MENA Region Data Centre Market Report

Dubai - Abu Dhabi - Riyadh - Bahrain - Kuwait

Prepared by Knight Frank Data Centres

Your partners in property

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Knight Frank Data Centres are a globally recognised data centre consultancy business that provide market leading advice to owners, occupiers, and investors in the data centre industry. The business is led by Stephen Beard and Ben Stirk who have over 20 years of combined experience in the sector with global head offices in London, Los Angeles, and Singapore.

The focus of the team in recent years has been providing development consultancy advice to data centre operators and landlords by facilitating land transactions across EMEA. Within the last 24 months, Knight Frank Data Centres have confidentially sold development land, standing data centre assets or leases to Microsoft, Amazon Web Services, Vantage, Keppel, and Virtus Data Centres among others. The team have provided consultancy and transactional advice on multiple data centre development pre-positioning strategies which include the design, power acquisition, planning process and eventual disposal here by giving the team a unique knowledge of the data centre market.

Knight Frank Data Centres have produced a report setting out the current market conditions that exist within the data centre market across the Middle East. This report will cover the Middle East Data Centre market and individually consider the markets of Dubai, Abu Dhabi, Riyadh, Bahrain and Kuwait.

Contents

1. The Middle East - Data Centres

1.1 What is a data centre and what do they do?

Data centres are the mission critical infrastructure that allows individuals, businesses, and entire economies to adequality function and service their digital needs whether that be financial trading, music streaming or online gaming.

A data centre refers to a building or cluster of buildings used to house computer systems and associated components, such as telecommunications and storage systems. Data centres often include backup components in case of a system failure and various security devices which means the possibility of failure of the IT services within the building is unquestionable.

1.2 Types of Data Centres

Wholesale colocation data centres and build-to-suit hyperscale colocation data centres are the most sought-after data centre types across MENA, and globally. Due to the widespread growth of cloud computing, companies created to service this growth require large, dedicated facilities to support the IT required. Cloud migration undoubtedly offers businesses an accessible and appealing option as they expand and establish their European or global presence. The scalability, flexibility, and cost-efficiency of cloud solutions are often enticing during the initial stages of growth. Wholesale and Hyperscale facilities are required to service this demand in MENA.

While the demand for cloud services undeniably dominates a significant portion of the market, it would be a mistake to overlook the potential of the retail and enterprise colocation. At a certain point, some enterprises become so substantial that the cloud may no longer fully accommodate their requirements or prove to be cost-effective. This is where the allure of enterprise-owned facilities regains its strength. We would expect to see this trend emerge in MENA following the widespread emergence and adoption of cloud, rather than in the short term.

	Enterprise/Self-Build Data Centre	**Retail Colocation Data Centre**	**Wholesale Colocation Data Centre**	**Built-to-Suit Colocation Data Centre**
Description	Enterprise data centres are where a business builds and runs their own facilities. Examples may include banks, telecoms companies or, more recently, hyperscale companies such as the US or Chinese tech giants.	Retail colocation offers third party data centre space to smaller customer deployments, typically under 500kW. Retail colocation facilities can have hundreds of customers and dozens of network connections. Retail operators provide additional services such as Smart Hands or Cross Connects which carry one-off and ongoing charges.	A facility developed at scale for large customer deployments. Rents tend to be lower and the size of individual deals commensurately larger, perhaps 1MW or higher per deal as a typical size.	A data centre that is designed and customised to meet specific design needs of a third party.
Customer profile and lease contract	N/A	A wide range of clients including banks, telecoms, hyperscalers	Typically, hyperscale or public cloud companies with long least contracts of 5-15 years	Typically, hyperscale or public cloud companies with long least contracts of 5-15 years

1.3 What is the Cloud?

Outsourcing a company's IT infrastructure to a Cloud Service Provider makes organisations more resilient to such equipment problems that they would face by housing the IT equipment on premises (within office server rooms), rising operational costs and malicious parties. Cloud Service Providers, through their leasing of space within data centres, are optimized for accommodating this IT infrastructure of separate companies through their cooling, connectivity, and security. In most cases it is therefore very attractive for a business to migrate onto The Cloud via a secure data centre and is why there is such demand from Cloud Service Providers to acquire more space in specific locations across the globe.

The most popular Cloud Service Providers for MENA businesses are AWS (Amazon Web Services), Google Cloud and Microsoft Azure although there are multiple smaller providers such as IBM SoftLayer and Oracle Cloud. These are third-party companies offering a Cloud platform on which they host a business IT services, infrastructure and applications. Businesses use these platforms on a pay-per-usage model on a per gigabit basis and receive the benefits of scalability, flexibility and most importantly, security. This is due to the fact that via a Cloud platform, data is backed up and secured via multiple data centres, known as Availability Zone's, so that consistency of service is guaranteed.

All these services are hosted on a provider's own public cloud solution as well as offering this infrastructure to other business to use. The public cloud can be split into three main forms which includes infrastructure as a service (IaaS), platform as a service (PaaS) which is the most common and software as a service (SaaS). Enterprise businesses are increasingly migrating onto these platforms and away from a pure colocation strategy as they look to reduce costs and upgrade their IT infrastructure.

Software as a Service (SaaS) - Software is hosted on a server(s) in a data centre not physically in the same location as the user. The model allows users to subscribe to, personalise and use application software from any compatible device over the Internet. Major advantages include flexibility, agility, and scalability of service, with application capacity upgrades easily accessed. Security and compliance are often referenced as a challenge to this model, with access control transferred outside an immediate organisation to a third party.

Platform as a Service (PaaS) - A Platform-as-a-Service (PaaS) model means developers essentially subscribe to the tools needed to build an application. This means relying on a cloud provider for development tools, infrastructure, and operating systems. PaaS can be accessed over any internet connection, making it possible to build an entire application in a web browser. Because the development environment is not hosted locally, developers can work on the application from anywhere in the world. This enables teams that are spread out across geographic locations to collaborate. It also means developers have less control over the development environment, though this comes with far less overheads.

Infrastructure as a Service (IaaS) - Infrastructure-as-a-Service, or IaaS for short, is when a cloud computing vendor hosts the infrastructure on behalf of their customers. IaaS includes virtual servers and cloud storage, cloud security, and access to data centre resources (managed by the IaaS provider). The vendor hosts the infrastructure, with customers accessing infrastructure over the Internet. Users can use it to build and host web applications, store data, run business logic, or do anything else that could be done on traditional on-premises infrastructure. Scalability is a major advantage of this model. With businesses able to add a new server capacity on demand through the IaaS provider. This on-demand scalability is a major benefit of cloud computing across all cloud service models.

Public, Hybrid, Private

Private clouds provide computing capabilities over a personal network or the internet, and they are available to a small group of users rather than the public. Scalability, self-service, and elasticity are among the advantages offered to enterprises, as are further customisation and controls hosted on on-premises computer infrastructure. Furthermore, private clouds give a higher level of privacy and security for third-party providers by utilising internal hosting and firewalls to assure high-level data protection.

The public cloud refers to the cloud computing model in which IT services are delivered via the internet. The public cloud offers vast choices in terms of solutions and computing resources to address the growing needs of organizations of all sizes and verticals.

Services on the public cloud may be free, free with additional services provided at a cost, or subscription-based, wherein charges are based on the computing resources consumed. Typical computing functionality may range from common services - email, apps, and storage - to the enterprise-grade OS platform or infrastructure environments used for software development and testing. Importantly, the cloud vendor is responsible for developing, managing, and maintaining the pool of computing resources shared between multiple tenants from across the network.

A hybrid model, however, has emerged as the preferred option. Several firms are increasingly focusing on establishing hybrid cloud models and smart methods to help enhance business operations, resource usage, cost optimisation, user experience, and application modernisation while maximising the benefits. Edge computing has risen as one of the most critical forces expected to hasten the adoption of hybrid cloud models in enterprises.

1.4 The Growth of the Cloud in The Middle East

Cloud adoption rates in the Middle East are on the rise, with the majority of organisations either implementing or planning to implement cloud solutions in the near future. This trend is driven by several factors including the need for greater scalability, flexibility, and cost savings, as well as the rise of remote work and the need for cloud-based collaboration tools.

According to the IDC, the market for public cloud services in the Middle East is expected to grow at a compound annual growth rate (CAGR) of 25.5% between 2020 and 2025, driven by factors such as the need for digital transformation, the rise of smart city initiatives, and the increasing popularity of e-commerce and online marketplaces. The entire Middle East market consists of over 1700MW of power, of which 919MW is live or under construction. The market witnessed investments of USD 3.86 billion in 2021 and will witness investments of USD 6.73 billion in 2027. The metros that have attracted the most interest and investment to date include Dubai, Abu Dhabi, Riyadh, Tel Aviv and Doha.

New technologies such as Edge Computing, 5G, Artificial Intelligence and the Internet of Things are all factors driving anticipated growth. Demand drivers are broken down further as follows –

1.5 The Internet of Things (IOT)

The Internet of Things describes physical objects with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks.

The autonomous vehicle (and autonomous transport network) is a good example of how IoT will make an impact on the sector, it is expected that once autonomous vehicles are on the road, they will be uploading 3TB of data a day. The enabler for this will be the 5G network which will act as edge hubs that process before sending it to regional and centralised hyperscale data centre facilities. Without this new data centre network in place the autonomous vehicles will simply not be able to function. This is just one of many new connected items such as the fridge, kettle etc and not forgetting the phone which is already creating vast amounts of data a day.

We understood that most countries' network infrastructure was designed to handle up the 4K in content quality. This means content is produced to a horizontal display resolution of approximately 4,000 pixels. Above this level the network effectively become clogged, the solution is to push more of the processing and storage closer to the end user. As more and more is produced in 8K, we expect to see further investments in regional infrastructure. Both IoT and increasing content quality and quantity will put new demands on data centre infrastructure in the Middle East. As more data is created, data centres are likely to become larger and smaller at the same time as increased processing and storage is required.

1.6 Artificial Intelligence

Artificial Intelligence (AI) is branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. With the proliferation of generative AI tools such as ChatGPT and Bard, AI is increasingly becoming part of everyday life.

Modern data centres are becoming increasingly more application driven, moving away from traditional mechanical operations. AI is turbo-charging this optimisation. By analysing vast amounts of data, AI can help businesses – like data centres – optimise their operations in ways that were previously impossible.

To support these advancements, data centres are growing in both size and complexity with more data being stored and generated than ever before. Exponential growth is expected and will be linked to both the level of IT power required to support AI, and the impact AI will have on increasingly digitalising our world.

AI will have a number of impacts on the efficiency of data centres –

Maintenance

AI will have the ability to predict equipment failures before they happen. By monitoring data from sensors and other sources, AI systems can identify patterns that may indicate a potential failure and alert data centre operators to take action before the equipment goes offline. This can help data centres avoid costly downtime and maintain the highest levels of uptime.

Energy

AI will also optimise data centre energy usage. Due to the growing amount of global data being consumed, data centre energy consumption is naturally increasing, so finding ways to reduce power utilisation efficiency (PUE) is critical for both cost savings and environmental sustainability. By analysing data on energy usage and adjusting cooling and other settings accordingly, AI and ML (Machine Learning – a form of Ai) systems could help data centres achieve significant energy savings.

Design and Construction

AI could assist in the design and construction of data centres by simulating different scenarios and optimising factors such as layout, cooling infrastructure, airflow management, and equipment placement. It could also recommend design changes that improve energy efficiency, reduce costs, and enhance overall performance.

Capacity Planning

AI could also be used to improve capacity planning, by analysing trends on usage patterns and demand to make accurate predictions about future capacity needs. This would help data centres ensure that they have sufficient resources to meet customer needs, without over-investing in capacity that may go unused.

Security

AI could be used to enhance data centre security by detecting and preventing potential threats. By analysing data from multiple sources, including security cameras, access logs, and network traffic, AI systems can identify anomalies that may indicate a security breach and alert IT teams to act.

1.7 Sustainability

The prominence of environmental and social considerations in data centre design, construction and operation is on the rise. It is estimated that by as soon as 2025, the carbon emissions of hyperscale cloud services will be a top three factor in cloud purchase decisions. More than 90% of organisations have increased their investments in sustainability since the start of the pandemic, compared to investments in 2017.

As hyperscalers continue to drive significant new business growth in the industry, they also need to continue setting the bar and driving sustainable change. Google aim to decarbonise their energy consumption so that by 2030 they will operate on carbon-free energy 24/7. By 2030, Microsoft have expressed a goal to be carbon negative and by 2050 to have removed from the environment all the carbon they have emitted either directly or by electrical consumption since their founding in 1975. Colocation providers are emulating the hyperscalers sustainability measures in order to secure Cloud as a customer.

The incoming waves of demand can only be serviced by truly green approaches to data centre design, construction and operation. New technologies for cooling, waste heat utilisation and renewable energies are becoming increasingly crucial for data centres of the future. The Middle East is no exception: the region has seen a growing trend of ESG investments as investors become more conscious of the long-term impact of their investments on society and the environment. Apart from the rising temperature and extreme climate events experienced in the region in the past few years, Middle Eastern countries are driven by several factors:

- International pressure on the region's hydrocarbon-dependent economies to transition to sustainable energy sources.
- The convening of COP28 in Dubai In November 2023
- Governments in the Middle East have set ambitious long-term goals and net zero targets which companies have to comply with. Initiatives include UAE's Vision 2021, Saudi Arabia's Vision 2030, and Qatar's National Vision 2030.

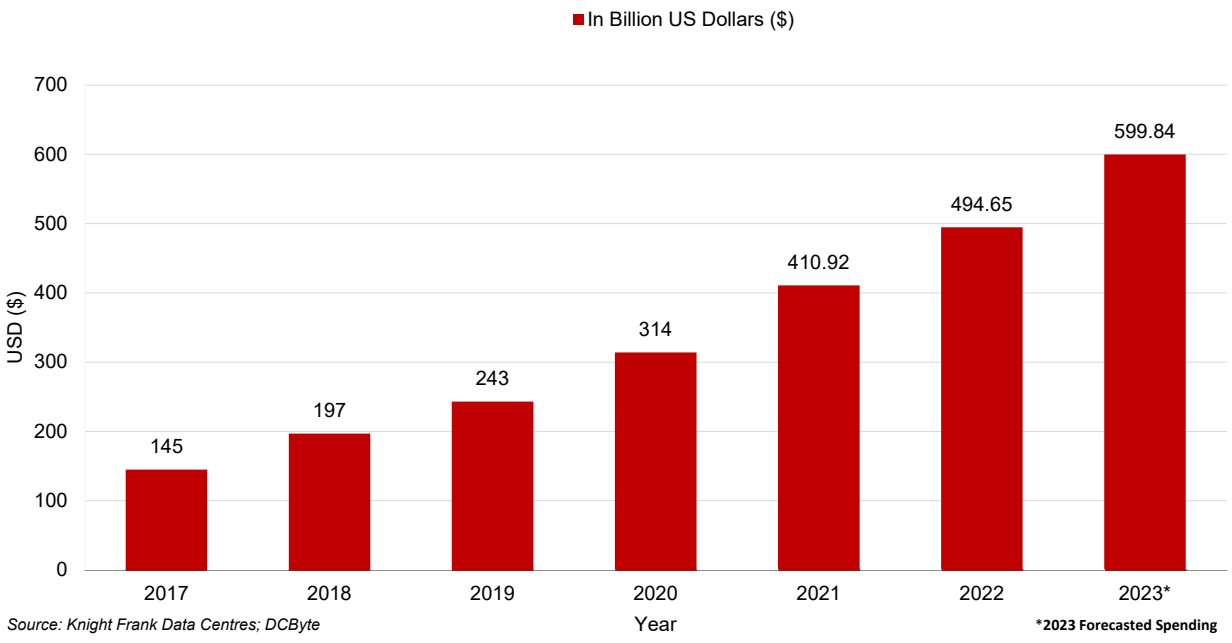
1.8 Cloud Availability Zones (AZ's)

An Availability Zone refers to a geographical area where a Cloud Service Provider has decided to create their network by leasing space in a multitude of existing data centres. In order for Cloud computing companies to provide truly resilient and secure services to their customers, they create Availability Zones whereby the IT infrastructure of their customers is run across multiple different data centres within this defined zone so that if one data centre fails, the other data centre within that zone will instantaneously pick up the operation of that specific programme. Crucially, a single Availability Zones can be no bigger than a c.15-20km fibre cable radius from the initial data centre deployment so that all the facilities effectively act as one.

