1.42	725	7.6	7.3	34.4	1.0	1.0	677	6.8	-1.1	8.7
SOILBUILD BUSINESS SPACE REI	SGD 0.63	490	9.1	8.2	38.8	0.9	0.9	472	7.8	-13.0	10.4
CACHE LOGISTICS TRUST	SGD 0.75	597	8.5	7.7	36.6	0.9	1.1	1,341	7.9	-19.2	10.2
ESR-REIT	SGD 0.55	1,278	7.6	8.1	43.7	1.1	1.2	1,576	6.9	0.1	8.6
EC WORLD REIT	SGD 0.77	449	9.0	8.2	40.8	0.8	0.9	189	10.9	0.0	13.2
SABANA SHARIAH COMP IND REIT	SGD 0.41	319	8.2	-	37.4	0.7	-	248	5.1	-6.5	6.9
Average		**1,946**	**7.4**	**6.9**	**37.3**	**1.0**	**1.2**	**6,153**	**10.0**	**2.7**	**11.6**
Median		**1,002**	**7.6**	**7.3**	**37.0**	**1.0**	**1.2**	**1,458**	**9.2**	**0.0**	**11.5**
GLOBAL LISTED DATA CENTRE STOCKS											
EQUINIX INC	SD 462.01	38,674	2.6	2.1	61.1	5.2	5.1	231,417	31.0	17.5	31.8
CORESITE REALTY CORP	SD 109.40	5,274	4.7	4.1	77.2	31.5	15.3	34,598	25.4	31.8	26.7
DIGITAL REALTY TRUST INC	SD 121.66	26,613	3.8	3.5	50.5	2.9	2.8	165,758	14.2	17.8	15.3
QTS REALTY TRUST INC-CL A	JSD 45.63	2,527	4.4	3.8	50.9	8.8	2.3	20,617	23.2	-21.9	24.4
CYRUSONE INC	JSD 54.39	5,892	3.5	3.5	54.4	2.6	2.5	58,793	2.9	2.0	3.8
SWITCH INC - A	JSD 10.93	2,700	0.8	0.6	46.1	18.8	3.7	11,530	56.1	-48.6	56.6
NEXTDC LTD	AUD 6.16	1,510	0.0	0.0	25.4	2.4	2.4	16,135	0.7	60.5	1.0
Average		**11,884**	**2.8**	**2.5**	**52.2**	**10.3**	**4.9**	**76,978**	**21.9**	**8.5**	**22.8**
Median		**5,274**	**3.5**	**3.5**	**50.9**	**5.2**	**2.8**	**34,598**	**23.2**	**17.5**	**24.4**

Source, KGI Research

Key Risks

Oversupply risks as data centres continue to proliferate locally, as region specific DC leaders seek to strengthen position in Singapore.
Future supply looks ample as global players such as Equinix expand aggressively within Singapore. As an important DC hub within the APAC region, regional players such as Telstra (Australian DC provider) have been trying to anchor their position within Singapore.

Figure 16: KDCREIT's competitors as visualized in Frost IQ Matrix of DC Providers in APAC, 2017



Source: Frost & Sullivan, KGI Research

Redevelopment works could ramp up short term supply. Uneven recovery across the industrial sector saw certain REITs redeveloping selected properties as Hi-tech buildings or data centres. Mapletree Industrial Trust (MINT SP) recently acquired a warehouse at 7 Tai Seng Drive and is enhancing the property into a data centre with total GFA of 256,600 sqft. Once completed in 2H19, the property will be fully leased to foreign data centre player Equinix for an initial term of 25 years. With the overall vacancy rate within the local industrial sector forecasted to rise from 10.7% as of 4Q18 to over 12% in FY20, industrial players with underperforming properties may also turn to redevelopment if 7 Tai Seng Drive turns out to be a success story.

Figure 17: 7 Tai Seng Drive property that was previously a 20 year old seven-story warehouse will be redeveloped into a data centre.

Source: Business Times, KGI Research

We view 'unknown future data centre supply' as one of the biggest risk in the short to mid-term time frame as approximately half of KDC's total revenue is derived from Singapore data centres. Negative rental reversions continue to be a risk within KDC's exposure in Singapore.

Exchange rate and Interest rate risk.
The vast majority (77%) of KDC's borrowings is denominated in the currencies matching geographical operations, and 86% of all borrowings are hedged on a fixed rate. We do not see rising interest rates as a risk as weighted average interest rate was at a low of 1.9% with interest coverage ratio reported to be at 11.4x.

Approximately half of total rental income is derived in foreign currencies (Euro, Pound, and Ringgit). Based on Bloomberg's 1 year forward consensus, the Euro, Pound and Ringgit are expected to move 2.3%, 1.0% and -1.0% against the SGD. We are more concerned about exchange rate fluctuations given uncertainties in the near term outcome of geopolitical events such as trade war, Brexit, European sovereign debt crisis to name a few.

Government regulations.
Data protection had been a top priority within the agenda list of governments.
• China implemented its Cyber Security Law in June 2017.
• Indonesia implemented a regulation that by October 2017 all offshore data connected to personal and business information should be kept onshore.
• The Ministry of Information and Communication in Vietnam recently enacted cybersecurity law effective 1 Jan 2019.

The only expectation would be for tighter laws governing data security and protection going forward, and also one that DC operators should keep close tabs on. An out breach of data security and protection might not only mean a potential law suit but may act as a going concern for DC providers as other tenants may seek early termination.

Tenure renewals for local DCs.
Two local data centres, KDC 2 and KDC 3 will see lease tenure expiring in 2021 and 2022. As such additional renewal costs amounting to S$10mn will be expected to renew these tenures.

Company Overview

First pure-play data centre REIT listed in Asia.
KDCREIT is the first pure-play DC REIT listed in Asia. The REIT invests, directly or indirectly, in a geographically diversified portfolio of income-producing data centres with an initial focus on APAC and Europe.

