

Research



INDIA WAREHOUSING MARKET REPORT 2020

India Warehousing Market Report 2020

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INTRODUCTION

With a decadal low GDP growth of 4.2% in FY 2020, the Indian economy was already reeling under stress. Then came the Covid-19 crisis that engulfed the global economy and further aggravated the pain of the Indian economy in general and the real estate sector in particular. However, as we have seen in the last few years, there have been wide variations in the fortunes of sub-segments of real estate wherein the commercial real estate, particularly the warehousing sector, has achieved new benchmarks on demand, supply and investments. Noteworthy is the fact that these peaks have been achieved on an improving metric of quality - for both product and enterprise. With the economy turning turtle on account of the Covid-19 pandemic, the real estate sector has been pushed to the wall and all segments including warehousing will see a slowdown in demand, although the warehousing sector provides hope considering it will be better placed compared to residential, retail and office.

The country's warehousing sector gained prominence in the last 4-5 years as the eco-system for efficient supply chain had been triggered by the implementation of Goods and Services Tax (GST) in 2017. In the same year, the central government's grant of 'infrastructure status' to the logistics sector including warehousing, had also proved to be a catalyst. Since then, this segment has undergone a rapid change towards institutionalization. From the supply side, the warehousing segment - earlier dominated by unorganized players - has increasingly attracted international players and accelerated formalization of the sector. The regulatory eco-system is also giving attention to the sector with many state governments announcing dedicated logistics sector policies. On the demand side, occupier expectations in terms of compliant and quality warehousing space, has catapulted to the next level with increasing dominance of e-commerce, third party logistics (3PL) players and corporates with global operations.

On ground, we have seen a strong demand for warehousing space and a complimentary engagement on the institutional investment and development side too. Across the top 8 cities, the warehouse sector has witnessed a threefold transaction growth during FY 2017 to FY 2019. The transactions have grown from 14 mn sq ft in FY 2017 to 26 mn sq ft in FY 2018 and 46 mn sq ft in FY 2019. FY 2020 numbers, although a tad lower at 41 mn sq ft, depict the enhanced market size of the country's warehousing space.

From the supply side, the top 8 cities held an estimated 307 mn sq ft of warehousing stock at the end of FY 2020. The Mumbai market accounts for a massive 40% of this stock which along with NCR houses nearly 58% of the same. Vacancy level on the currently built-up space is at a comfortable 15.5%. As we detail out in the subsequent segments of the report, nearly 193 mn sq ft of potential warehousing space that can come up on the existing warehousing land parcels amounts to almost five years of warehousing demand going by the FY 2020 absorption rate. However, while land is available to build warehousing facilities, it is the relative scarcity of land which fulfills compliance requirements of occupiers and institutions, that causes a supply constraint.

On the institutional investment side, the sector has seen investment volume growing from USD 125 million in 2016 to USD 2.3 billion in 2017. In 2018 and 2019 it was recorded at USD 2.2 billion and USD 1.8 billion respectively. In 2020, the investor activity was subdued on account of Covid-19 disruptions..

With Covid-19 pandemic and the consequent nationwide lockdown, we saw large scale supply chain disruptions. While the warehouse and transport activity levels have gradually improved, we see some key learnings/themes which will be embraced by stakeholders on a long term basis. While there was a temporary disruption in the non-essential segment during the initial phase of the lockdown, the ensuing slowdown in some occupier groups will impact the warehousing demand in the short to medium term even as some others accelerate their take up. Automobile, consumer durables, engineering are some segments which will experience a slowdown thus impacting their warehouse demand, whereas e-commerce, FMCG, 3PL are likely to enhance their footprint. Overall, in the short term, we expect the warehousing demand to be adversely impacted by the Covid-19 crisis and rents to be under pressure.

Amidst these upheavals in the overall market dynamics, which will see many interim fixups and also trends which will fade soon, we reckon that the warehousing sector is a long-term play whether it is in terms of the lease tenures or investment horizon. Hence, taking cognizance of the underlying dynamics of the segment, we identify the following themes as key catalysts for the sector in the times to come.