Demand from the three main public cloud operators (AWS, Microsoft and Google) is going to continue to grow across the Middle East. The graph below depicts the Cloud Service Providers current and predicted spending worldwide from their underlying customers since 2017 ($USD) outlining the meteoric growth in the Cloud sector as businesses realise the advantages that outsourcing infrastructure to the Cloud offers.

Cloud Service Providers: Worldwide Spending

2017-2023



Source: Knight Frank Data Centres; DCByte

Please see below for an example list of businesses that host their IT infrastructure on the Cloud which outlines how crucial these Cloud platforms are to the day-to-day operation of multi-national companies.

Company	Cloud Service Provider
Netflix	AWS
Pinterest	AWS
Etsy	AWS
eBay	Google Cloud
Twitter	Google Cloud
PayPal	Google Cloud
Boeing	Microsoft Azure
Samsung	Microsoft Azure
BMW	Microsoft Azure
GE Healthcare	Microsoft Azure

The Middle East market is seeing growth as part of US Cloud Provider global growth. Microsoft launched its Azure Availability Zone in Qatar in August 2022, AWS opened its Region in the UAE in August 2022 and Google announced plans to team up with the Qatari government to open a region of their own. The MENA region may be considered a small market when compared to other regions such as North America or Europe, but it is actually a rapidly growing market with significant potential for growth. In recent years, the region has seen major investments in technology and digital infrastructure, mainly driven by governments with a focus on economic diversification.

Alibaba Cloud have an established cloud region, known as Middle East 1, in Dubai. Alibaba has been one of the leading cloud providers in the Middle East region, working with local partners to deploy across the region rather than establishing their own data centres. Oracle, IBM and SAP also are scrambling to keep with demand for cloud services across the region.

Data Sovereignty

Digital data and information are subject to the laws of the country in which they are located and/or created. There have been concerns about how to maintain privacy and lawful access to data when a company is hosting its applications on a remote cloud provider. This has also been restricted by further government regulatory requirements like the Saudi Arabian Monetary Authority (SAMA) initiative in Saudi Arabia. Hence, there is huge benefit in accessing these markets with government support to ensure full compliance with local regulatory requirements. This is highly feasible given the Gulf Cooperation Council governments have been actively promoting the development of their technology sectors and have shown strong support for the adoption of cloud computing and AI initiatives. Equally, end cloud users have a responsibility to outline the steps they will take to mitigate or prevent adverse human rights impacts and privacy violations via their cloud computing platforms.

1.9 Challenges in the Middle East Markets

Until recent years there were restrictions on foreign entities entering the market, however these have been relaxed in order to speed up the process of economic recovery in the aftermath of the COVID-19 pandemic. Regardless, partnering with local companies throughout the development and operational process is an important aspect of operating in the Middle East.

The Cloud Service Providers are more likely to acquire space in wholesale and/or hyper-wholesale colocation facilities than through the construction of their own self-build facilities, given this allows easier entry to the market. Wholesale colocation operators can more easily navigate the language, cultural and social

complexities and business rules (i.e. having a business license and associated registered address in the area of operation), allowing the Cloud Service Providers to lease large swathes of completed facilities.

1.10 Largest Players in the Middle East Data Centre Market

Amazon Web Services

AWS adopt a concept known as a 'Region' which is a physical location around the world where a number of data centres are clustered together. Each group of data centres then creates an availability zone. Each AZ has independent power, cooling and security but is connected via redundant, ultra- low latency networks. AWS separates AZs by a meaningful distance, albeit within 100km of each other. Globally, AWS has 93 Availability Zones across 29 geographic regions with 18 new zones in the works across several AWS Regions.

The new AWS Middle East Region (UAE) opened in 2022. Across the region, AWS have facilities in Dubai, Abu Dhabi and Bahrain.

For ease and speed, cloud providers will often deploy via colocation operators. This has not been the case in the Middle East region due to a lack of colocation operators being readily available at the time AWS entered the market.

DAMAC

Damac Data Centres, formerly Edgnex, were established by Dubai property firm DAMAC. The Dammam facility is expected to become operational in 2023, totalling 33MW at full build out. Damac are also aiming to build out a facility in Jeddah.

In Riyadh itself, Damac is expected to launch its first facility of 25MW in 2023.

Equinix

Equinix is the world's largest retail colocation operator and owner of the busiest Internet Exchange Point, Equinix Exchange. It is both a connectivity and service provider. Equinix was founded in 1998 and headquartered in Redwood, US.

Equinix has over 220 International Business Exchange (IBX) data centres in 63 major metros worldwide. This includes DX1 in Dubai – a 5.58MW facility which has been operational since 2013. Equinix are developing a further facility in Dubai Production City. This data centre will be located next to their DX1 building. Equinix's DX3 is planned to become operational in 2023, supporting 7MW of IT.

Equinix also have facilities in Oman.

Etisalat

Etisalat is the largest telecommunication corporation in the GCC. Headquartered in Abu Dhabi UAE, Etisalat serves 11.6 million customers and over 300,000 small, medium and large enterprises and government customers in the UAE. The UAE government owns 60% of the company, with the remaining 40% traded publicly.

Etisalat have self-build telco facilities in Abu Dhabi and Dubai, as well as Kalba.

Gulf Data Hub

Gulf Data Hub (GDH) have one of the largest colocation pipelines in the Middle East. Currently GDH operate 40MW of IT power and 100MW is expected in due course. GDH have facilities across the UAE including the Abu Dhabi Icad Campus, the Kizad 1 campus in the Kizad free zone and the Dubai Silicon Oasis campu which will consist of 6 buidlings at full buidl out.

GDH have further facilities planned in Bahrain and Qatar, as part of a plan to open 10 new data centres across the Middle East.

Khazna

Khazna build and operate wholesale data centres across MENA. Khazna have 14 completed or under constrction faciliteis across the UAE. The newest of these, AUH6 in Abu Dhabi, is set to go live in Q3 2023. It will support 60MW at full build out. The facility will be powered by the solar plant developed by Emerge, a joint venture between Masdar and EDF.

Pure Data Centres

Pure is UK based developer looking to design, build and operate across Europe, Africa, Asia and the Middle East with facilities established in London, Dublin and Jakarta.

Pure Data Centres are developing a facility on Yas Island located close to the Ferrari World Abu Dhabi theme park. This data centre will be the first of 2 identical facilities in Abu Dhabi, supporting 40MW at full build out.

Mobily

Mobily is a brand name for Ethad Etisalat Company in Saudi Arabia. They are one of the largest Saudi Arabian telecommunciations companies, established in 2004. Etisalat holds a 27.45% stake in the company, the General Organization for Social Insurance (GOSI) holds 11.85%, and the rest is held by other investors and by public shares.

Mobily have facilities in Riyadh, Jeddah and Bahrain.

NourNet

NourNet is Saudi Arabia's major digital transformation enabler, operating across 10 industry verticals including Managed Services, Cloud, Connectivity and Cyber Security. NourNet opened its Riyadh data cenrte in 2016. The facility has 450 racks and a building size of 4500 sqm, supporting 2MW of IT.

Quantum Switch

Quantum Switch design, build and operate data centres across the Middle East. In Saudi Arabia, QST, a joint venture between Quantum Switch and Tamasuk, has signed an agreement with the Ministry of Communications and Information Technology (MCIT) to develop and operate new data centres with a total capacity of 300MW by 2026. This is likely to be over multiple facilities of 50MW each. Quantum Switch also have 2 facilities in Doha, Qatar.

Saudi Telecom Company

Saudi Telecommunication Company is the Saudi digital enabler of telecommunications services in the Kingdom of Saudi Arabia, and among the operators in the Middle East. STC have mulitple facilities acorss Saudi Arabia and Bahrain.

2. Dubai

2.1 Economic Overview

The economy of Dubai, United Arab Emirates (UAE), is diverse and has experienced significant growth and development over the years. Dubai is one of the seven emirates that make up the UAE, and its economy plays a crucial role in the country's overall economic landscape. Blossoming initially from the oil and gas industry, Dubai has diversified into other sectors such as trade, tourism, real estate, financial services, transportation, logistics, and telecommunications. While oil production once accounted for 50% of Dubai's gross domestic product (GDP), it contributes 1% today. Dubai saw 4.6% GDP growth in 2022, reaching AED307.5 billion.

The emirate has now positioned itself as a global hub for business and commerce, attracting both regional and international companies. The government's decision to diversify from a trade-based but oil-reliant economy to one that is service- and tourism-oriented resulted in the property boom from 2004 to 2008. Construction on a large scale has turned Dubai into one of the fastest-growing cities in the world with megaprojects such as the off-shore Palm Islands and The World, and the inland Dubai Marina, Burj Khalifa complex, Dubai Waterfront, Business Bay, Dubailand and Jumeirah Village. In tandem, Dubai has established itself as the Middle East's leading market as it has established itself as one of the economic powerhouses of the Middle East.

Since June 2021 it is no longer compulsory for foreign investors to have Emirati partners. Dubai's Department of Economic Development enabled this change to speed up the country's economic recovery following the COVID-19 pandemic.

Dubai's economic development is guided by long-term plans and visions, such as the Dubai 2040 Urban Masterplan. These strategies focus on sustainable development, innovation, knowledge-based industries, and enhancing the quality of life for residents.

2.2 Dubai Data Centre Market

The Dubai data centre market is dynamic and rapidly expanding. Dubai, as a global business and technology hub, has witnessed significant growth in digital transformation and data-driven services, thus driving greater demand for data centre infrastructure in the region. In recent years, Dubai has placed a strong emphasis on innovation and technology. Initiatives such as Dubai Internet City, Dubai Media City, and Dubai Silicon Oasis have fostered the growth of the technology sector.

Dubai's strategic location makes it an attractive data centre destination, serving as a gateway between Europe, Asia, and Africa. The city's proximity to emerging markets and its robust connectivity infrastructure position it as a regional hub for data centre operations.

The Dubai data centre market is home to both local and international data centre providers. Some prominent providers operating in the region include Equinix, Etisalat (through its subsidiary, Datamena), Khazna Data Centers, Gulf Data Hub, and STC Data Centers.

The Dubai government has actively supported the development of the data centre industry through initiatives aimed at attracting investment, fostering innovation, and promoting digital transformation. These efforts include policies to facilitate data centre operations, data protection regulations, and infrastructure development plans to enhance connectivity and power infrastructure. The government has also introduced sustainability programs and regulations, encouraging data centres to implement energy-efficient technologies and renewable energy sources.

The Internet Exchange (IX) known as the UAE-IX serves as the heart and home of digital eco-systems and is a driving force for the digital evolution of a region and key to digital life of the future. The reason behind the UAE-IX'S importance, and the importance of IX's across MENA, is that to ensure the seamless functioning of all digital applications and the secure transportation of data, every millisecond counts. This is where latency – the time it takes for data to travel from a user device to its destination for processing and back again, plays a major role. Therefore, the connectivity between the data centres, where this data processed and stored, needs the shortest path to the user's device, where the data is consumed. The shortest data pathways are created by directly

interconnecting networks locally at an IX and data centres should be positioned with strong links to these interconnections.

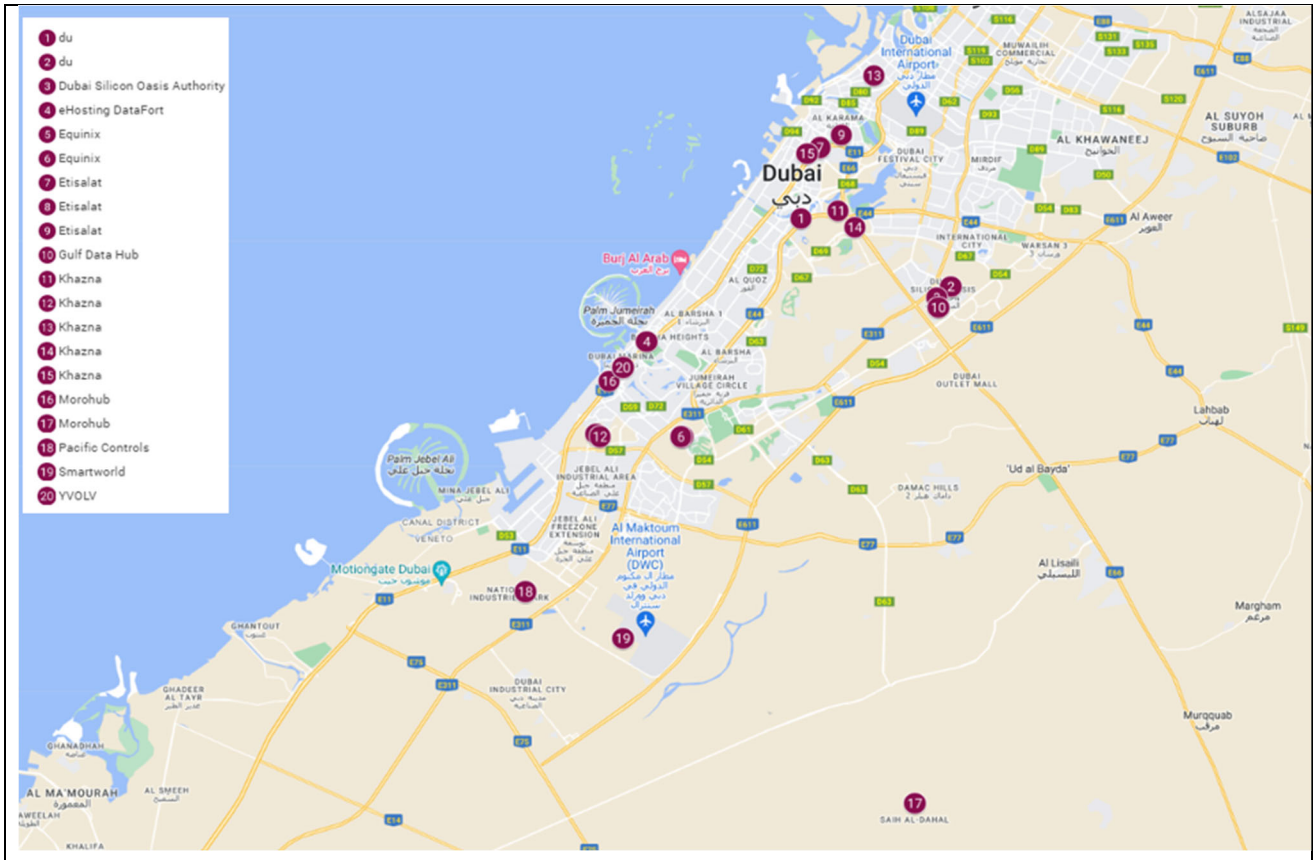
In 2012, when the UAE-IX was established, 90% of local data traffic needed to transported outside of the GCC to Europe, Asia and North America, to be exchanged, which resulted in huge delays, poor internet performance and regular outages. Today, 90% of locally bound data remains local. The result is a massive drop in latency (200 milliseconds in 2012 to less than 3 milliseconds in 2022). This makes the market dramatically more attractive than 10 years ago.

Free Zones

Dubai has established free zones, such as Dubai Internet City (DIC) and Dubai Silicon Oasis (DSO), which offer favourable business environments, tax incentives, and infrastructure support for data centre operations. These free zones have attracted numerous data centre providers and technology companies to establish their presence in Dubai and have gone some way in dictating where new data centre developments are emerging in Dubai.

Map

There is currently 80MW of live IT capacity in Dubai. The below map sets out existing facilities in the Dubai market.