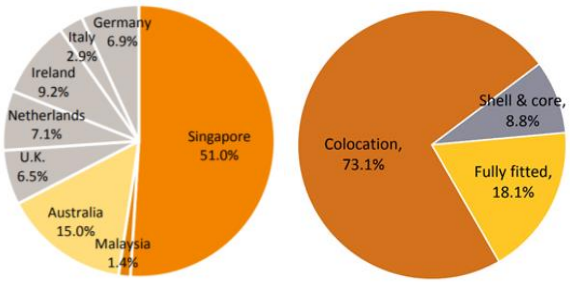
As at 31 December 2018, the REIT had AUM valued at approximately S$2.0bn, comprising 15 data centres strategically located in key data centre hubs. The REIT manager seeks to capture value and sustainable shareholder returns via a three-pronged approach: (1) Focused investment strategy (2) Proactive asset management, and (3) Prudent capital management.

Property Portfolio.
KDCREIT's portfolio property consists of 15 high-quality DCs within APAC and Europe spanning a total NLA of 1,111,991 sqft. ICDC 3 East (Sydney, AU) is an upcoming asset that is currently under development and scheduled to be completed in by 2020. Development costs for the asset falls between S$26.2mn and S$36.3mn and will be borne by KDC upon completion. By benchmarking against ICDC 2 (KDC's existing DC within the same business park in Sydney), we expect valuation of ICDC 3 East to fall between S$48.5mn and $53.9mn.

Portfolio tenants originate mostly from three main sectors on a rental income basis, internet enterprise (46.5%), IT services (24.1%) and telecoms (19.8%). The colocation segment is the single biggest contribution to rental income at 73.1%, followed by fully fitted (18.1%) and shell & core (8.8%).

Portfolio WALE by NLA stood at 8.3 years as of end Dec 2018 and occupancy rate at 93.1%. We expect WALE to be extended after accounting for the addition of ICDC 3 East, which will see an initial lease term of 20 years. We anticipate aggregate rent rates to remain flattish, on the knowledge that less than 5% of all leases will be due for expiry per year until end 2020. On a side note, ten out of 15 DCs owned by the REIT were at full occupancy as at end FY18, leaving room for organic growth if KDCREIT were to convert potential prospects.

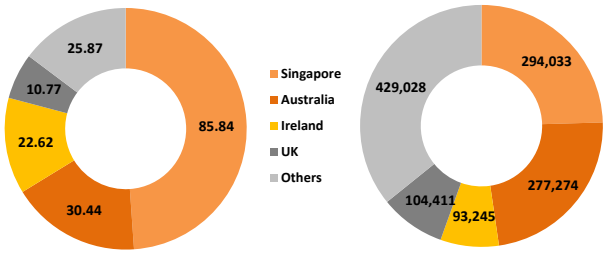
Figure 18: AUM breakdown based on geographical location (LHS), DC segment type (RHS), DC segment characteristics table (bottom)



Lease Type	Client Count	WALE[2] (years)	Ownership of Data Centre Components		
			M&E Equipment	Facility Management	Servers & Racks
Colocation	Multi	3.3	✓	✓	-
Fully fitted	Single	11.2	✓	-	-
Shell & core	Single	11.1	-	-	-

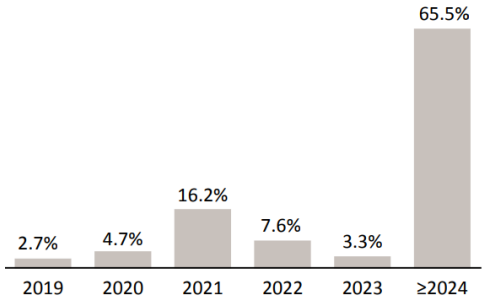
Source: Company, KGI Research

Figure 19: Rental revenue (LHS, in SGD millions) and NLA (RHS, sqft) by geographical breakdown in FY18



Source: Company, KGI Research

Figure 20: Lease expiry profile by NLA at 31 Dec 2018, Wale of 8.3 years



Source: Company, KGI Research

Debt Maturity Profile.

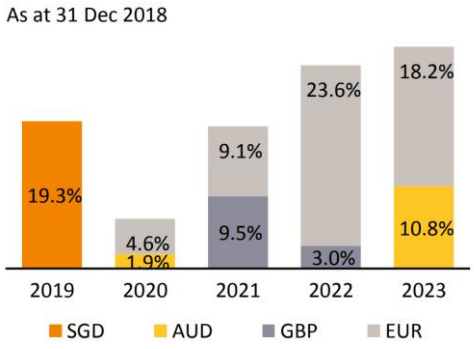
Majority (86%) of all loans are hedged on a fixed rate limiting exposure to interest rate risks. Overall leverage of 30.8% stood at a moderately low rate. The ample debt headroom would allow KDCREIT to pursue near term acquisitions if suitable opportunities do arise. Approximately one-fifth (19.3%) of total debt held by KDCREIT will be due for refinancing this year and management communicated that they will likely be refinancing at a comparable rate.

The sponsor – Keppel T&T

The REIT is managed by Keppel DC REIT Management Pte. Ltd. (the manager), which is jointly owned by Keppel Capital (50% stake) and Keppel Corp subsidiary, Keppel Telecommunications & Transportation Ltd (50% stake).

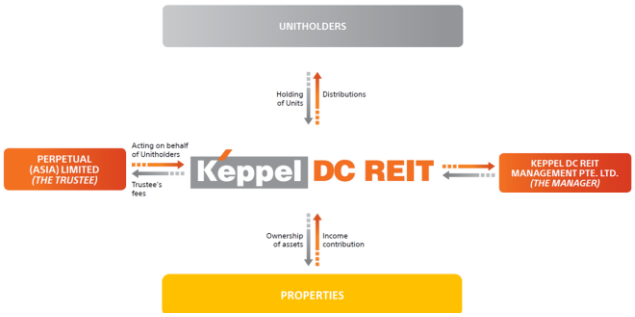
Keppel Capital is a premier asset manager in Asia with AUM of approximately S$29 bn comprising real estate, infrastructure and data centre properties. As the Sponsor of the REIT, Keppel T&T has also granted Rights of First Refusal (ROFR) to the REIT for future acquisition opportunities of its data centre assets. Keppel T&T manages four separate DCs that were not listed under KDCREIT, Keppel DC 4 (SG), Almere DC 2 (Netherlands), Keppel DC Frankfurt 1 and PCCW Global-Keppel International Carrier Exchange (HK). The former two DCs are located within close proximity to existing data centres held by KDCREIT, and could be viewed as viable future acquisitions.