Dubai Existing Facilities

There is currently 80MW of live IT capacity in Dubai. There is a further 62MW under construction, which includes Khazna's DXB2 and DXB3 and GDH's Dubai Silicon Oasis Campus.

Market Leaderboard

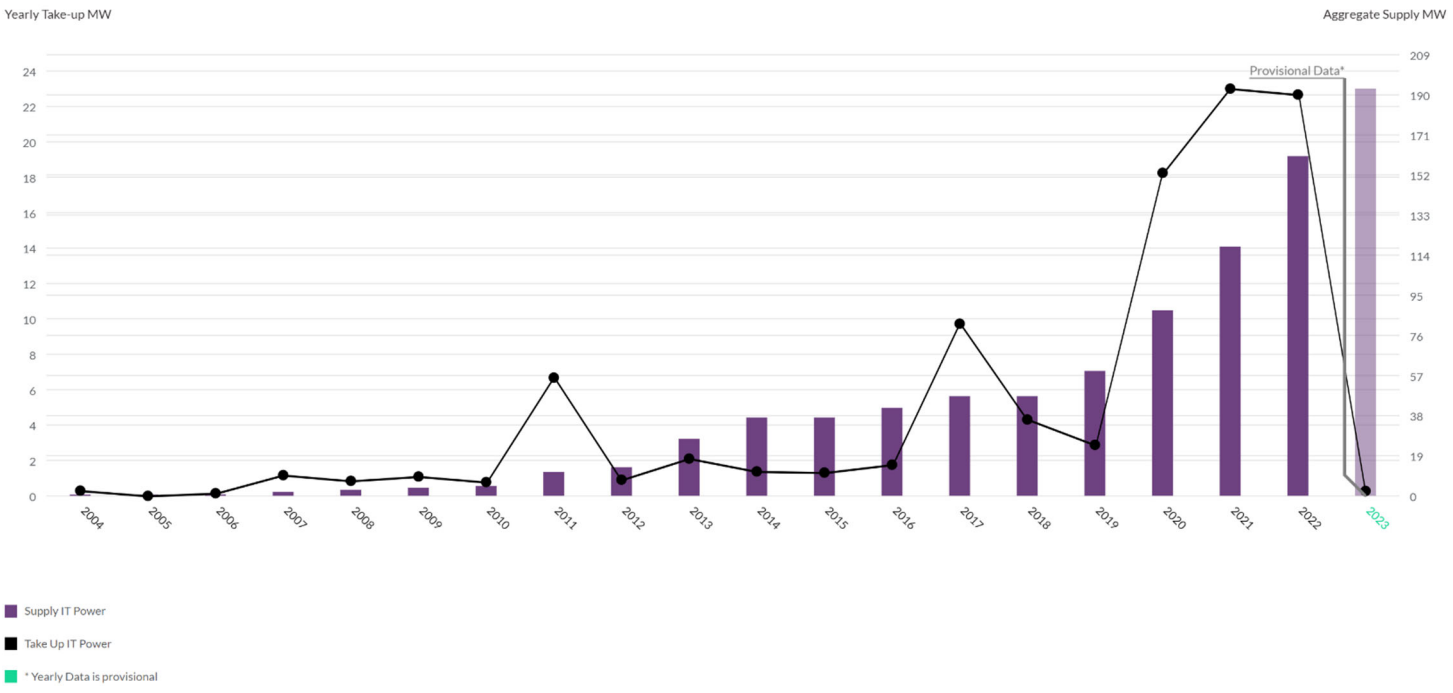
Gulf Data Hub is the largest operator by Live IT. Founded in 2014, GDH have a number of data centre facilities across the Middle East.

Ranking (By MW)	Company Name	MW Live	MW Under Construction	MW Committed	MW Total	MW Early Stage
1	Gulf Data Hub	22.2	16	16	**54.2**	16
2	Khazna	17.884	42.95	0	**60.834**	0
3	Amazon Web Services	16	0	0	**16**	0
4	Etisalat	14.22	0	0	**14.22**	0
5	Pacific Controls	6.68	0	0	**6.68**	0
6	Morohub	6.6	0	14.4	**21**	0
7	Equinix	5.58	3.6	0	**9.18**	3.6
8	du	2.66	0	4	**6.66**	0

Supply and Take-Up

Supply refers to the amount of power added to the market and can be live, under construction, committed (to be constructed) and early stage (announced, but without a timeline for build out). Take-up refers to the amount of power let (including pre-let).

Dubai is an undersupplied market. 2021 saw record 23MW of take-up and 2022 22.6MW. The market is predominantly wholesale colocation, which makes up 74%.

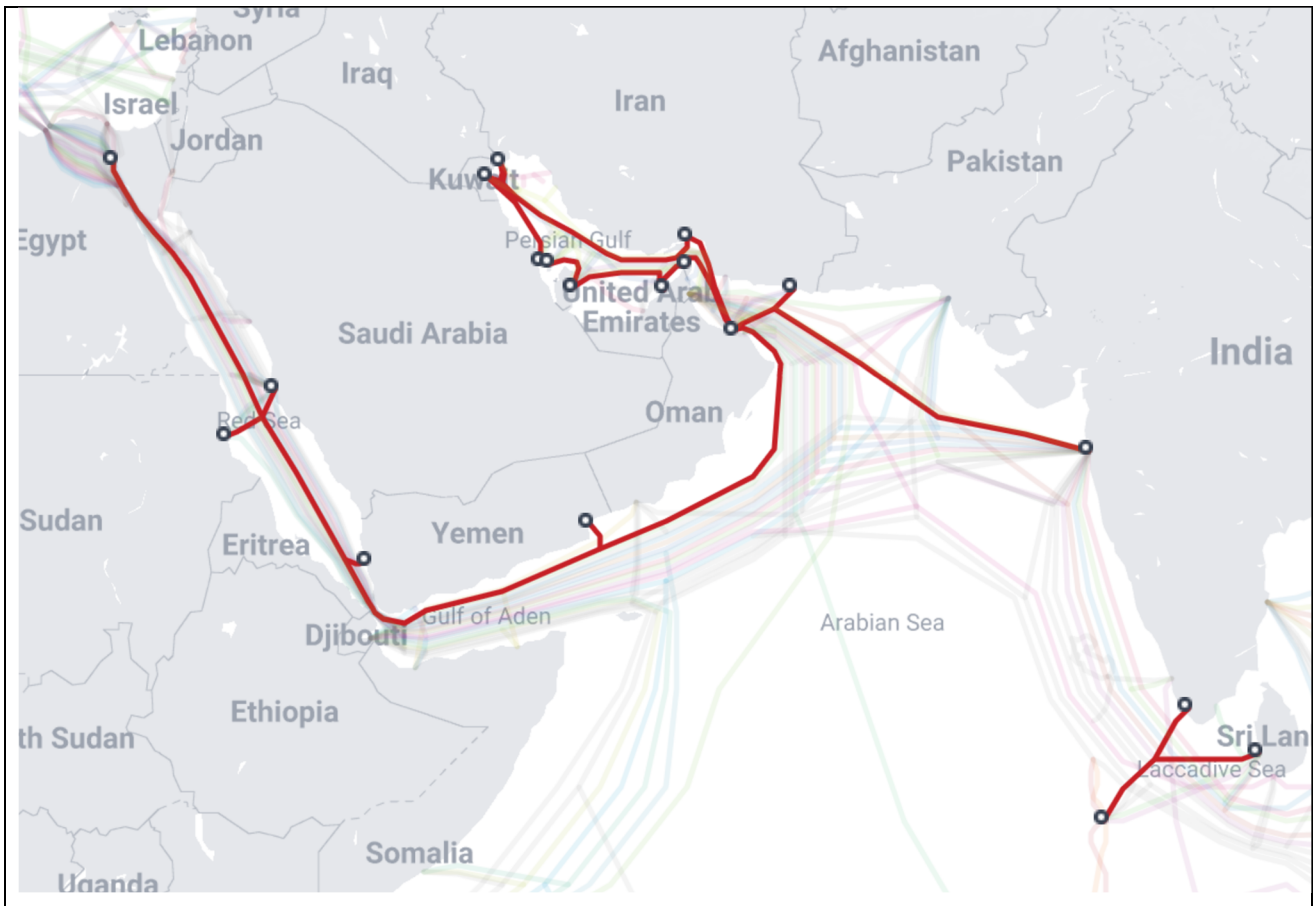


Pipeline

As observed from the market leaderboard, there is limited pipeline power in the Dubai market. Equinix DX3 will offer a further 3.6MW, but this will entirely cater to retail colocation demand. GDH's facility is the only real hyperscale opportunity with future capacity in the Dubai market. A further 16MW is expected. There is no pipeline power 2025 and beyond.

Subsea Cables

Dubai has excellent connectivity infrastructure, including extensive subsea cable networks that provide high-speed and low-latency connections to various global destinations. In particular the FALCON cable lands in Dubai, connecting the city with multiple Middle East and Asian countries, as can be observed below. The city is well-connected to major international network routes, enabling reliable and efficient data transmission.



FALCON Subsea Cable

2.3 Dubai Power

Dubai's power supply primarily comes from conventional sources, including natural gas and oil, as well as renewable energy sources like solar power. Dubai has invested significantly in expanding its power generation capacity to meet the growing demand for electricity. The Dubai Electricity and Water Authority (DEWA) is the main utility responsible for power generation and oversees major power projects in the Emirate. Dubai follows an integrated utility model, where DEWA handles both the generation and distribution of electricity.

Regulatory oversight is provided by entities such as the Dubai Regulatory & Supervisory Bureau for Electricity and Water, which monitors and regulates the power sector to maintain industry standards and promote efficiency.

The raw cost of power for businesses in the UAE is 0.110 USD/kWhr.

Renewable Energy

The Dubai Clean Energy Strategy 2050 targets a mix of renewable energy sources, with a goal of achieving 75% clean energy by 2050. As of 2023, renewables make up 14% of Dubai's total energy production. Solar power plays a vital role in Dubai's renewable energy plans, with large-scale solar projects such as the Mohammed bin Rashid Al Maktoum Solar Park. Solar power accounts for 2,027 MW of the emirate's total power production capacity of 14,517MW.

Substations

Dubai's substations are strategically located throughout the emirate to ensure efficient power distribution and meet the growing demand for electricity. They are interconnected through an extensive network of power lines and cables, enabling the transmission of electricity to different areas.

DEWA inaugurated 17 new substations in 2022. These include fifteen 132kV stations with a conversion capacity of 2,280 megavolt amperes and two 400kV stations with a conversion capacity of 4,000 megavolt amperes, in Al Qusais Industrial Area 5 and Jebel Ali First. This is part of DEWA's effort to keep pace with the pace of development in Dubai.

There is a total of 334 132kV transmission substations in Dubai now with a further 15 under construction. 5 new 400kv substations are being constructed with an allocated budget of AED 2.2 billion

Map of new DEWA 132/11 kV substations

3. Abu Dhabi

3.1 Economic Overview

The capital of the UAE, Abu Dhabi's economy has been built on oil and gas, finance, tourism, real estate, manufacturing, and renewable energy. Abu Dhabi accounts for 87% of the UAE's total land area (26,000sqm) and has the second-largest population (2.1 million).

Abu Dhabi has significant reserves of oil and natural gas, making it a key player in the global energy market. The emirate's oil industry contributes significantly to its economy through exploration, production, refining, and export. Abu Dhabi National Oil Company (ADNOC) is the major state-owned entity responsible for managing the oil and gas sector.

Abu Dhabi recorded 5.9% GDP growth in Q4 2022 compared to the same period in 2021. The non-oil sectors witnessed a notable growth of AED 43 billion, bringing the total to AED 554.6 billion by the end of 2022. This resulted in the non-oil sectors contributing 50% to the GDP. The UAE is ranked as the 6th richest country in the world per capita GDP (out of 193 countries).

Real estate activities in Abu Dhabi witnessed an increase of 17.1% compared to 2021. Major real estate projects, such as Saadiyat Island, Al Reem Island, and Masdar City, have transformed the cityscape. The emirate has also invested in transportation systems, including airports, seaports, and a metro network.

3.2 Abu Dhabi Data Centre Market

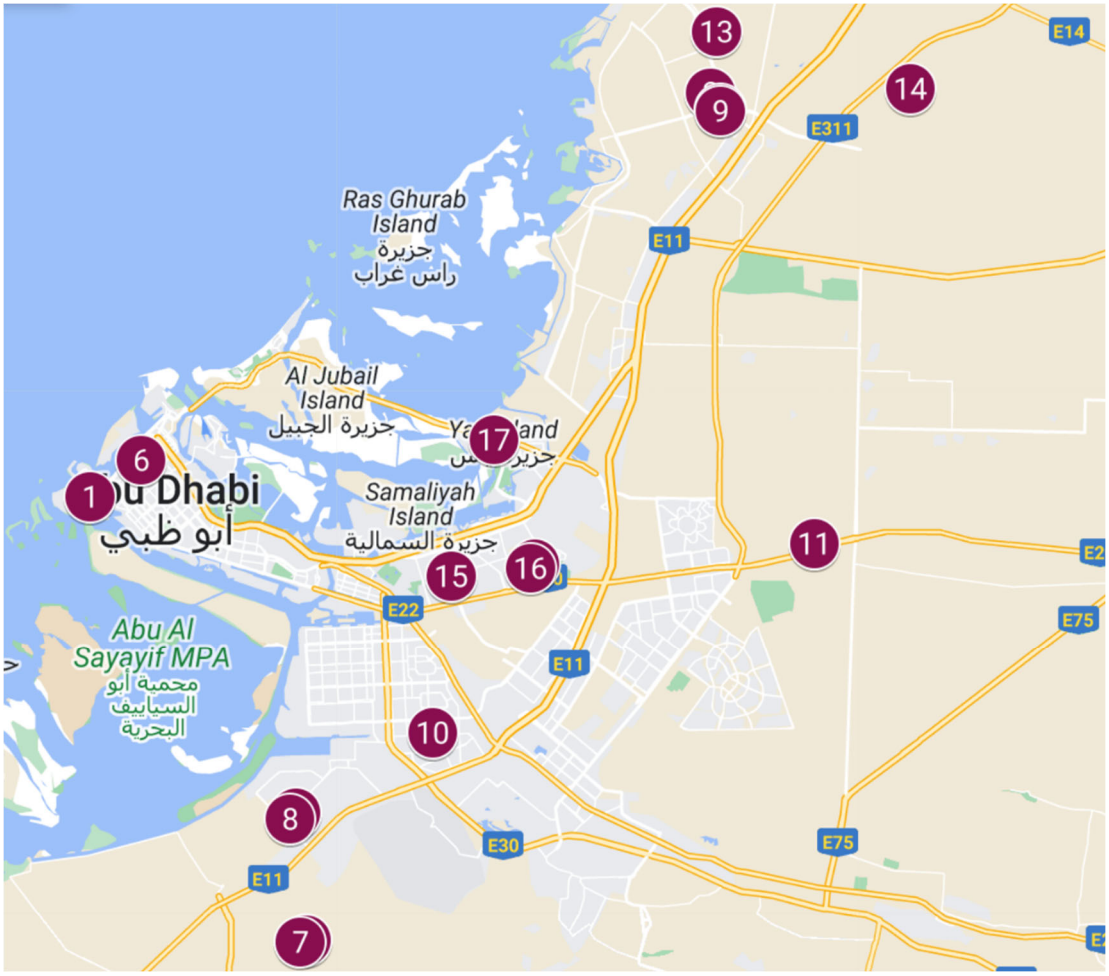
Abu Dhabi's data centre market is driven by various factors, including the increasing demand for digital services, the growth of cloud computing, and the UAE's efforts to establish itself as a regional technology hub.