Figure 21: Debt maturity profile as at 31 Dec 2018



Source: Company, KGI Research

Figure 22: KDCREIT organization structure



Source: Company, KGI Research

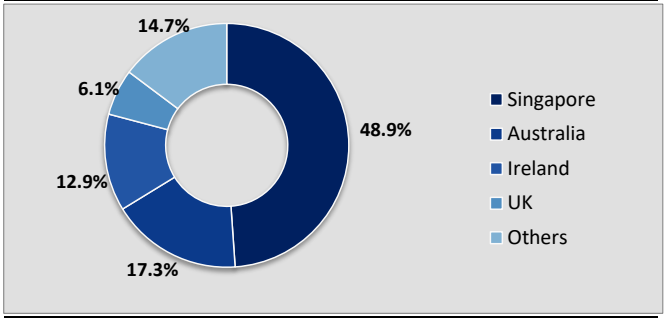
Company Snapshot

Figure 23: Company profile

Keppel Data Centre Real Estate Investment Trust (KDCREIT) is a Singapore real estate investment trust (REIT) listed on Singapore Exchange Securities Trading Limited (the SGX-ST) since 10 December 2014. Its investment strategy is principally to invest in a portfolio of income-producing data centres globally. The REIT is managed by Keppel DC REIT Management Pte. Ltd., (the Manager) which is partly owned by the Sponsor, Keppel Telecommunications & Transportation Ltd (Keppel T&T), part of the Keppel Group.