The data centre market in Abu Dhabi caters to various industry verticals, including banking and finance, government, healthcare, education, telecommunications, and oil and gas. These sectors have significant data processing and storage requirements, making them key drivers of data centre demand

There is 128MW of live IT in the Abu Dhabi market and a further 113MW under construction. Khazna have four facilities under construction across the emirate, while GDH are constructing a further 16MW at their Icad Campus. The market is primarily a wholesale colocation one, making up 74% of total IT.

Currently, Dubai is the UAE's largest data centre market. This places Abu Dhabi in an exciting place to absorb overspill from the Dubai market as the UAE's second largest market, while also catering to its own digital infrastructure requirements. Abu Dhabi is well positioned to serve as the UAE's second market after Dubai: a model that has worked successfully with London and Manchester, Paris and Marseille, and Frankfurt and Berlin. Second markets enable the avoidance of longer data detours through congested major markets and tend to face benefits the more established markets lack e.g. availability of power, lower land prices.

1 ADNOC
2 AWS
3 AWS
4 DC Vaults
5 du
6 Etisalat
7 G42 Cloud
8 Gulf Data Hub
9 Gulf Data Hub
10 Injazat
11 Khazna
12 Khazna
13 Khazna
14 Khazna
15 Khazna
16 Khazna
17 Pure Data Centres



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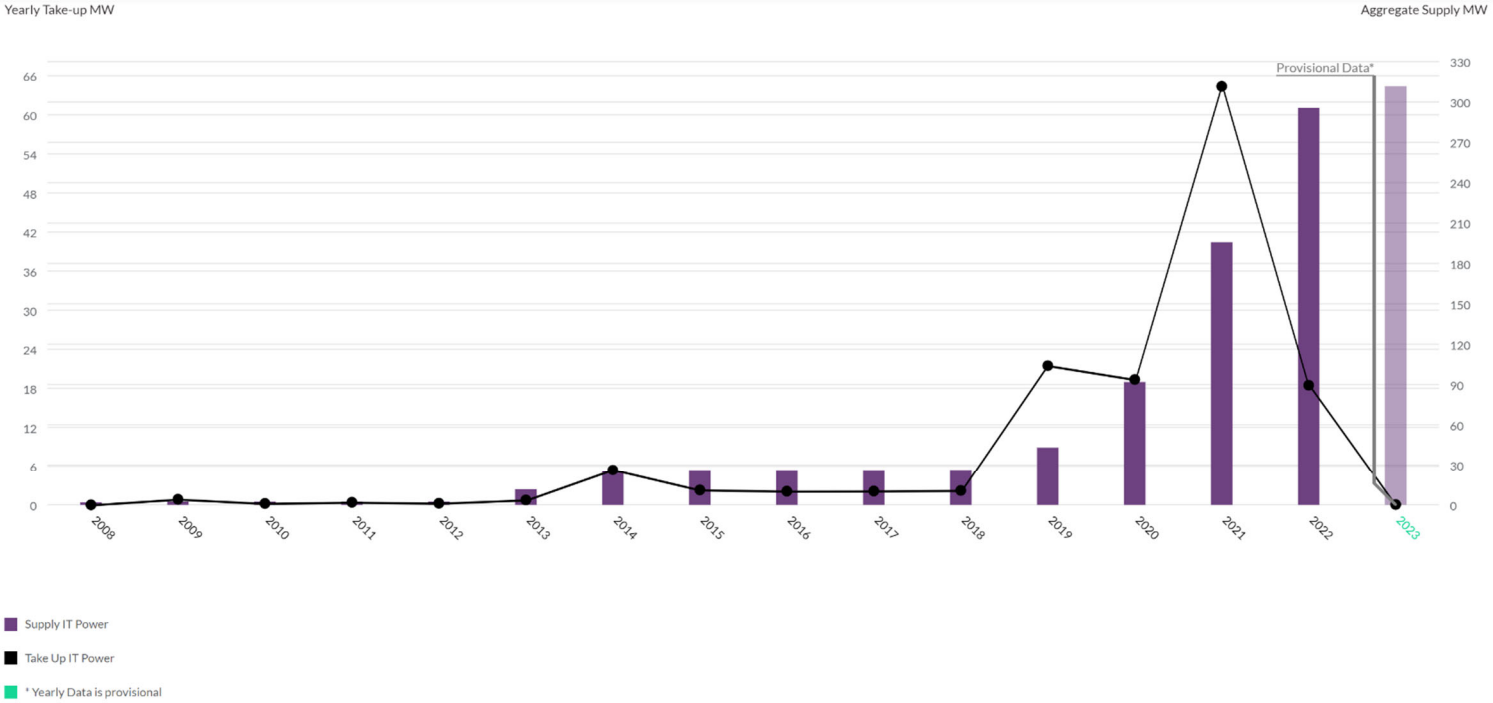
Market Leaderboard

Khazna are the largest operator by MW, as illustrated below.

Ranking (By MW)	Company Name	MW Live	MW Under Construction	MW Committed	MW Total	MW Early Stage
1	**Khazna**	69.2	97.3	0	**166.5**	28.2
2	**Amazon Web Services**	32	0	0	**32**	0
3	**Gulf Data Hub**	16	32	32	**80**	0
4	**G42 Cloud**	4.8	0	0	**4.8**	0
5	**Injazat**	1.8	0	0	**1.8**	0
6	**du**	0.9	0	1.8	**2.7**	0
7	**DC Vaults**	0.86	0	0	**0.86**	0
8	**Etisalat**	0.625	0	0	**0.625**	0
9	**Pure Data Centres**	0	0	20	**20**	20

Supply and Take-Up



Take-up for 2021 reached a record peak of 70MW, far exceeding the supply additions for the year. Take-up for 2022 dropped to 18MW, all of which was allocated to Khazna's IRIS data centre. The physical lack of supply available in the market meant that the drop in take-up was collateral and unavoidable: there was no supply available to take-up. There is 18MW of available power in the Abu Dhabi market, reflecting a vacancy rate of 44% - however, 16MW of the available power is at GDH's Icad Campus.

Pipeline

As noted from the breakdown table, pipeline power in the Abu Dhabi market is only from Pure Data Centres and Khazna. There have been no further supply announcements in the Abu Dhabi market, providing no pipeline beyond 2025. As the need for IT services continues to grow in Abu Dhabi, further supply will be required to service this demand.

Dubai and Riyadh are currently more mature markets than Abu Dhabi. For Abu Dhabi to compete as a data centre location, more facilities will be required. Abu Dhabi will need more local interconnections to avoid longer detours via e.g. Dubai to support its burgeoning digital eco-system of networks, thereby enticing further relevant networks and service providers into the region, encouraging cloud service providers to establish local cloud onramps and setting the foundation for low-latency connectivity that meets the demands of business and people.

Data Sovereignty

Abu Dhabi emphasizes data sovereignty, ensuring that data generated within the emirate is stored and managed within its borders. This requirement has led to the establishment of local data centres to meet regulatory compliance and address data privacy concerns.

Subsea Cables

Abu Dhabi's location on the Arabian Gulf makes it an important landing point for subsea cables in the region. The city serves as a hub for cables connecting the UAE with neighbouring countries in the Gulf Cooperation Council (GCC) region, including Bahrain, Qatar, Kuwait, and Saudi Arabia. These cables facilitate regional connectivity and data exchange among GCC countries.

Intercontinental Cables: Abu Dhabi is also a landing point for several intercontinental subsea cables and 2 of the world's largest subsea cable routes are due to arrive into Abu Dhabi. The 2Africa is a 45,000km cable routed around India, Pakistan, the Middle East, the entire perimeter of the African continent, much of the Mediterranean and into the UK. The SeaMeWe-6 which runs from Marseille to Singapore will also land in Abu Dhabi.

3.3 Abu Dhabi Power

Abu Dhabi has a diverse energy mix for power generation. The primary sources of electricity are natural gas and oil, which are used in combined-cycle gas turbine (CCGT) power plants. These plants utilize both gas and steam turbines to maximize energy efficiency. Abu Dhabi also aims to diversify its energy sources by investing in renewable energy projects, such as solar and wind power.

Abu Dhabi National Oil Company or ADNOC is the state-owned oil and gas company responsible for the exploration, production, and refining of oil and gas resources in Abu Dhabi. Abu Dhabi Water and Electricity Authority (ADWEA) is the government entity responsible for overseeing the water and electricity sector in Abu Dhabi. It ensures the reliable supply of power to meet the emirate's needs and encourages sustainable practices. he transmission and distribution of electricity in Abu Dhabi are managed by the Abu Dhabi Transmission and Despatch Company (TRANSCO) and the Abu Dhabi Distribution Company (ADDC). TRANSCO is responsible for the high-voltage transmission network, while ADDC manages the distribution network that delivers electricity to consumers across the emirate.

The raw cost of power for businesses in the UAE is 0.110 USD/kWhr.

Renewable Energy

Abu Dhabi is actively investing in renewable energy projects to diversify its energy sources and reduce carbon emissions. The emirate aims to increase the share of renewable energy in its power generation through initiatives like the Abu Dhabi Clean Energy Company (Masdar) and the deployment of large-scale solar and wind projects.

Under the UAE's Net Zero by 2050 initiative, Abu Dhabi's upcoming renewable energy projects including the (5.6 GW) Barakah nuclear energy plant and the (2-GW) Al Dhafra Solar PV project will produce a total clean power generation capacity of 8.8 GW by 2025. This initiative means 55% of Abu Dhabi's electricity in 2025 will come from clean sources and reduce power generation emissions from 40 million tons of CO2 emissions in 2020 to about 20 million tons in 2025.

The UAE Net Zero by 2050 strategic initiative is a national drive to achieve net-zero emissions by that year, making the country the first in the Middle East and North Africa (MENA) region to do so.

Substations

There are a number of planned 400kV substations in Abu Dhabi. Al Dhafra, Al Faya and Barakah are all expected to be commissioned in 2023. There are twenty-two 132kV substations.

Major Abu Dhabi Substations

4. Riyadh

4.1 Economic Overview

Riyadh is the capital of Saudi Arabia and a major economic hub. Riyadh benefits from its proximity to the country's vast oil reserves. The oil and petrochemical sectors have historically been the backbone of the Riyadh economy, with numerous oil companies and petrochemical plants located in and around the city. Saudi oil reserves are the second largest in the world (after Brazilian–Venezuelan oil reserves), and Saudi Arabia is the world's leading oil exporter and second-largest oil producer. Proven reserves are estimated to be 260 billion barrels, which is about one-quarter of the world oil reserves.

40% of Saudi Arabia's GDP comes from the private sector. The government has been encouraging the growth of the private sector for many years to decrease the kingdom's dependence on oil and to increase employment opportunities for the swelling Saudi population. In recent decades, the government started allowing private sector activity and foreign investor participation in certain sectors, such as power generation and telecommunications, and acceded to the World Trade Organization.

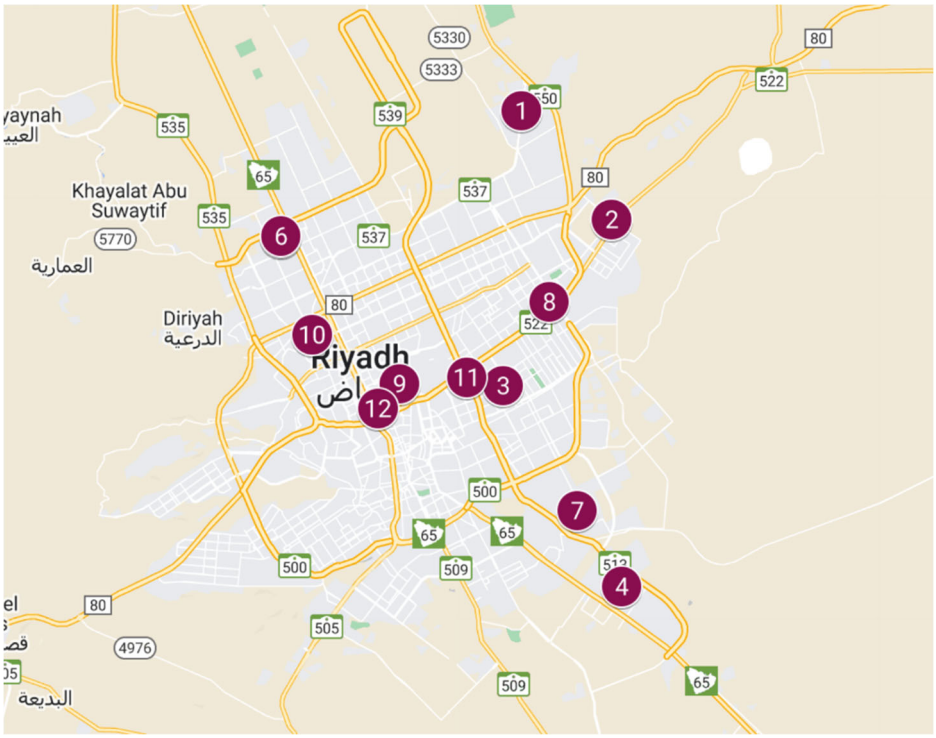
The Saudi economy grew by 8.7% in 2022, and GDP of non-oil activities grew by 5.4% in the previous year. Saudi Arabia's GDP generally fluctuates dramatically according to the price of oil.

4.2 Riyadh Data Centre Market

The Saudi Arabian government has been actively supporting the growth of the data centre industry as part of its Vision 2030 plan, which aims to diversify the economy and promote digital transformation. The government has implemented initiatives and policies to attract data centre investments and promote local data hosting.

As across the globe, cloud service providers are establishing their presence in Riyadh to cater to the growing demand for cloud-based applications, storage, and infrastructure services. At present there is 29MW of live IT power in the Riyadh market and a further 23MW under construction. 200MW of early-stage IT power has been announced in the market – all by Quantum Switch. QST, a joint venture between Quantum Switch and Tamasuk, has signed an agreement with the Ministry of Communications and Information Technology (MCIT) to develop and operate new data centres with a total capacity of 300MW by 2026 the UAE. This is expected to be across multiple facilities of 50MW.

Wholesale colocation makes up over 50% of the market, largely attributed to new market entrants Quantum Switch and DAMAC.



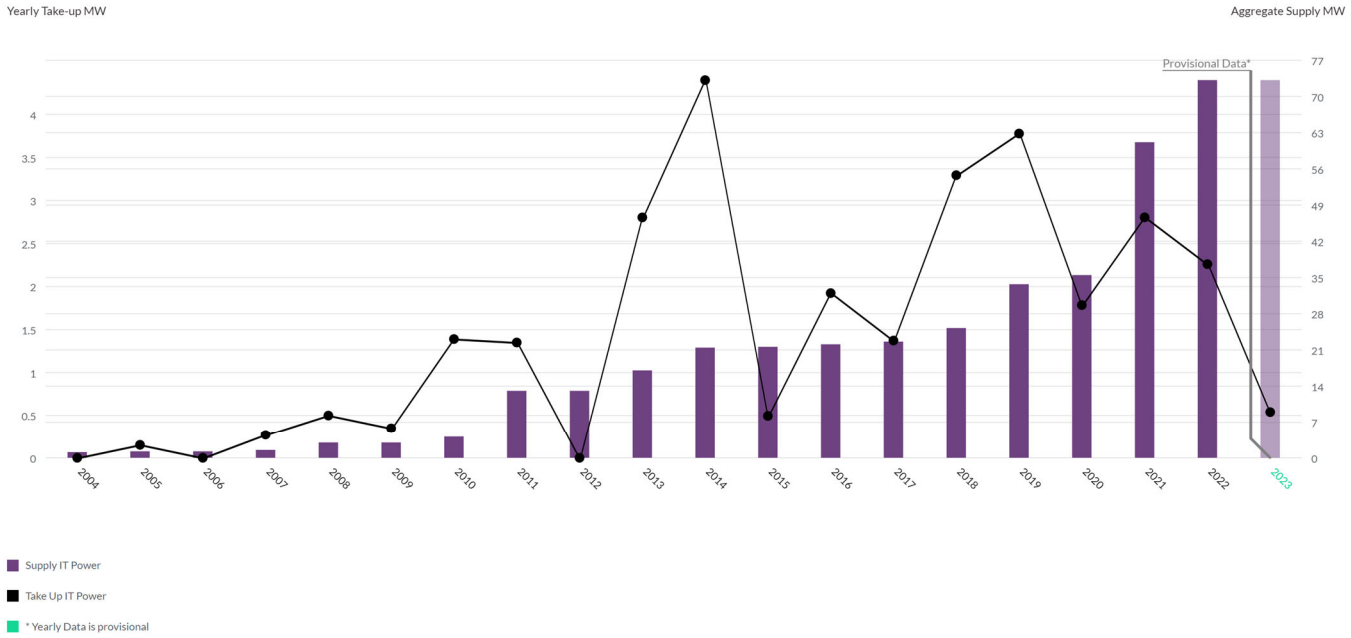
Market Leaderboard

Saudi Telecom Company are the largest operator by live IT, currently dominating 42% of the live market.