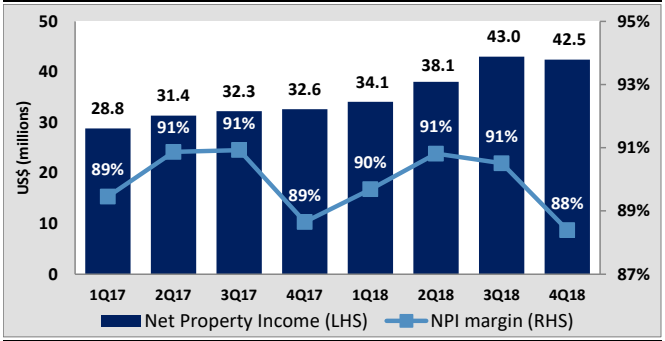
Source: Company

Figure 24: Portfolio breakdown by NLA



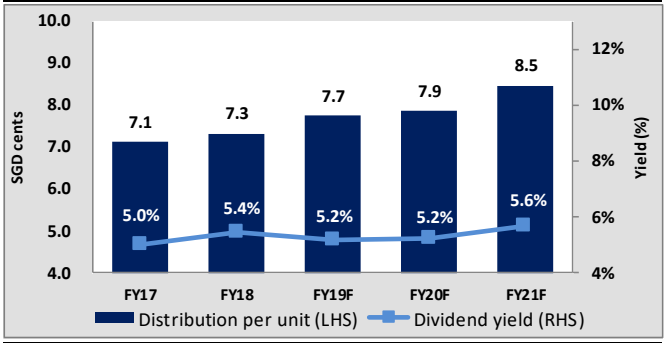
Source: Company Data, KGI Research

Figure 25: NPI vs NPI margins



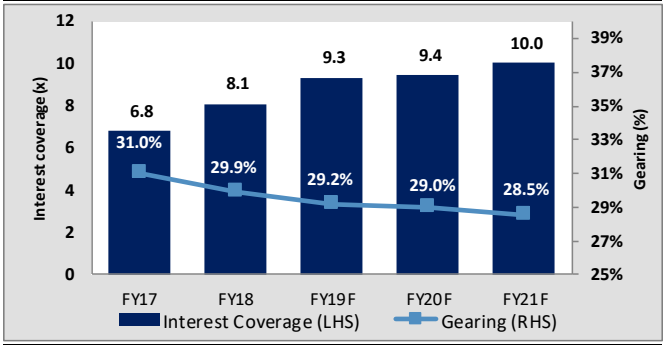
Source: Company Data, KGI Research

Figure 26: DPU and Dividend yield



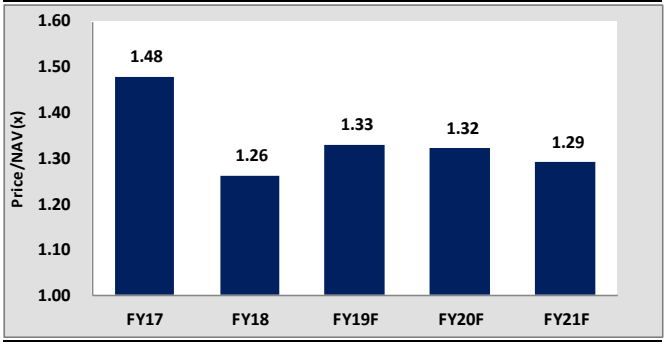
Source: Company Data, KGI Research

Figure 27: Interest coverage and gearing



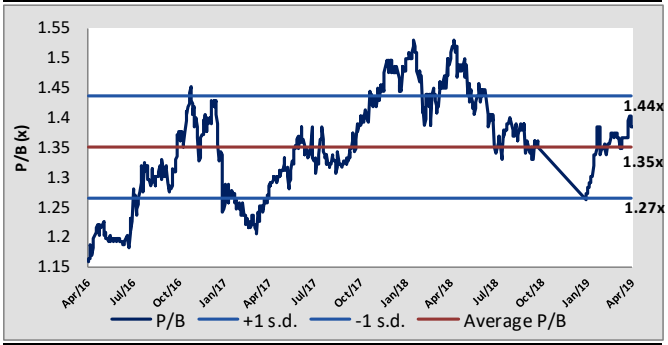
Source: Company Data, KGI Research

Figure 28: Price/NAV



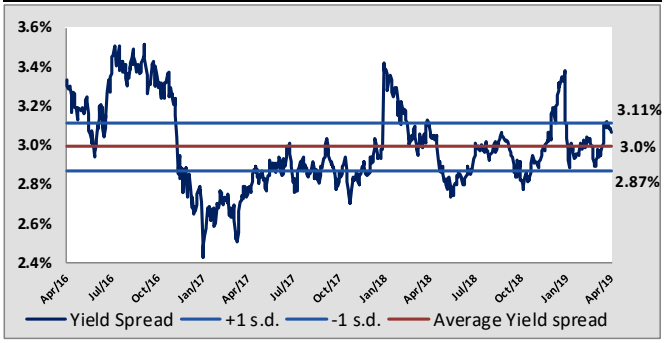
Source: Company Data, KGI Research

Figure 29: Historical 3 year P/B band



Source: Bloomberg, KGI Research

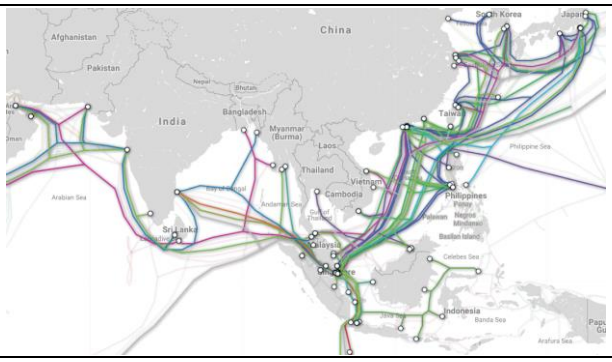
Figure 30: Share price performance against benchmark index



Source: Bloomberg, KGI Research

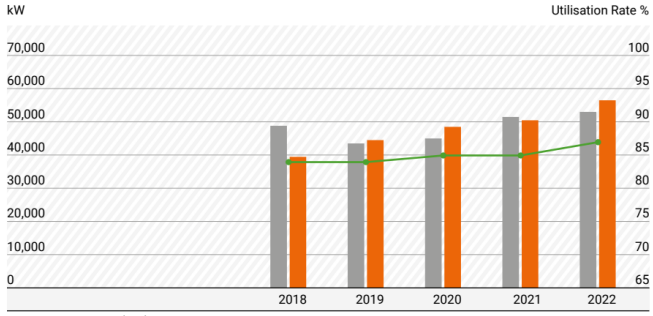
Singapore data centre market outlook

Figure 31: Singapore's subsea cable connections in key regional markets



Source: Submarine Cable Map, KGI Research

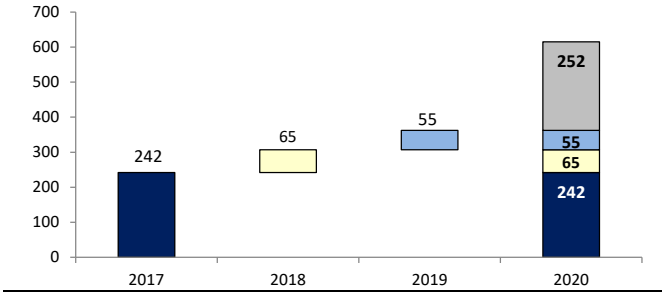
Figure 32: Data Centre supply, demand and utilization in Singapore



	2018	2019	2020	2021	2022
Supply Added (kW)	48,822	43,516	45,018	51,486	53,006
New Demand (kW)	39,488	44,512	48,506	50,474	56,501
Utilisation Rate (%)	84	84	85	85	87

Source: Company, KGI Research

Figure 33: Existing supply stock and future pipeline (sqm' 000s)



Source: Structure Research, Colliers, Cushman & Wakefield, KGI Research

Figure 34: Known future supply pipeline

Operator	Location	Size (sqm)	IT Power (MW)	Stage/Est Delivery
STT	Defu 2	14,401	12	Completed/ Q4 2018
	Loyang	27,000	30	Under Construction / Q2 2020
Global Switch	Woodlands	25000	18	Completed/ Q4 2018
Iron Mountain	Serangoon	14200	6	Under Construction / Q2 2019
China Mobile	Tai Seng	17490	12	Under Construction / Q2 2019
Equinix	SG4	23800	25 (est)	Under Construction / Q4 2019
Google	Jurong West	21410	25 (est)	Under Construction / Q2 2020
Digital Realty	Digital Loyang	34000	50	Under Construction / Q3 2020
Facebook	Tanjong Kling	170000	150	Under Construction / Q2 2020

Source: Cushman & Wakefield, KGI Research

Figure 35: Recent Singapore data centre sales

Property	Size (sqm)	Sale Date	Sale Price	Buyer	Seller
9 Tai Seng Dr	20,337	Jan'19	S$ 99.6 mn	Ascendas-Singbridge Group	Sabana REIT
13 Sunview Way	9,176	Jun'18	S$ 309.6 mn	Keppel DC REIT	Kingsland Development, Nylect Engineering
1 Serangoon North Ave 6	14,214	Mar'18	S$ 80,5 mn	Iron Mountain	Credit Suisse

Source: Cushman & Wakefield, KGI Research

Singapore as a strategic data centre hub. Approximately 97% of all transoceanic data traffic goes through subsea cables, including our everyday internet usage, phone calls and text messages. This transmission method is also up to eight-fold faster than your usual satellite transmissions. According to Cushman & Wakefield, another four subsea cables are scheduled to be completed by 2020, bringing the total number of cable linkage to 27. New routes will connect Singapore to the rest of SEA, Australia and the US.

For instance, SJC2 (Southeast Asia – Japan 2) has signed an agreement with NEC Corporation to construct a 10,000km long subsea cable connecting Singapore to 10 other regional locations. The new subsea cable will feature up to eight fibre pairs of high capacity optical fibre with initial design capacity of 144 Terabits per second. The high capacity will support high bandwidth intensive digital activities such as IoT, robotics, analytics and virtual reality uses amongst others.

Government-led initiatives to contribute to the demand side of the equation. According to Jones Lang LaSalle, Singapore's 370 MW IT power supply for data centres is the largest in the world, followed by Tokyo (315 MW), Hong Kong (285 MW) and Sydney (197 MW). Singapore's Smart Nation Initiative should allow it to further expand power supply by 100 MW. The Smart Nation projects aim to drive pervasive adoption of digital and smart technologies. Key milestones had been set for 6 distinct categories, namely digital identity, e-payments, smart sensors, urban mobility, moments of life (digitization of services a person needs throughout one's lifetime) and integration functions. This is not withstanding other digitization initiatives aimed at cultural and innovation purposes such as 'Living Laboratory' program which umbrellas both RIE2020 (Research, Innovation and Enterprise 2020) and AI Singapore and other government-led start up accelerators such as JTC Launchpad.

Concerns of future supply over flagged. A report by Structure Research showed that local data centre supply totalled 242,000 sqm as of 4Q17, contributed by a total of 33 data centres island wide. Known supply stock is expected to double between 2017 and 2020, however, 46% of pipeline stock supply will originate from Facebook's first data centre in APAC. Facebook's 170,000 sqm data centre in Tanjong Kling is scheduled to be completed in 2Q20.

We anticipate local players to continue to have an edge over foreign players, such as Digital Realty and Equinix, due to long standing landlord-tenant relationship and better local market knowledge. Case in point is that Jurong Town Council owns 90% of all industrial spaces in Singapore and would have the final decision as to where new data centre land supply would be allocate. New demand in Singapore is estimated to grow at a CAGR of 9.4% between 2018 and 2022. Average utilisation rate was 84% as at end-2018, and is expected to increase to 87% in 2022.

Financial forecast

Figure 36: Forecasted Financials (2016A – 2020F)

INCOME STATEMENT (SGD mn)	2017A	2018A	2019F	2020F	2021F
Gross revenue	**139.1**	**175.5**	**199.8**	**208.0**	**219.7**
Property expenses	(13.9)	(17.9)	(20.3)	(21.2)	(22.4)
Net property income	**125.1**	**157.7**	**179.5**	**186.8**	**197.3**
REIT Manager's fees	(11.3)	(14.0)	(14.1)	(14.3)	(14.3)
REIT Trustee's fees	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Net interest expense	(13.3)	(15.8)	(15.8)	(15.7)	(15.8)
Other expenses	(15.1)	(9.2)	(10.4)	(15.9)	(16.5)
Net profit/(loss)	**85.2**	**118.4**	**138.8**	**140.7**	**150.4**
Change in fair value - investment ppty	(7.6)	32.6	0.0	0.0	0.0
Total return before tax	**77.6**	**151.0**	**138.8**	**140.7**	**150.4**
Income tax	(7.3)	(5.0)	(4.6)	(4.7)	(5.0)
Total return after tax	70.3	146.0	134.2	136.0	145.4
Distributable income for the period	**82.3**	**96.1**	**116.2**	**117.9**	**127.1**

BALANCE SHEET (SGD mn)	2017A	2018A	2019F	2020F	2021F
Cash and cash equivalents	118.2	128.4	155.3	135.0	168.5
Trade and other receivables	56.2	85.7	97.6	101.6	107.3
Other current assets	3.7	6.1	6.1	6.1	6.1
Total current assets	**178.1**	**220.2**	**259.0**	**242.7**	**281.9**
Investment properties	1,570.1	2,028.7	2,048.0	2,076.5	2,078.5
Intangibles, others	15.1	4.0	0.8	0.8	0.8
Total assets	**1,763.3**	**2,252.9**	**2,307.7**	**2,320.0**	**2,361.2**
Trade and other payables	48.2	53.2	60.6	63.1	66.6
Other current liabilities	0.0	0.0	0.0	0.0	0.0
Total current liabilities	**48.2**	**53.2**	**60.6**	**63.1**	**66.6**
LT Borrowings	546.9	673.1	673.1	673.1	673.1
Other non-current liabilities	51.7	50.6	50.6	50.6	50.6
Total liabilities	646.8	776.9	784.3	786.8	790.3
Unitholders' funds and reserves	1,116.5	1,476.0	1,523.4	1,533.2	1,570.9
Total liabilities and equity	**1,763.3**	**2,252.9**	**2,307.7**	**2,320.0**	**2,361.2**

CASH FLOW STATEMENT (SGD mn)	2017A	2018A	2019F	2020F	2021F
Total return before tax	**70.3**	**146.0**	**134.2**	**136.0**	**145.4**
Depreciation & Amortisation	7.3	5.0	4.6	4.7	5.0
Other non-cash adjustments	43.8	(7.5)	23.2	23.0	23.1
Changes in working capital	1.1	(29.9)	(4.5)	(1.5)	(2.2)
Taxes paid	(4.7)	(1.7)	(1.7)	(1.7)	(1.7)
Cash flows from operations	**117.8**	**111.9**	**155.8**	**160.5**	**169.7**
Capital expenditure	(305.1)	(447.1)	(30.0)	(76.2)	(30.0)
Acquisition of investment properties	0.0	0.0	0.0	0.0	0.0
Other investing cashflow	0.0	(0.8)	0.0	0.0	0.0
Cash flows from investing	**(305.1)**	**(447.9)**	**(30.0)**	**(76.2)**	**(30.0)**
Borrowings raised / (repaid)	84.9	129.3	0.0	0.0	0.0
Equity raised / (bought back)	(0.9)	302.7	0.0	0.0	0.0
Dividends paid	(74.3)	(84.8)	(98.9)	(104.6)	(106.1)
Other financing cashflow	(1.4)	(2.3)	0.0	0.0	0.0
Cash flows from financing	**8.3**	**344.9**	**(98.9)**	**(104.6)**	**(106.1)**
FX Effects, Others	(0.2)	1.1	0.0	0.0	0.0
Net increase in cash	**(179.3)**	**10.0**	**26.9**	**(20.3)**	**33.5**
Beginning Cash	294.0	116.1	128.4	155.3	135.0
Ending cash	**114.7**	**126.1**	**155.3**	**135.0**	**168.5**