Ranking (By MW)	Company Name	MW Live	MW Under Construction	MW Committed	MW Total	MW Early Stage
1	Saudi Telecom Company (STC)	11.4	0	0	11.4	0
2	Mobily	2.94	0	0	2.94	0
3	NourNet: KSA	2.07	0	0	2.07	0
4	Salam	0.675	0	0	0.675	0
5	Center3	0	6	6	12	0
6	Damac Data Centres	0	10	15	25	0
7	Quantum Switch	0	0	0	0	200

Supply and Take-Up

Take up has been low in the market due to the low levels of supply available. 2022 saw 2.26MW of retail colocation take-up. As the cloud announces new regions in the Saudi Arabian market and enters Riyadh, higher levels of take-up are expected.



Pipeline

The entirety of the Riyadh pipeline rests upon Quantum Switch building out their intended facilities in the market. This will make up a total of 200MW, which would account for 80% of the total market. There have been no further announcements regarding early stage power in the Riyadh market.

Subsea Cables and Fibre

Riyadh is an inland city. The major landing stations in Saudi Arabia are located in Jeddah, Yanbu and Duba on the west coast with the Red Sea and Al Khobar on the east coast with the Persian Gulf.

Red Sea Cables: Saudi Arabia's Red Sea coastline is a significant route for subsea cables. Multiple submarine cable systems traverse the Red Sea, connecting Saudi Arabia with countries in Africa, Europe, and Asia. These cables include the Red Sea - Middle East - Western Europe (SMW5) cable, the AAE-1 (Asia-Africa-Europe-1) cable, and the PEACE (Pakistan & East Africa Connecting Europe) cable, among others.

Arabian Gulf Cables: Saudi Arabia's eastern coast along the Arabian Gulf is also an important route for subsea cables. Cables in this region connect Saudi Arabia with neighbouring countries in the Gulf Cooperation Council (GCC) and beyond. Examples of subsea cables in the Arabian Gulf include the Middle East North Africa (MENA) Cable System, the Gulf Bridge International (GBI) cable, and the TGN-Gulf cable.

There is a further landing station in Haql, on the border with Israel at the Gulf of Aqaba where the Saudi Telecom Saudi Vision cable links up with the rest of Saudi Arabia's west coast landing stations.

An extensive network of fibre optic cables link across the country and into Riyadh itself

4.3 Riyadh Power

The majority of power generation in Saudi Arabia is based on fossil fuels, primarily oil and natural gas. Saudi Arabia also has several large-scale power plants, including combined-cycle gas turbine (CCGT) plants, which utilize both gas and steam turbines to maximize energy efficiency. One such example is the King Salman Energy Park (SPARK). Saudi Arabia has developed an interconnected power system that allows the transfer of electricity between different regions of the country. This interconnected grid enables the efficient distribution of power and helps maintain a reliable supply across various regions.

The Saudi Electricity Company is the government-owned utility responsible for the generation, transmission, and distribution of electricity throughout the country. SEC operates and maintains the majority of the power infrastructure in Saudi Arabia. The Saudi Electricity Company sets power tariffs in accordance with regulations set by the Electricity & Cogeneration Regulatory Authority (ECRA). The tariff structure varies for different customer segments, such as residential, commercial, and industrial, and aims to balance affordability, sustainability, and the cost of power generation.

The raw cost of power for businesses in the KSA is 0.069 USD/kWhr.

Renewable Power

99% of power in Saudi Arabi is generated from fossil fuels, In recent years, Saudi Arabia has been actively diversifying its energy mix by promoting the development of renewable energy sources. The country has significant solar and wind energy potential, and it has launched initiatives such as the Saudi Vision 2030 and the Renewable Energy Project Development Office (REPDO) to accelerate the deployment of renewable energy projects. These efforts aim to increase the share of renewable energy in the overall power generation mix and reduce dependence on fossil fuels.

Saudi Arabia is expected to produce 1.5GW of renewable energy in 2023, of which 1GV will be solar.

Substations

A number of 380kV new substations are in the process of being delivered.

Riyadh Substations

5. Bahrain

5.1 Economic Overview

Bahrain is a small island nation located in the Persian Gulf. Historically, Bahrain's economy has been dependent on oil production. Although oil reserves are relatively limited, the sector has played a significant role in the country's development. Bahrain continues to extract and refine oil, but its contribution to the overall economy has diminished over time. Bahrain is known as a major financial hub in the Middle East. It has a well-developed banking sector and is home to numerous local and international banks, insurance companies, and investment firms. The Bahraini government has implemented favourable regulations and initiatives to attract financial institutions, making the country a regional centre for finance and Islamic banking.

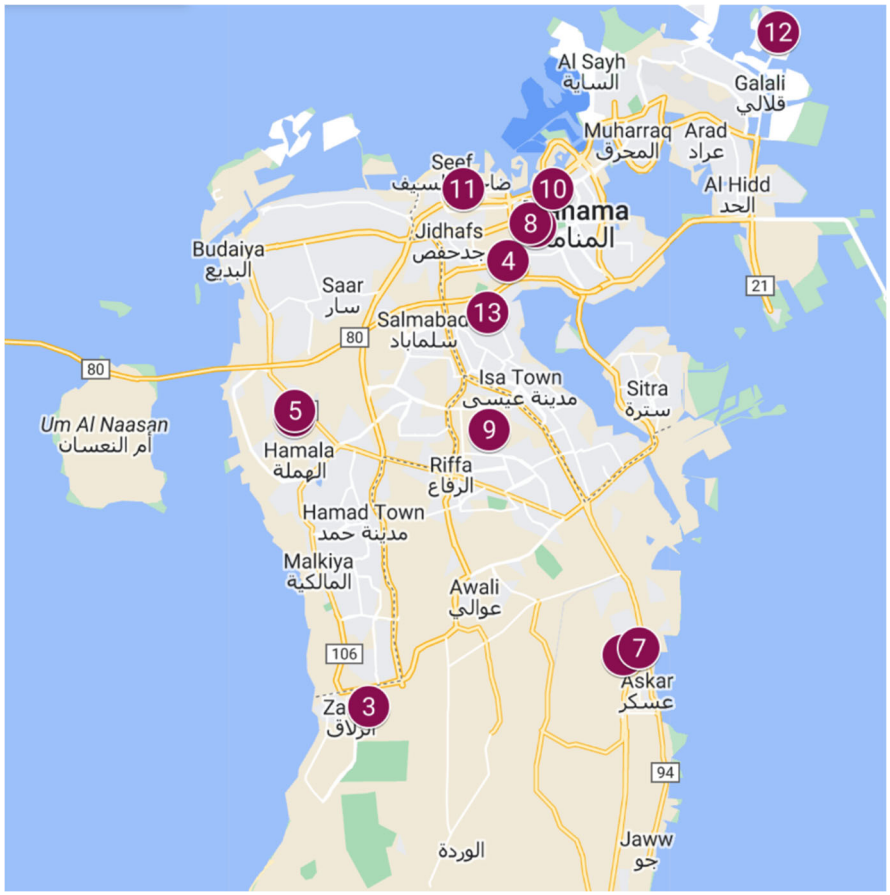
Bahrain has been actively pursuing economic diversification to reduce its reliance on oil and enhance its long-term sustainability. The government has implemented economic reforms, encouraged foreign investment, and supported initiatives in sectors such as technology, tourism, finance, and manufacturing. Part of this has involved developing the ICT sector. The government has implemented initiatives to enhance digital infrastructure, promote e-commerce, and encourage technology start-ups. Bahrain is known for its supportive regulatory environment and has attracted companies in areas like software development, telecommunications, and crucially data centres.

Bahrain GDP grew close to 5% for 2022 – the fastest pace in almost a decade. Its non-oil GDP witness 6.2% growth, the highest since 2012. It exceeded 13 billion Bahraini dinar ($34 billion).

5.2 Bahrain Data Centre Market

Bahrain's strategic location in the Persian Gulf makes it an attractive destination for data centre investments. It serves as a gateway between the Middle East, Europe, and Asia, offering favourable geographic proximity to major markets.

There is currently 28MW of live IT and a further 32MW of early stage power. This 32MW can be attributed to GDH's facility.



1 Amazon Web Services
2 Amazon Web Services
3 Amazon Web Services
4 ATDXT
5 Batelco
6 Batelco
7 Batelco
8 Gateway Gulf
9 Gulf Data Hub
10 Infonas
11 Kalaam
12 Nuetel Communications
13 Saudi Telecom Company

Market Leaderboard

AWS are the largest by MW, with Bahrain Telecommunications Company (Batelco) taking the second largest share of the market.

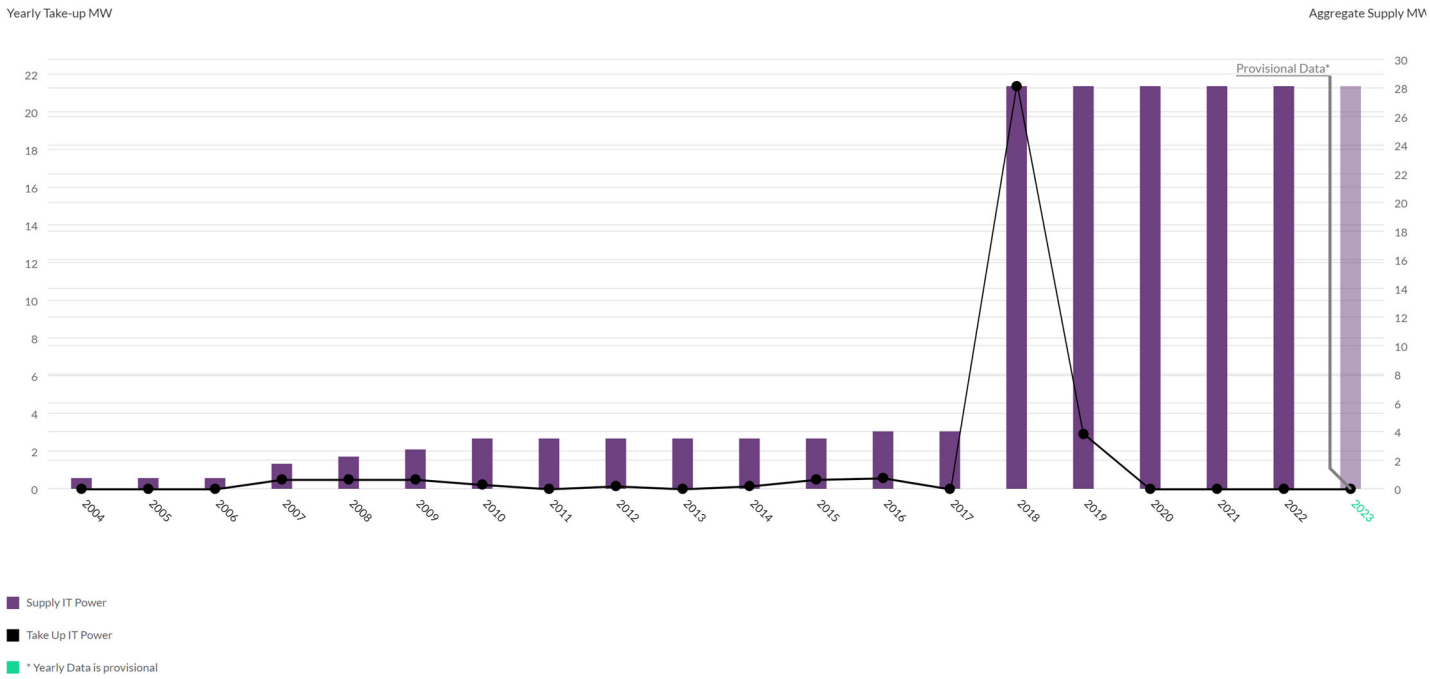
Ranking (By MW)	Company Name	MW Live	MW Total	MW Early Stage
1	**Amazon Web Services**	21	**21**	0
2	**Batelco**	3.86	**3.86**	0
3	**Nuetel Communications**	1	**1**	0
4	**Saudi Telecom Company (STC)**	0.765	**0.765**	0
5	**Infonas**	0.5	**0.5**	0
6	**Gateway Gulf**	0.5	**0.5**	0
7	**Kalaam**	0.5	**0.5**	0

8	**Gulf Data Hub**	0	**0**	32

Supply and Take-Up

Bahrain recorded record take-up in 2021 with 21.36MW. This was almost entirely as a result of the opening of three AWS facilities (Hamala, Alba, Zallaq). There have been no supply additions since AWS in 2018, meaning the market is severely under supplied with a vacancy rate of 0%.

The market is primarily Self Build Public Cloud, with the AWS facilities making up 75% of the Bahrain Data Centre market.



There can physically be no take-up in 2020-2022 due to there being no remaining supply in the market to take-up, as indicated in the above graph. Given there have been no new supply additions since 2018, there has been no means to secure space in the Bahrain market.

Pipeline

The GDH Bahrain facility offers the only pipeline power in Bahrain. At full build out, it will account for 54% of the total market. There is no pipeline in Bahrain beyond this.

Subsea Cables

As an island nation, Bahrain plays a significant role in the deployment and operation of subsea cables that facilitate international telecommunications and data connectivity. Bahrain's strategic location within the GCC region makes it an important hub for subsea cables that connect Bahrain with neighbouring countries such as Saudi Arabia, Qatar, Kuwait, Oman, and the United Arab Emirates. Bahrain is also a landing point for subsea cables that connect the Middle East with other regions. Examples of subsea cables in this category include the TGN-Gulf cable and the FALCON cable.

Bahrain serves as a point of connection for intercontinental subsea cables that link the Middle East with Europe and Asia. Examples o intercontinental cables landing in Bahrain include the 2Africa cable.

5.3 Bahrain Power

Power in Bahrain is primarily generated and distributed by the state-owned utility company, the Electricity and Water Authority (EWA). Bahrain's electricity generation is predominantly fuelled by natural gas. The country has several power plants that produce electricity, including the Al Hidd Power Plant, which is the largest power plant in Bahrain. The government of Bahrain sets electricity tariffs based on various factors such as consumption levels and consumer categories.