KEY RATIOS	2017A	2018A	2019F	2020F	2021F
DPS (SGD cents)	7.1	7.3	7.7	7.9	8.5
Dividend yield (%)	4.98	5.42	5.16	5.24	5.64
NAV per share (SGD cents)	1.0	1.1	1.1	1.1	1.2
Price/NAV (x)	1.5	1.26	1.33	1.3	1.3
Profitability (%)					
NPI Margin	90.0	89.8	89.8	89.8	89.8
Net Margin	50.5	83.2	67.2	65.4	66.2
ROE	6.4	10.1	8.8	8.9	9.3
ROA	4.0	6.5	5.8	5.9	6.2
Financial Structure					
Interest Coverage (x)	6.8	8.1	9.3	9.4	10.0
Gearing (%)	31.0	29.9	29.2	29.0	28.5

Source: KGI Research

Appendix: Data centre market outlook in selected cities

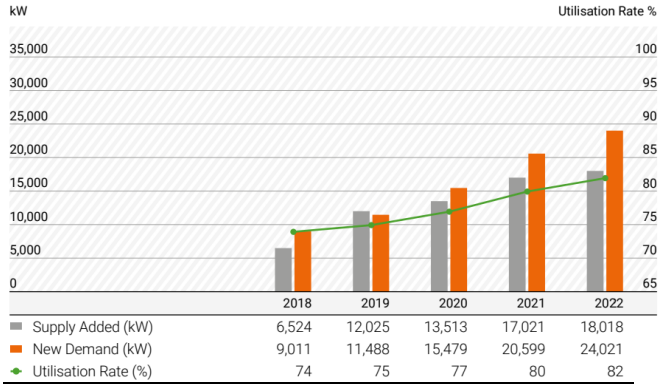
Figure 37: Cyberjaya, Malaysia

Cyberjaya, Malaysia. The Malaysian data centre market continues to face competition from neighbouring Singapore. Perceived political uncertainty within the country has contributed to the softening market. In 2018, Microsoft and Alibaba announced expansion plans in Malaysia. This could

This could attract demand from other cloud players as well as Chinese companies looking to enter the Malaysian market. The Malaysian data centre market also stands to benefit from the growth of its neighbour's data centre market by offering lower cost alternative disaster recovery and backup sites to users in Singapore.in Singapore.New demand in Cyberjaya is estimated to grow at a CAGR of 27.8% between 2018 and 2022, and the average utilisation rate was 74% as at end-2018.

Source: BroadGroup Consulting, Company, KGI Research

Figure 38: Data Centre Supply/Demand/Utilisation in Cyberjaya



	2018	2019	2020	2021	2022
Supply Added (kW)	6,524	12,025	13,513	17,021	18,018
New Demand (kW)	9,011	11,488	15,479	20,599	24,021
Utilisation Rate (%)	74	75	77	80	82

Source: BroadGroup Consulting, Company Data, KGI Research

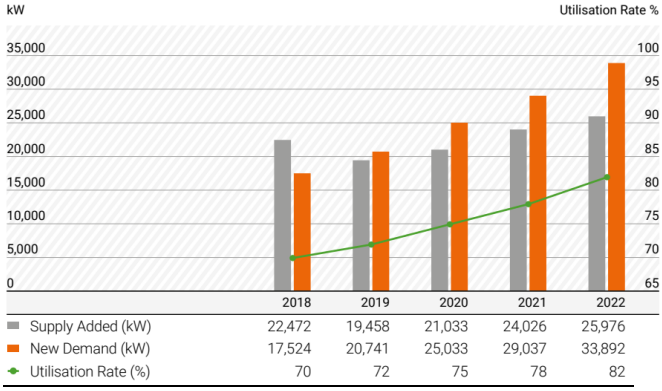
Figure 39: Sydney, Australia

Sydney is a key data centre hub of Australia and is also ranked among the top five colocation markets in Asia Pacific alongside Singapore, Hong Kong, Tokyo and Shanghai. As the choice business destination for cloud providers, multinational organisations and telecommunications companies, Sydney presents an attractive and robust data centre ecosystem, supported by its business-friendly environment, strategic geographical location and strong national broadband infrastructure.

Colocation facilities are well-established in the market, encouraged by the government's outsourcing of data centre requirements and its adoption of cloud computing, as well as strong demand from Australian firms on the back of data sovereignty rules in the country. New demand in Sydney is estimated to grow at a CAGR of 17.9% between 2018 and 2022, and the average utilisation rate was 70% at end-2018.

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 40: Data Centre Supply/Demand/Utilisation in Sydney



	2018	2019	2020	2021	2022
Supply Added (kW)	22,472	19,458	21,033	24,026	25,976
New Demand (kW)	17,524	20,741	25,033	29,037	33,892
Utilisation Rate (%)	70	72	75	78	82

Source: BroadGroup Consulting, Company Data, KGI Research

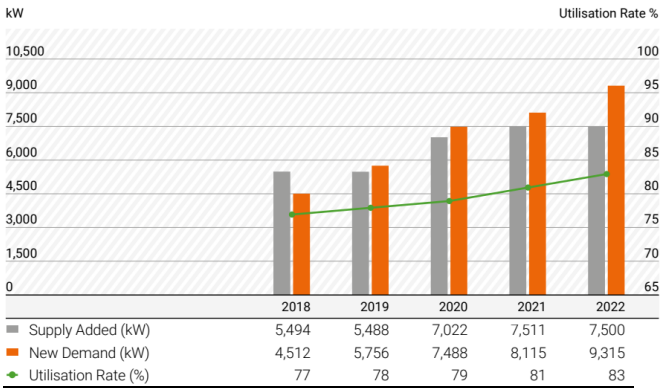
Figure 41: Brisbane, Australia

The data centre market in Brisbane is driven by demand from local companies and government agencies looking for lower-cost alternatives to colocation in larger Australian cities. Cloud providers have also been strong drivers of data centre demand in Brisbane due to the high cloud adoption rates in Australia.