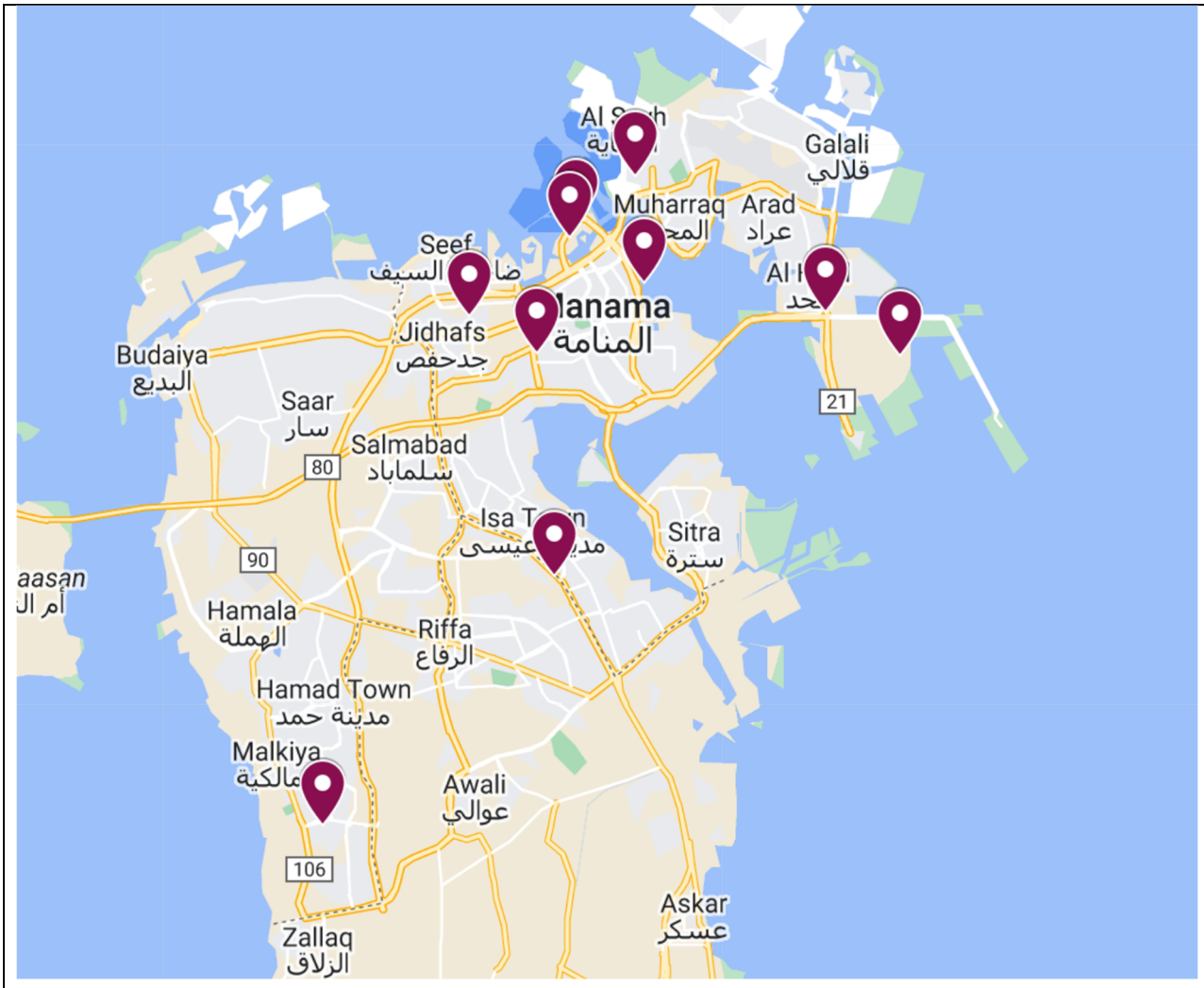
The raw cost of power for businesses in the Bahrain is 0.077 USD/kWhr.

Renewable Power

Bahrain is targeting net zero by 2060 and a 30% reduction in greenhouse gas emissions by 2035. Bahrain's proposed renewable energy pipeline consists of solar, wind, and waste to energy technologies. In 2021 the government inaugurated the Batelco solar plant, which can produce some 1600 MW of power and is expected to reduce the country's carbon emissions by around 900 tonnes

Substations

EWA Owned Power Plants and Independent Power Producers (IPP) generate electricity by the parallel connected three phase alternators/generators in Kingdom of Bahrain. EWA then have numerous Bulk Supply Points and 220kV and 66kV Gas Insulated Substations.



Location of substations in Bahrain

6. Kuwait

6.1 Economic Overview

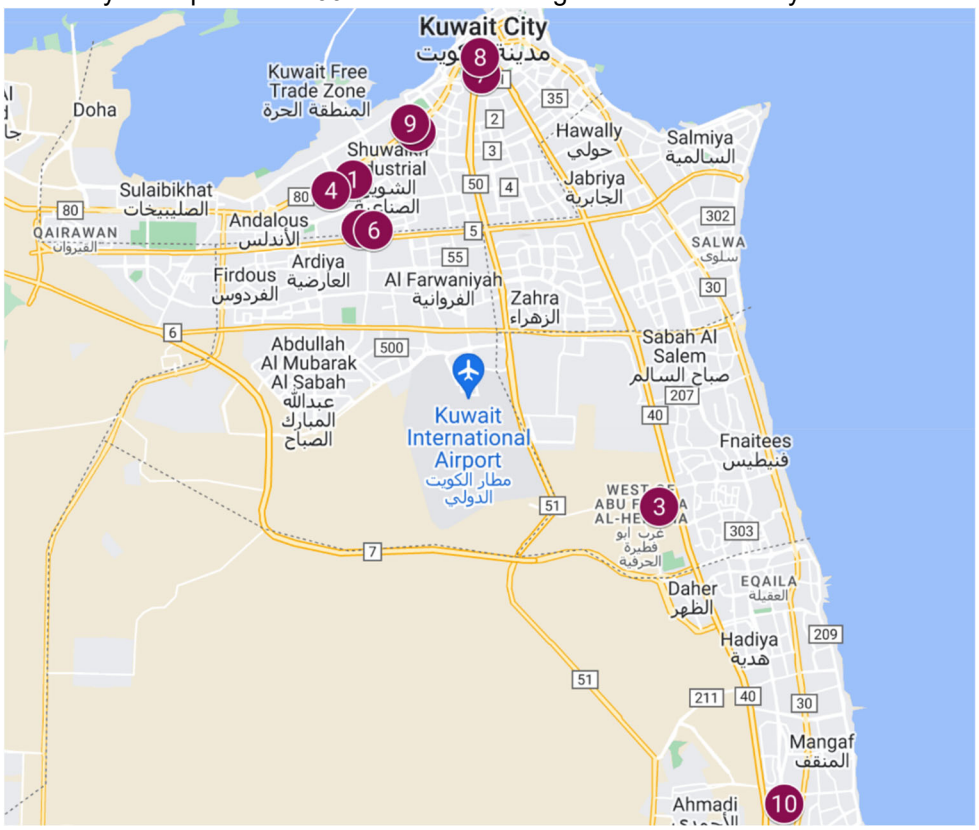
Kuwait is a small country in possession of significant oil reserves, which have been the primary driver of its economy. In recent years, Kuwait has been actively pursuing economic diversification to reduce its dependence on oil. Stell manufacturing is Kuwait's second biggest industry. Kuwait has a well-developed financial services sector, which includes commercial banks, investment companies, and Islamic banking institutions. The Kuwaiti Stock Exchange (Boursa Kuwait) serves as the primary market for trading equities and securities.

Kuwait has one of the world's largest sovereign wealth funds, the Kuwait Investment Authority (KIA). The KIA manages and invests the country's oil revenues globally. Kuwait actively encourages foreign direct investment and the government has implemented measures to attract FDI, including the establishment of free trade zones and the simplification of investment procedures.

Kuwait is ranked as the 36th richest country in the world per capita GDP (out of 193). GDP growth of 8% was recorded for 2022, as the country rebounded from COVID-19 Pandemic struggles.

6.2 Kuwait Data Centre Market

Kuwait's data centre market is driven by increasing digitalisation, growing internet penetration, and the adoption of cloud computing. There is currently only 8MW of live IT in Kuwait, with no pipeline. Existing facilities are self-builds for financial institutions or telecommunications. Zain operate a 2.3MW retail colocation facility that opened in 2004. Zain are the largest in the market by MW.

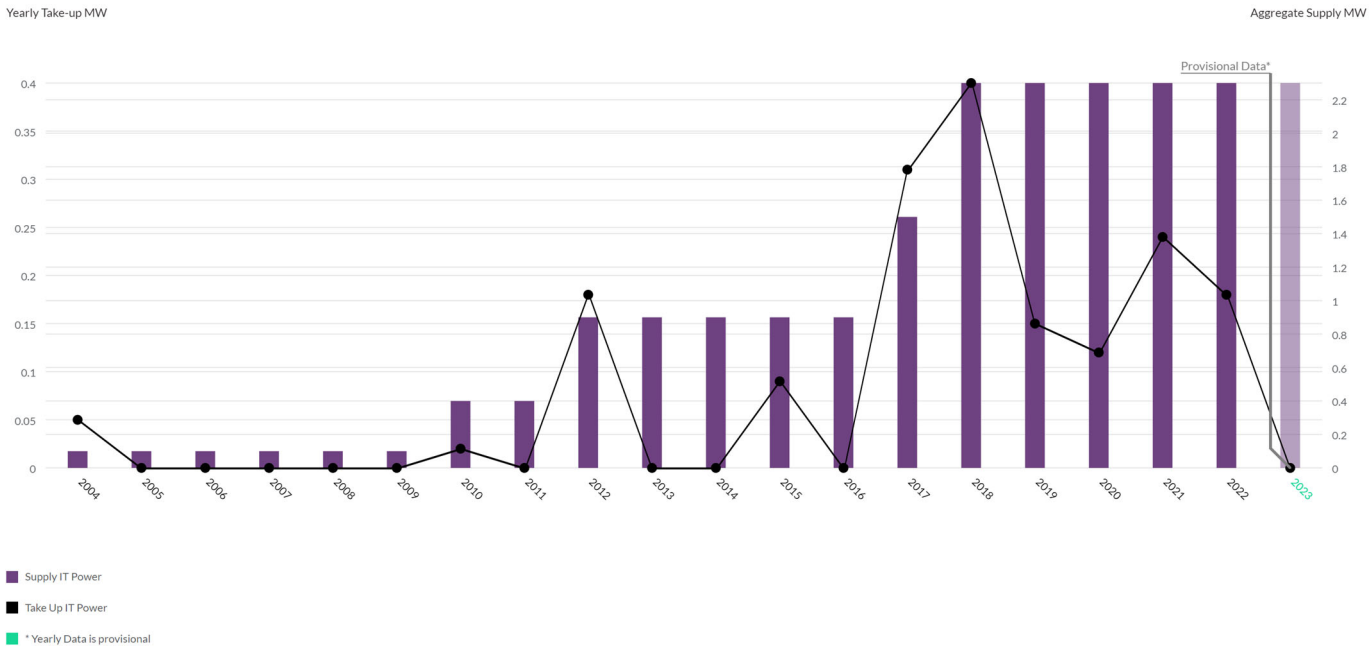


Market Leaderboard

Ranking (By MW)	Company Name	Vacant MW	MW Live	MW Total
1	Zain	1	2.8	2.8
2	Kuwait Finance House	N/A	2	2
3	National Bank of Kuwait	N/A	1	1
4	Kalaam	N/A	0.5	0.5
5	Ooredoo	N/A	0.5	0.5
6	Solutions by STC	N/A	0.5	0.5

Supply and Take-Up

Given Zain is the only operator in the market, take-up is exclusively at Zain's facilities, peaking at 0.4MW in 2018.



Pipeline

There is no pipeline for the Kuwait market.

Subsea Cables

Kuwait is well served with a number of subsea cables, including intercontinental 2AFRICA and Gulf Bridge International Cable System (GBICS)/Middle East North Africa (MENA) Cable System.

6.3 Kuwait Power

Power in Kuwait is primarily generated and distributed by the Kuwait Ministry of Electricity and Water (MEW). Kuwait relies heavily on natural gas as its primary fuel for electricity generation. The country has several power plants, including thermal power plants and combined cycle power plants, which produce electricity to meet the growing demand.

The raw cost of power for businesses in Kuwait is 0.065 USD/kWhr.

Renewable

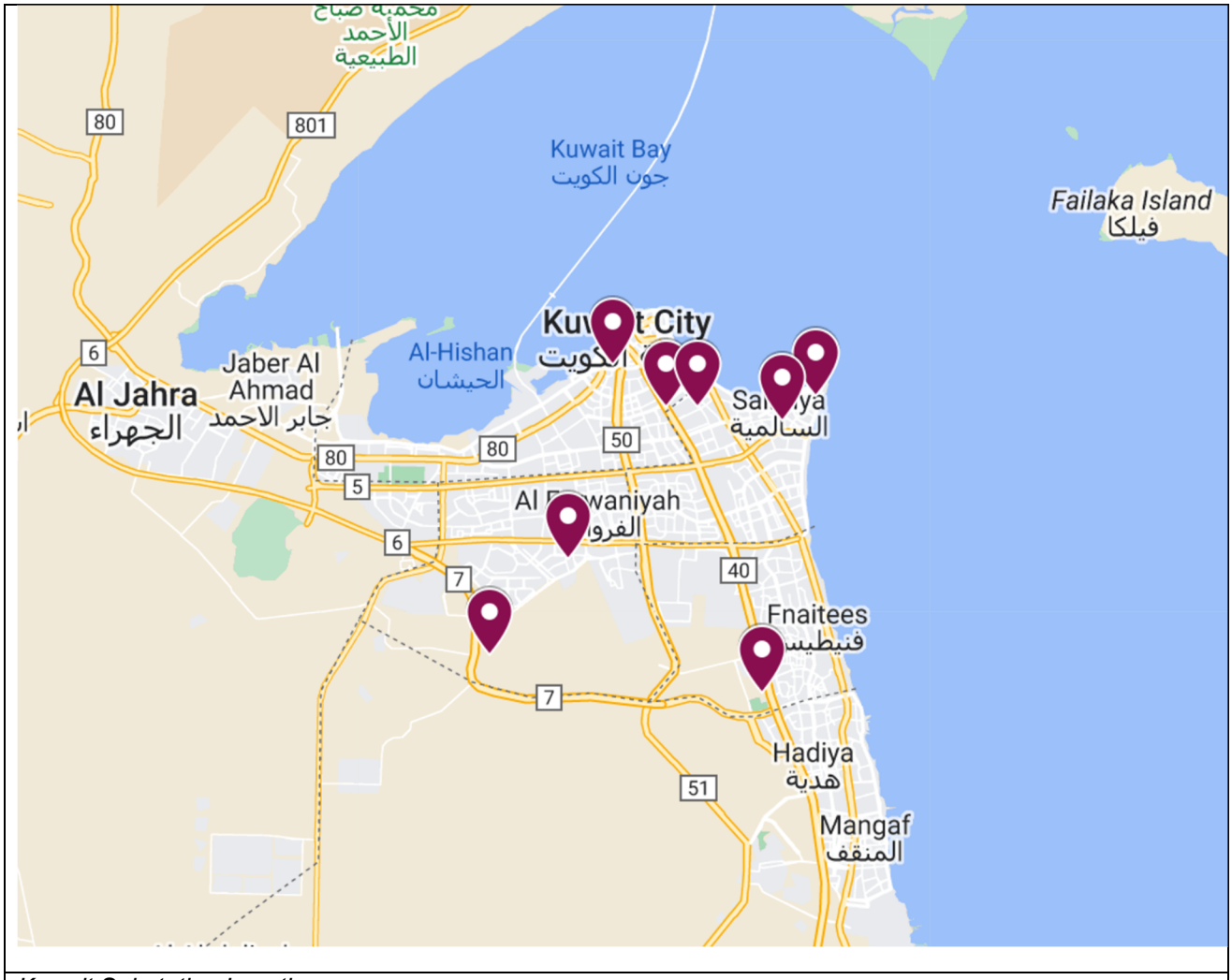
As part of Kuwait Vision 2035, Kuwait also opened its largest renewable energy park, Shagaya Renewable Energy Park, which consists of four phases with a target capacity of 4,000 MW. At present solar power output is at 0.3%.

Substations

Kuwait's substations handle different voltage levels depending on their location and function. Transmission substations typically handle high-voltage levels, such as 132 kV or higher, while distribution substations operate at lower voltage levels, such as 11 kV or 33 kV, to supply electricity to consumers.

Kuwait has been investing in substation automation to enhance the monitoring, control, and operation of substations. Automation technologies, such as Supervisory Control and Data Acquisition (SCADA) systems, help improve the efficiency, reliability, and maintenance of substations.