Connectivity into Brisbane will be greatly enhanced in 2019 with the completion of the Japan-Guam-Australia subsea cable spanning over 9,500 km. Demand growth is expected to be led by hyperscale cloud providers, IT and financial services firms, as well as other regional players across various industries. New demand in Brisbane is estimated to grow at a CAGR of 19.9% between 2018 and 2022, and the average utilisation rate was 77% at end-2018.

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 42: Data Centre Supply/Demand/Utilisation in Brisbane



	2018	2019	2020	2021	2022
Supply Added (kW)	5,494	5,488	7,022	7,511	7,500
New Demand (kW)	4,512	5,756	7,488	8,115	9,315
Utilisation Rate (%)	77	78	79	81	83

Source: BroadGroup Consulting, Company Data, KGI Research

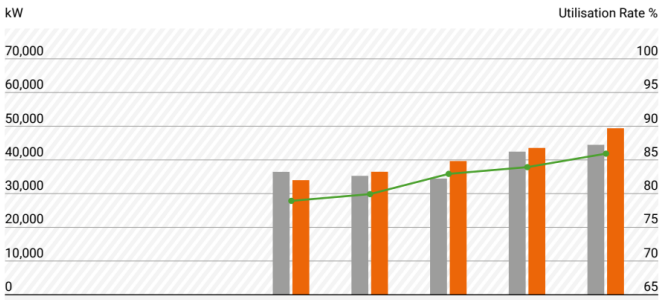
Figure 43: London, United Kingdom

London remains a key global financial hub and the largest European data centre market. Around 70% of the UK data centre market supply sits in London. It is one of five main European markets alongside Dublin, Frankfurt, Amsterdam and Paris. Hyperscale cloud providers were the key driver of colocation demand in 2018. Cloud adoption in the UK is ahead of other European countries with all major players having a presence in London. Chinese cloud players such as Alibaba have also secured colocation space in the city. Land availability for data centres within the city remains challenging. This has prompted data centre developers to set their sights beyond London.

New demand in London is estimated to grow at a CAGR of 9.8% between 2018 and 2022, and the average utilisation rate was 79% at end-2018.

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 44: Data Centre Supply/Demand/Utilisation in London



	2018	2019	2020	2021	2022
Supply Added (kW)	36,494	35,311	34,508	42,479	44,511
New Demand (kW)	34,024	36,522	39,700	43,589	49,421
Utilisation Rate (%)	79	80	83	84	86

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 45: Cardiff, United Kingdom

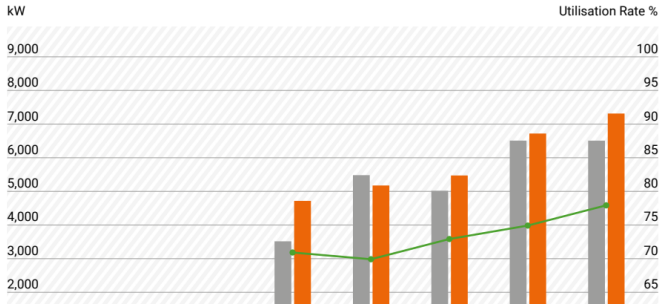
Cardiff has been the ideal location for disaster recovery data centre operations for London users, and is increasingly attracting hyperscale cloud players and multinationals as a lower cost alternative to London, evident by Microsoft's significant presence in the city.

Existing cables already offer connectivity to Ireland via the Bristol Channel, and the United States and Portugal via the North Atlantic. Survey work for a new subsea cable to Ireland is expected to be undertaken in 2019.

Cardiff has its own Internet Exchange, Cardiff-IX, operated by the London Internet Exchange and currently serves mostly local traffic. Digital traffic in Cardiff is growing, with a number of large companies leveraging the region for new call centres and distribution centres. Some data centre providers have also carried out power upgrades and expansions in recent years to cater to this growing demand. New demand in Cardiff is estimated to grow at a CAGR of 11.6% between 2018 and 2022, and the average utilisation rate was 71% at end-2018.

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 46: Data Centre Supply/Demand/Utilisation in Cardiff



	2018	2019	2020	2021	2022
Supply Added (kW)	3,520	5,485	5,021	6,511	6,510
New Demand (kW)	4,721	5,179	5,476	6,722	7,316
Utilisation Rate (%)	71	70	73	75	78

Source: BroadGroup Consulting, Company Data, KGI Research

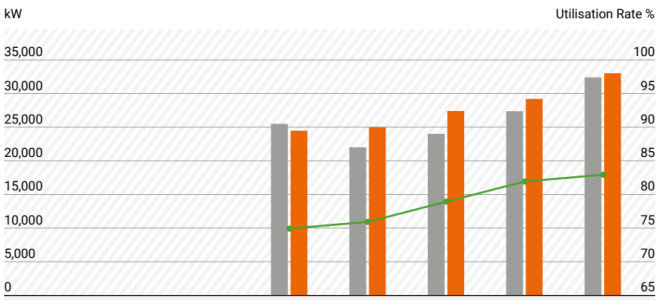
Figure 47: Amsterdam, The Netherlands

Amsterdam is one of five main data centre hubs in Europe, and has attracted many multinational organisations due to its open market and business-friendly environment, as well as its centralised location. Amsterdam competes with Frankfurt for the title of the largest Internet Exchange in Europe, and has been referred to as the digital media hub or the internet capital of Europe.

The city is home to more than 600 telecommunications companies, and is often the choice location for technology companies setting up their European headquarters due to its superior connectivity. Amsterdam is a popular location for hyperscale cloud providers; Google alone invested over €1.5 billion in data centres in the country. The Dutch Data Center Association has been active in engaging the government on power availability concerns, as well as lobbying for power grid expansion and infrastructure improvements. New demand in Amsterdam is estimated to grow at a CAGR of 7.8% between 2018 and 2022, and the average utilization rate was 75% as at end-2018.

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 48: Data Centre Supply/Demand/Utilisation in Amsterdam



	2018	2019	2020	2021	2022
Supply Added (kW)	25,500	22,014	24,023	27,384	32,399
New Demand (kW)	24,488	25,003	27,413	29,216	33,021
Utilisation Rate (%)	75	76	79	82	83

Source: BroadGroup Consulting, Company Data, KGI Research

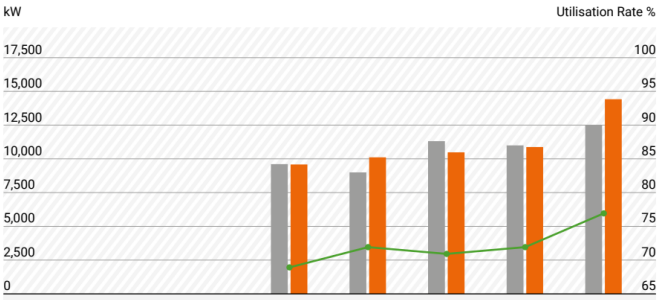
Figure 49: Dublin, Ireland

Dublin continues to be an attractive market for hyperscale cloud providers, with Facebook, Google, Amazon and Microsoft estimated to have invested over US$8 billion in data centres since 2010. More than 75% of this demand comes from customers headquartered in the US due to strong trading links to the US.

Dublin will remain attractive with the completion of new subsea cables linking Dublin to Europe and the US. Europe and the US, and present itself as an attractive location as a European headquarters for companies after Brexit events. Power availability remains a concern in Dublin with data centres utilising around 15% of Irish power in 2019. Allaying this are major planned investments in power infrastructure upgrades, and an increasing focus on wind energy as an alternative power source. New demand in Dublin is estimated to grow at a CAGR of 10.7% between 2018 and 2022, and average utilisation rate was 69% at end-2018.

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 50: Data Centre Supply/Demand/Utilisation in Dublin



	2018	2019	2020	2021	2022
Supply Added (kW)	9,619	9,007	11,318	11,006	12,491
New Demand (kW)	9,594	10,122	10,491	10,884	14,423
Utilisation Rate (%)	69	72	71	72	77

Source: BroadGroup Consulting, Company Data, KGI Research

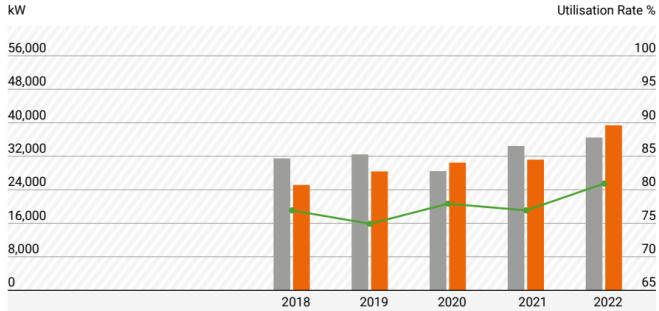
Figure 51: Frankfurt, Germany

Frankfurt has been one of the most attractive European data centre markets in recent years. Historically, Frankfurt has a strong financial base and connectivity to the leading Internet Exchange, DE-CIX. International players, including Chinese companies establishing an international presence, had been increasing their hyperscale cloud investments in Frankfurt in recent years.

Data sovereignty regulations in Germany are considered a critical factor by many colocation customers. Colocation demand in Frankfurt continues to be bolstered domestically by German corporations. With challenges faced around power availability, pricing and land issues, new data centres are being developed in neighboring locations like Offenbach and Wiesbaden. New demand in Frankfurt is estimated to grow at a CAGR of 11.8% between 2018 and 2022, and the average utilisation rate was 77% at end-2018.

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 52: Data Centre Supply/Demand/Utilisation in Frankfurt



	2018	2019	2020	2021	2022
Supply Added (kW)	31,516	32,483	28,498	34,490	36,510
New Demand (kW)	25,192	28,416	30,512	31,223	39,424
Utilisation Rate (%)	77	75	78	77	81

Source: BroadGroup Consulting, Company Data, KGI Research

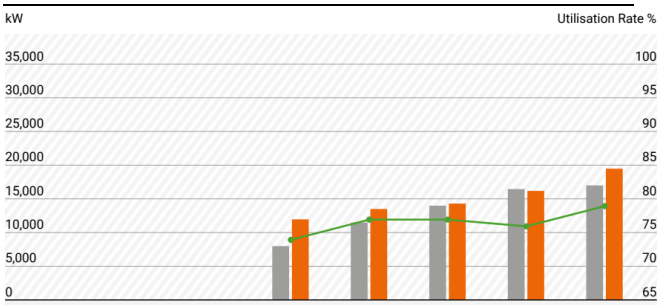
Figure 53: Milan, Italy

Milan is the main data centre hub of Italy and the most fibre-dense area in the country with over 150 telecommunications providers in the city. As the third largest economy in the Eurozone and a gateway to southern Europe and potentially North Africa, Italy is one of the few remaining large European countries in which global cloud service providers have yet to establish a sizeable footprint. The Milan market has not developed as quickly as other European data centre hubs.

However, this is changing with large new colocation sites being developed. Amazon Web Services has in 2018 announced plans to launch a cloud region in Milan within the next two years. Other hyperscale cloud players could also develop data centre space in Milan in the next few years. New demand in Milan is estimated to grow at a CAGR of 12.9% between 2018 and 2022, and the average utilisation rate was 74% at end-2018.

Source: BroadGroup Consulting, Company Data, KGI Research

Figure 54: Data Centre Supply/Demand/Utilisation in Milan



	2018	2019	2020	2021	2022
Supply Added (kW)	8,020	11,516	14,011	16,476	17,016
New Demand (kW)	11,982	13,519	14,323	16,205	19,493
Utilisation Rate (%)	74	77	77	76	79

Source: BroadGroup Consulting, Company Data, KGI Research

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