The network is being expanded, with Kuwait’s electricity ministry expected to award contracts for the construction of new substations imminently.



Kuwait Substation Locations

7. Accessing the Data Centre Market: Three Routes to the Middle East

There are three vehicles which may be utilised by an acquisitive party looking to enter any one, or multiple markets in the Middle East. These are as follows:

- Acquiring an equity stake in an existing Middle East platform
- Purchasing land then securing power and data centre permit, to then dispose of the land for a higher cost
- Powered shell development

Regardless of entry route, sites will require certain characteristics in order to serve as a viable option for data centre development. The maturity of respective markets will dictate exactly how much land may be required to appeal to the end customer demand, as broken down below:

7.1 Data Centre Site Selection Requirements by Market

Tier 1 markets are established regions where space has been historically sought after. They are likely to be more expensive and generally have less availability in existing facilities due to the demand profile. Within the Middle East Markets, Dubai, Abu Dhabi and Riyadh would be considered Tier 1.

In these markets, hyperscalers would be targeting a minimum 50MW facility. This would require a land parcel of 50,000sqm minimum. Tradition construction of such a facility would be 2 floors with 6m slab to slab minimum spacing and a typical site to build ratio of 50%. This accommodates additional features required to support data centres including onsite substations, external chillers, and generators/fuel tanks where appropriate. The total IT load typically reflects 70% of the site power, based on a PUE of 1.3. However, the air temperatures across the Middle East may see an achievable PUE increase to 1.5. Therefore, we would expect total site power to be 75MVA.

Tier 2 markets are newer markets, where investment initially was not concentrated. Real estate is generally cheaper in these markets. Emerging markets are those we expect to see demand in the near future but with little-to-no existing development. Kuwait and Bahrain would fall within this categorisation.

In these markets, hyperscalers would not require facilities on the same scale. Minimum 25MW would be sought, which would equate to 25,000sqm land plot. Again, based on a PUE of 1.5, we would expect a total power to site of ca. 40MVA.

Typical construction costs for data centre shell reflect 1.5x base logistics. The base cost for logistics is $600-$800, dependent on individual market factors. An onsite substation and switchgear for a 25MW data centre would likely cost in a range of 4 to 7 million US Dollars.

Across markets and under all circumstances, data centres will require a dual feed to site and a firm power connection. A firm connection means power must be available 24 hours a day, 7 days a week, 365 days a year.

The typical 5 stage process in qualifying the viability of a site for hyperscale development is as follows:

1) **Site Identification:**
- 50,000sqm in Tier 1 markets, 25,000sqm in Tier 2/emerging markets
- Commercially zoned, or change of use allowed
- Close proximity to electricity substations: this reduces the cost of civil works in connecting the facility to the substation
- Proximity to multitude of service providers
- Avoidance of data centre risks: fuel and chemical storage, gas station, high rise residential, flood risk, flight path.

2) **Architectural Feasibility Study**

- Undertake stage one. Knight Frank exclusively utilise their architectural partners to determine a facility the end user market would seek can be feasibly completed (https://www.studionwa.com/). Examples of previous designs produced in partnership with NWA can be located in Appendix A.

3) <u>Power Application</u>

- Qualification of available high voltage/medium voltage power in proximity to the site.
- A formal application would be made to the relevant distribution and/or transmission provider.
- Typically, utility company would provide a formal offer after 12 weeks and would require the applicant to accept thereafter.

4) <u>Engagement with local and national water suppliers</u>

- Confirm whether there would be capacity within the water network
- This is particularly important in the Middle East given the chillers/cooling infrastructure would be under distress during the summer season and require large supplies of water.

5) <u>Zoning</u>

- Early engagement with local zoning authorities to determine sentiment towards providing data centre use consent.

7.2 Entry Method 1: Equity Stake in an Existing Platform

One method which may be employed to access the Middle East is by purchasing an equity stake in an existing platform. Given the dearth of significantly sized and viable data centre development land mixed with a lack of available & resilient high voltage power, the market has witnessed a 70% increase in M&A activity over the past 3-years. In addition, where power is not readily available and with planning applications typically taking between 9-18 months to grant, operators are increasingly considering M&A as the preferred route for market expansion. The average multiplier of EBITDA has risen from c.15 in 2020 to c.25 in 2022 driven by increased illiquidity for stabilised platform stock.

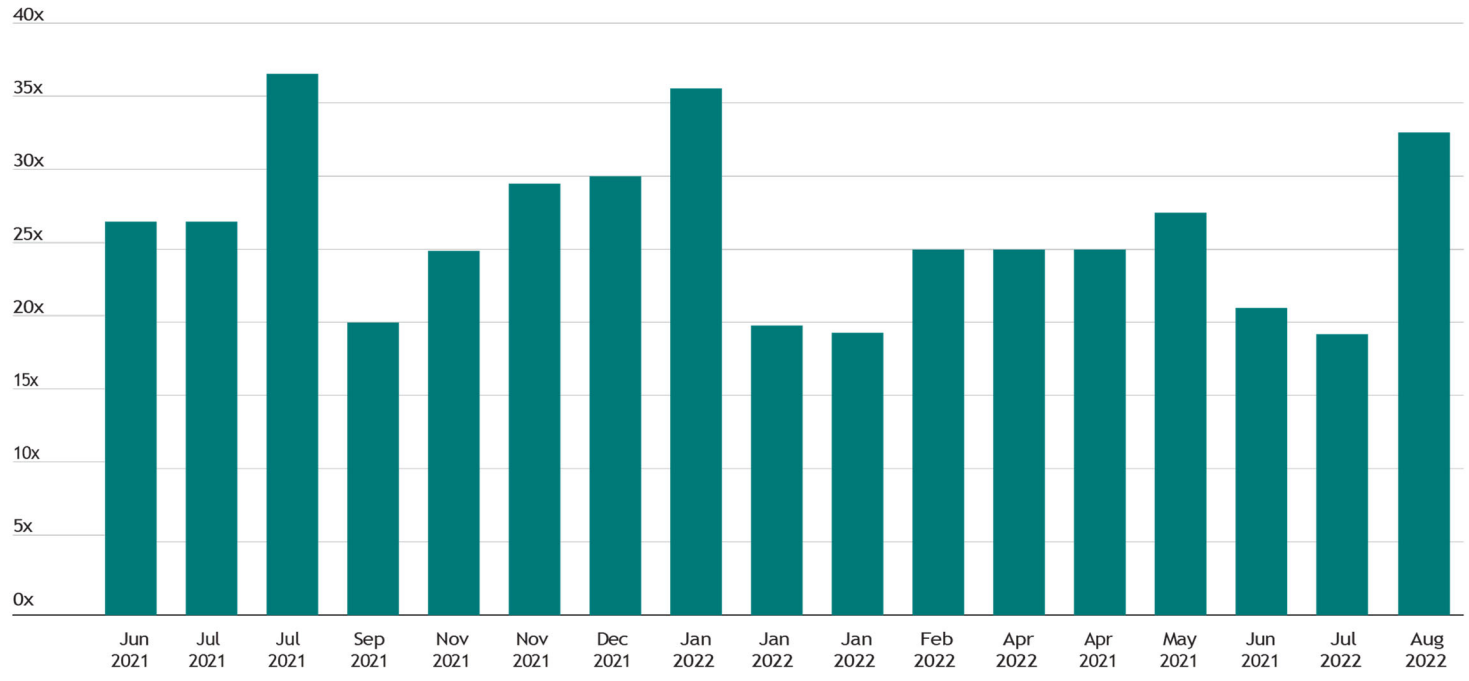
Leading UK colocation platform, Virtus Data Centres sold a minority equity stake to Macquarie at a price reflecting approximately 33x EBITDA. This has proven a new milestone in the appetite demonstrated by investors wishing to enter the data centre market or expand their presence in this case.

Other headline deals have included DigitalBridge's purchase of Switch for $11 Billion in May 2022, KKR and GIP's purchase of CyrusOne for $15 billion, American Tower's purchase of Coresite for $10 billion, and Blackstone's purchase of QTS for $10 billion. Elsewhere, Digital Infrastructure 9 added FiColo (Finland) to their growing portfolio for a reported c.€120m / c.20 x EBITDA, having acquired a 100% equity stake in London based, Volta Data Centres earlier in the year for a reported £45m.

American Tower's purchase of Coresite and Digital Bridge's purchase of Teraco have set new benchmark's in terms of pricing. The Teraco transaction was motivated in part by a desire to further expand and exploit the market opportunities in Africa and the expectation is that revenue will increase dramatically with further investment. American Tower's purchase must also have been partially motivated by the desire to increase their offering to include data and cloud management capabilities to complement the existing mobile edge compute business.

This unprecedented M&A activity is likely to further continue through 2023 with a number of high-profile processes underway or soon to commence. It should be noted that the inherent premiums secured are typically associated to stabilised platforms with facilities located in core markets with development pipeline secured and crucially where the said operator has exposure to at least one tier one US hyperscale customer.

The below graph breaks down Global Data Centre Transactions:



Buyer																	
Target																	
Value ($Mil)	8,792	CONF	850	320	14,888	10,111	CONF	3,500	222.5	670	505.0	145	58.5	11,000	63.68	CONF	CONF
Location																	

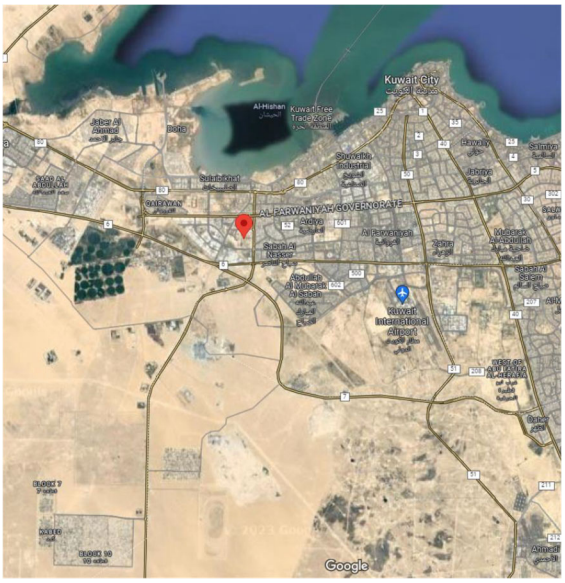
Source: Knight Frank

The first step of this process requires the identification of Middle East platforms that are believed to be coming to market. GDH are seeking to divest an equity stake, that will go towards aiding their expansion outside of Dubai. Ooredoo may also be looking to secure a minority partner to enable further expansion; and Bynet.

7.3 Entry Method 2: Powered and Permitted Land Sale

Knight Frank would analyse which of the Middle East markets is the best to enter with the most significant end user demand. Upon selection of the strongest markets, Knight Frank would identify existing assets within the client's existing portfolio that could serve as viable data centre developments or seek to acquire brownfield development land with good access to power and fibre. Upon purchase of the land a formal power offer would be sought and building permit secured. The premium value of the land which would then be disposed of is dictated by the speed to market the development offers. Knight Frank have experience of advising on this strategy throughout Europe, successfully secure clients 3x the land acquisition cost.

Knight Frank will introduce a range of potential development sites within one or multiple Middle East markets, short-listing sites that fit the criteria for the particular market. This will include land plots of appropriate size, in proximity to fibre and power, and without data centre development risks associated. Knight Frank are active across markets in the Middle East, with live land opportunities including the following:



Sabah Al Ahmad, Kuwait

- Vendor: Agility
- Size: TBA – Total 1.3 million sqm site
- Status: Part of a wider development area

Al Jahra Sulaibiya Industrial, Kuwait

- Vendor: Homes Kuwait
- Size: 30,000sqm
- Status: Vacant development land with power infrastructure

An example operator residual model is attached at Appendix 1. The example model refers to a site of c.40,000sqm and total power of 60MWA – in line with plot size and power expected in a Tier 1 market.

7.4 Entry Method 3: Powered Shell Development

Under this scenario, the client advised by Knight Frank would purchase land at industrial value which would guarantee the ability to secure debt finance on the acquisition. Typical responsibilities would include the securing of a building permit and power. Development would then include construction of the shell, onsite substation and civil works enabling a successful grid connection to site. Following this, Knight Frank would then utilise its extensive global network of data centre operators and enviable knowledge of comparable evidence and market driving factors required to secure an agreement for lease with an international data centre operator.

The annuity lease terms would be 20 to 25 years with CPI indexation. Rent would typically be derived on an open book rent-on-cost basis.

In Riyadh, Knight Frank are currently working with a leading industrial developer committed to building a powered shell with a target yield on cost rent of 17.5%. The yield on cost includes construction of the shell, construction of the onsite substation, transformers, switch gear, and the civil works connecting the asset to the suppliers power source. While the powered shell development structure has not been rolled out to scale across the Middle East, Knight Frank fully expect it to become more mainstream given it serves as an attractive proposition to US Cloud operators who need to enter the market and want to avoid both the time and complexity of seeking building permits themselves and handling the general construction.

The below comparables offer some indication on hyperscale fixed income:

Property Address	Market	Date	Power	Size (sq ft)	Rent (GIA psf)	Landlord	Tenant	Status
DC6, Stockley Park	**London**	May-23	16	c.250,000	**£31.50**	Prologis	Virtus	Completed
Rho Pero	**Milan**	Jan-23	90	70,000	**€ 21.25**	Segro	Confidential	Completed
Hueta	**Warsaw**	Jan-23	76 MVA	66,672	**€ 20.50**	7R	Virtus	Offers Received
St Denis	**Paris**	Jan-23	36	32700	**€ 31.50**	Blackstone	TBC	Under Offer
Metamorphosis 2	**Athens**	Dec-22	6	2150	**€ 21.00**	Confidential	TI Sparkle	Under Offer
Pimco	**Marseille**	Dec-22	20	20,500	**€ 18.25**	Pimco	U/0 Tier 1	Under Offer
Tirat	**Tel Aviv**	Nov-22	10	9400	**€ 13.00**	Mivne	MedOne	Completed
DC234, Prologis Park	**London**	May-22	N/A	c.235,000	**£21**	Prologis	AWS	Completed
Gyron Site	**London**	Jun-21	40	c.500,000	**£25**	Segro	GTR	Completed

The powered shell yield income is generally location agnostic and is instead fundamentally driven on covenant profile, length of lease and performance of revenue derived through indexation. An example operator rental model is attached at Appendix 2. The example model produces a base head rent of CHF 40.29 (GBP 35.44).

7.5 Colocation

Colocation refers to the practice of renting space for servers and other hardware at a third-party provider's facility, known as a colocation operator. While there are different types of colocation agreements, retail colocation agreements are primarily designed for smaller deployments. These facilities are strategically located in close proximity to population centres, allowing businesses to reap the benefits of accessibility and convenience.

In retail colocation, providers offer packages at a flat rate, bundling various services together. Typically, these packages include a comprehensive suite of services such as rack space, power supply, internet connectivity, IT support, and other related services. By offering a complete package, colocation providers simplify the process for businesses, enabling them to focus on their core operations while leaving the infrastructure management to the experts. Retail colocation facilities offer packages at a flat rate. When offering colocation services, the package offered is likely to include a full suite of services: rack, space, power, internet connection, IT support and other serves. This allows retail colocation providers to offer their services at a premium.

To establish the terms, conditions, and requirements of their colocation services, providers typically employ a master service agreement (MSA). The MSA serves as a comprehensive contract that outlines the obligations and responsibilities of both the provider and the tenant. Additionally, providers may also include a service level agreement (SLA) exhibit within the MSA. The SLA further specifies the performance measures and benchmarks against which the provider's services will be evaluated. An example of an MSA can be located in Appendix 4.

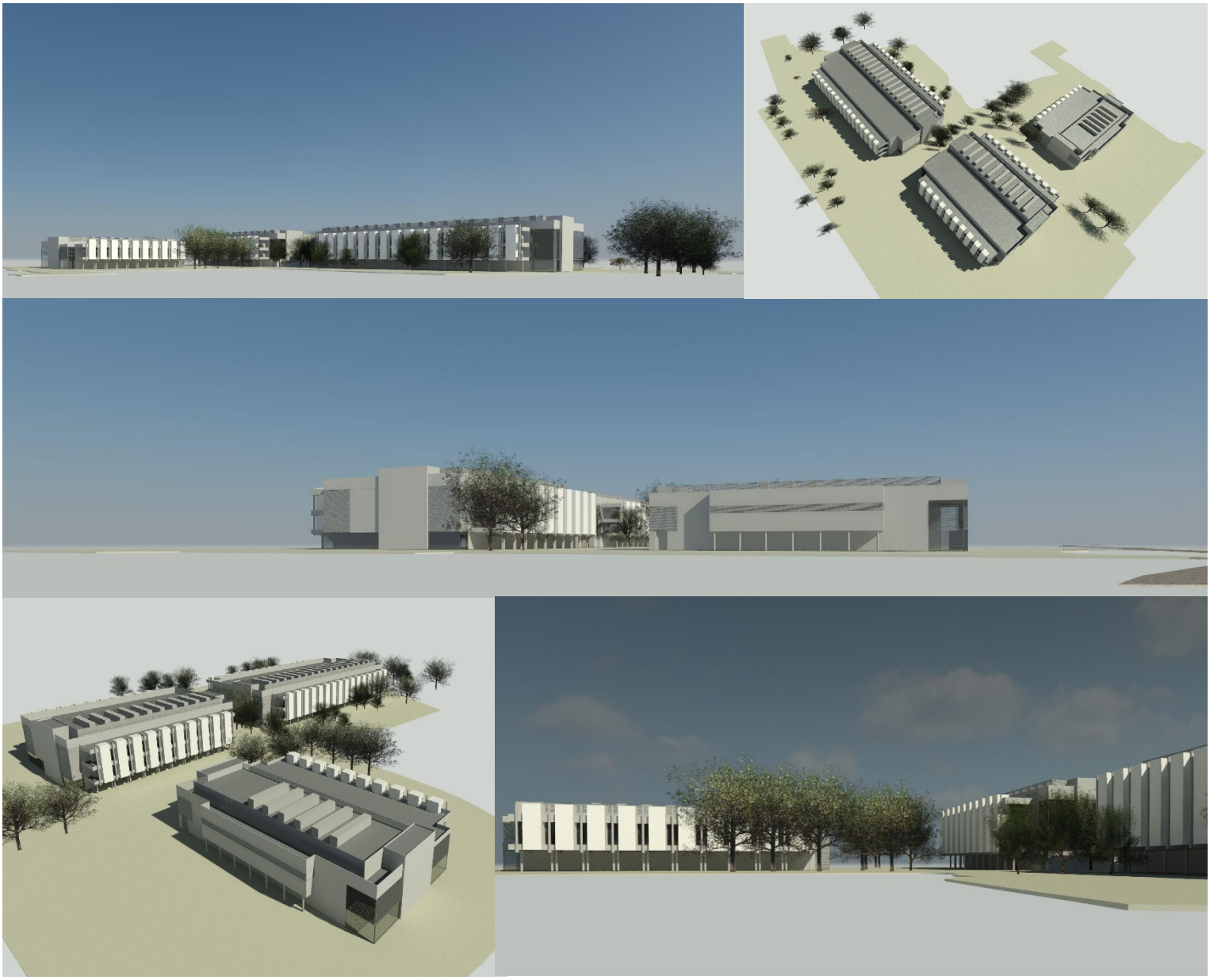
On top of the base rent, operators may charge an MRC, otherwise called a month-to-month repeating charge. These costs are separate to one-time costs at the start of the agreement. MRC's may include the cost of a hosting account, the usage of a network connection or the use of a transit service. The costs for retail colocation deployments are generally lower, given less space is generally required and the racks may be already set up.

Under pure retail colocation agreements, the tenant leases the equipment, making it an operational expense (OpEx) rather than a capital expense (CapEx). This distinction is advantageous for tenants, as OpEx expenses are fully tax-deductible, whereas CapEx expenses are amortized over time.

Wholesale colocation, on the other hand, involves a combination of CapEx and OpEx. In this arrangement, a company owns the servers and other equipment while leasing the necessary infrastructure components such as floor space, cooling systems, power supply, and security measures. Wholesale colocation pricing options differ from bundled services models and are often based on power capacity, such as kilowatts (kW) or megawatts (MW). Due to the larger scale and requirements involved, installation costs for wholesale colocation tend to be higher than those of retail colocation.

8. Appendices

8.1 Appendix 1: NWA Design Example



8.2 Appendix 2: Operator Residual Example

PROJECT PARAMETERS

Analysis Begin	Mar-25
Duration (months)	81 month
Analysis End	Nov-31
Total Area (sqm)	39,810.0
Total Area sf	428,510.9
Total kW	60,000.0

PURCHASE ASSUMPTION

Net Land Value	£90,505,496
Land Value (Say)	£90,500,000
Purchaser's Costs	6.80%

EXIT ASSUMPTIONS

Exit Date	Nov-31
Exit Value	£1,144,073,979
Project Unlevered IRR	12.52%
Exit Yield	5.50%
Multiplier	18.18 x
Purchaser's Costs	6.80%
Disposal Costs	1.50%

CONSTRUCTION ASSUMPTIONS

	Total Cost	Cost per sf	Construction sf	Start Month	Duration	End
Consultancy	£ 2,700,000.00	£ -	0	Mar-25	10	Dec-25
Highway Fee	£ 50,000.00	£ -	0	Mar-25	10	Dec-25
Demolition	£ 1,200,000.00	£ -	0	Dec-25	3	Feb-26
M&E Fit Out	£ 690,000,000.00	£ 11,500,000.00	60	Nov-29	24	Oct-31
Contestable Cost	£ 28,000,000.00	£ 2,000,000.00	14	Nov-28	12	Oct-29
Shell and Core (1)	£ 6,390,000.00	£ 213.00	30000	Nov-28	12	Oct-29
Shell and Core (2)	£ 6,390,000.00	£ 213.00	30000	Nov-29	12	Oct-30
0	£ -	£ -	0	1	1	1
0	£ -	£ -	0	1	1	1
0	£ -	£ -	0	1	12	12
0	£ -	£ -	0	1	12	12

TAKE UP ASSUMPTIONS

Capacity Distribution	Power Take Up	Start Month	Duration	End
1	30,000	Nov-30	13	Nov-31
2	30,000	Nov-31	1	Nov-31
3	-	1	81	81
4	-	1	81	81
5	-	1	81	81
6	-	1	81	81
7	-	1	96	96
8	-	1	96	96
9	-	1	96	96
10	-	1	96	96

REVENUE ASSUMPTIONS

	Per Annum Rent	Base Rental	Start Month	Duration	End
1	£ 36,000,000.00	£ 123.00	Nov-30	12	Nov-31
2	£ 36,000,000.00	£ 126.00	Nov-31	1	Nov-31
3	£ -	1	81	81	Mar-00
4	£ -	1	81	81	Mar-00
5	£ -	1	81	81	Mar-00
6	£ -	1	81	81	Mar-00
7	£ -	1	96	96	Apr-00
8	£ -	1	96	96	Apr-00
9	£ -	1	96	96	Apr-00
10	£ -	1	96	96	Apr-00
					Jan-00
Additional Services	0.00%				Jan-00

Growth Assumptions

Construction	3.00%	per annum growth
Rental	3.00%	per annum growth
Operating Expenses	0.00%	per annum growth

8.3 Appendix 3: Operator Rental Example

PROJECT TIMELINE

Analysis Begin	May-23
Duration (months)	37
Analysis End	May-26
Transaction Type	Operator

Head Rent

Base Head Rent (Yr 0)	CHF 4,321,688	CHF 433.67	per sq m / annum	CHF 36.14	per sqm / mth
Annual Indexation	2.50%	CHF 40.29	per sq ft / annum	CHF 3.36	per sqft / mnth
Year 1 starts at end of Ph. 1 fit out					
Headrent Start Date	31/05/2024				
Year 1 Payable	CHF 4,429,608				
Year 2 Payable	CHF 4,537,847				
Year 3 (1month) Payable	CHF 387,141				

EXIT ASSUMPTIONS

Exit Yield	5.50%
Purchaser's Costs	3.00%
Disposal Costs	0.50%
Exit Date	May-26
Exit Value	CHF 149,485,621

AREA AND CAPACITY INPUTS

Total Area - GIA (sq m)	9,965
Site Area (Acres)	
Total Capacity (MW)	12.0

Capacity Distribution	%	MW
Phase 1	33.33%	4.00
Phase 2	33.33%	4.00
Phase 3	33.33%	4.00

COST INPUTS

Tenant Costs	Cost psf / Cost per MW	Cost Amount	Start Month	Duration	End	Cost Distribution	Select Party to Bear Cost
Fit Out Phase 1	CHF 9,700,000	CHF 38,800,000	1	12	12	Straight Line	Operator
Fit Out Phase 2	CHF 9,700,000	CHF 38,800,000	13	12	24	Straight Line	Operator
Fit Out Phase 3	CHF 9,700,000	CHF 38,800,000	25	12	36	Straight Line	Operator
Construction Cost Growth		2.50%					
OpEx		30.00%					

TOTAL COSTS CHF 116,400,000

REVENUE INPUTS

Phase	ERV per kw pcm	Rental Growth pa	Additional Services	Start Date	End Date	Growth Rate Start Date	Growth Rate End Date
	CHF 121						
Phase 1	CHF 121	2.50%	5.00%	13	37	25	37
Phase 2	CHF 121	2.50%	5.00%	25	37	37	37
Phase 3	CHF 121	2.50%	5.00%	37	37	49	37

DEVELOPMENT FINANCE — Operator Financing

LTC	60.00%
Loan Amount (£)	CHF 69,840,000
Arrangement Fee	1.00%
Loan Start Month	1
Annual Interest Rate	7.50%
Monthly Interest Rate	0.60%
Repayment Date	31/05/2026

OPERATOR ASSUMPTIONS

Operator Target Unlevered IRR	20.00%
Operator Unlevered IRR	17.70%
Operator Target Levered IRR	20.00%
Operator Levered IRR	19.99%

REFRESH HEADRENT

REFRESH HEADRENT

The figures provided are draft and may be subject to change. The information provided is for client's internal purposes only and should not be published or disclosed to any other party.

Appendix 4: MSA Example (Contents and First Section)

Dated: [redacted] 2023

(1) [SUPPLIER]

(2) [CUSTOMER]

(3) [CUSTOMER GUARANTOR]

MASTER COLOCATION SERVICES AGREEMENT

relating to data centre at [ADDRESS]

Contents

MASTER COLOCATION SERVICES AGREEMENT

THIS AGREEMENT is effective as at the date set out on the date of the last signature below (the "**Effective Date**").

BETWEEN:

(1) [SUPPLIER] (incorporated and registered in [JURISDICTION] under company registration number [NUMBER]), the registered office of which is at [ADDRESS] ("**Supplier**"); and

(2) [CUSTOMER] (incorporated and registered in [JURISDICTION] under company registration number [NUMBER]), the registered office of which is at [ADDRESS] ("**Customer**"); and

(3) [CUSTOMER GUARANTOR] (incorporated and registered in [JURISDICTION] under company registration number [NUMBER]), the registered office of which is at [ADDRESS] ("**Guarantor**").

IT IS AGREED AS FOLLOWS:

1. **DEFINITIONS**

This Agreement uses the following definitions:

"**2003 Act**"

Insolvency Act 2003 ("*Ley 22/2003 de 9 de julio - Concursal*") as restated and amended from time to ~~time;~~

"**Acceptable Rated Assignee**"

an Assignee that has the technical wherewithal to observe and perform its obligations under this Agreement and all existing Services Orders and either the Assignee itself or the Assignee's Guarantor is a company that has had for the last complete trading year calculated from the date of the Customer's application for consent to assign:

(a) senior unsecured, ~~unsubordinated~~ and unguaranteed long-term debt that is rated (or whose proposed senior unsecured, unsubordinated and unguaranteed long term debts is indicatively rated) equal to or better than the Appropriate Rating at the date of the Customer's application for consent to assign; or

(b) a long-term counterparty credit rating that is rated equal to or better than the Appropriate Rating; or

(c) a credit rating in respect of its senior unsecured, ~~unsubordinated~~ and unguaranteed long-term debt or in respect of its long term counterparty status from another major rating agency that is equivalent to or better than the above ratings

and whose credit rating has not been placed on the credit watch list or has not been accorded a negative or developing outlook or equivalent (other than with a view to a possible up-grade) by the relevant rating agency during the that trading ~~year;~~

"**Acceptable Non-rated Assignee**"

an Assignee that has the technical wherewithal to observe and perform its obligations under this Agreement and all existing Services Orders and who produces Assignee's Accounts to the Supplier:

(a) for three consecutive Accounting Periods covering a period of not less than 36 ~~months;~~

(b) with the date on which the final set of Assignee's Accounts were audited being not more than eleven months before the Calculation ~~Date;~~

(c) disclosing Assignee's Profits for each of the Accounting Periods equal to or greater than three times the aggregate of the annual Fee payable pursuant to all existing Services Orders at the rate applicable at the end of each of the Accounting Periods; and

(d) disclosing Assignee's Assets for each of the Accounting Periods equal to or greater than ten times the aggregate of the annual Fee payable pursuant to all existing Services Orders at the rate applicable at the end of each of the Accounting ~~Periods;~~

"**Access Date**"

in relation to a Phase, the date by which the requirements set out at **paragraph 4** of **Schedule 2** have been ~~satisfied;~~

"**Accounting Period**"

each period of twelve months (and any shorter period where the last such period is less than twelve months) from and including the Termination Date up to the End Date that would have occurred but for the termination of the applicable Services Orders by the Customer pursuant to **clause 14.4.1**;

"**Act**"

any act of Parliament and any delegated law made under ~~it;~~

"**Additional Services**"

such services as the Supplier ~~is~~ required to supply under **clause 7.1**;

"**Additional Services Charges**"

the charges payable for the supply of Additional Services, as referred to in **clause 7.1.2**;

"**Affiliate**"

in relation to a party, any business entity which directly or indirectly Controls, is Controlled by, or is under common Control with that ~~party;~~

"**Agreement**"

this Agreement and any document supplemental to it, including any Services ~~Orders;~~

"**Allocated Power Capacity**"

in respect of each Phase, the electricity power capacity, in kilowatts, available to be drawn by all of the Equipment installed in that Phase, set out in each Services ~~Order;~~

"**Announcement**"

any public announcement, circular or other communication about or containing information about the terms, subject matter or existence of this Agreement or any matter arising out of or ancillary to this ~~Agreement;~~

"**Annual Certificate**"

in respect of each Accounting Period, a certificate showing the Annual Replacement Income received by the Supplier during that Accounting ~~Period;~~

"**Annual Replacement Income**"

the Replacement Income received by the Supplier during each Accounting ~~Period;~~

"**Applicable Law**"

any:

(a) law including any statute, statutory instrument, bye-law, order, regulation, directive, ~~treaty~~ or decree (including any judgment, order or decision of any court, regulator or tribunal); and/or

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You will not use the report when assessing or monitoring the performance of any portfolio, assets or liabilities of any kind unless (i) we have specifically agreed this in in writing that you may do so and (ii) you accept that you cannot rely upon the report for the purposes of any such assessment or monitoring because it will not be comparing like with like in terms of the general nature of the Report compared to specific advice in relation to specific matters.

In all cases you must take and rely upon specific professional advice on specific business decisions or other matters or circumstances, whether or not you investigated any matter and took such advice as a consequence of anything in our report.

In particular, but without prejudice to the above provisions, we will not be liable in respect of any inaccurate, incomplete, out of date or otherwise erroneous element of the report which arises as a result of any (i) data provided by you or your representatives or (ii) external data.

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Regulated by RICS