Key warehousing themes

Consolidation of warehouses to accelerate

Stocking levels to increase

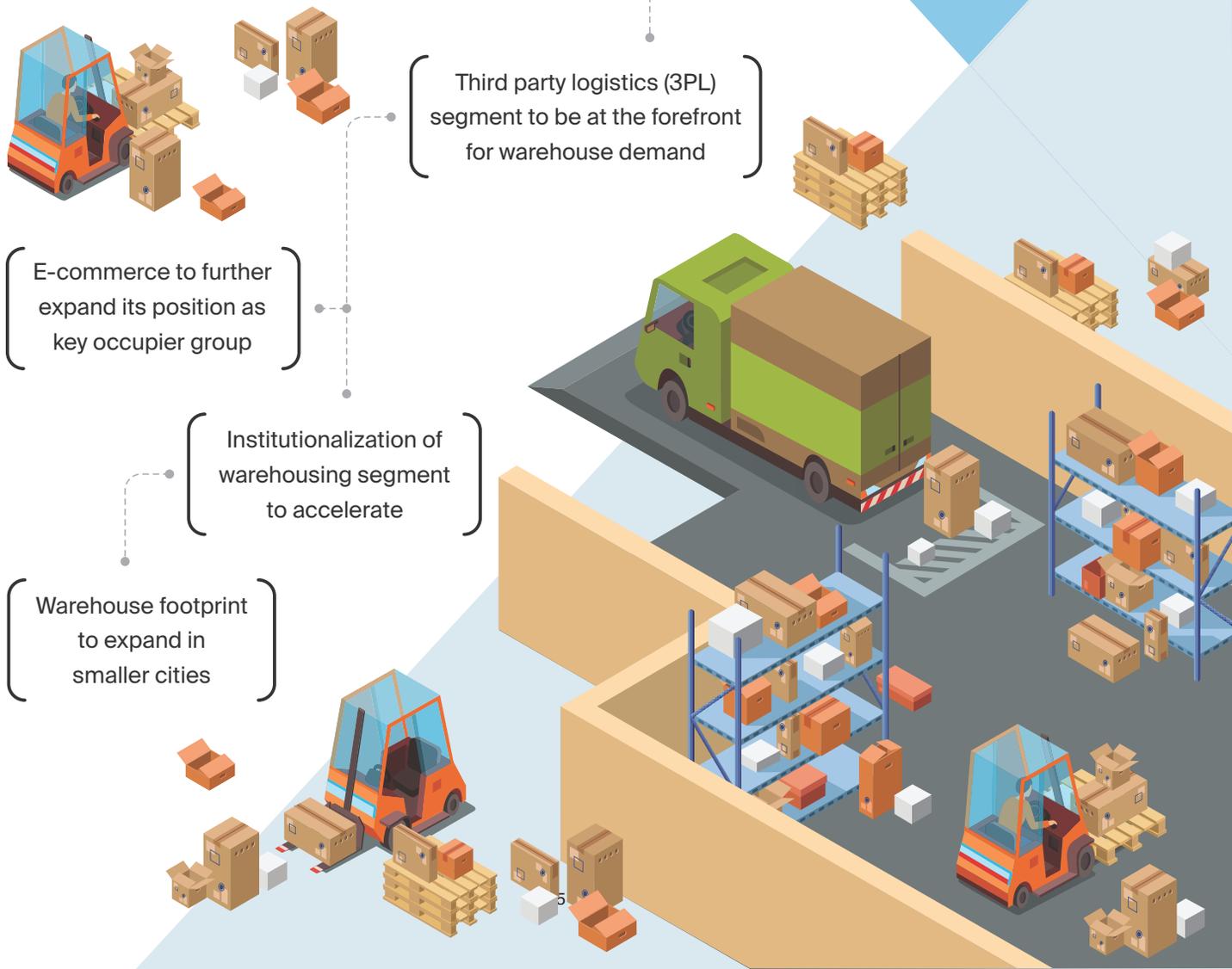
Cold storage warehousing to capture attention as focus shifts to essential supplies

Third party logistics (3PL) segment to be at the forefront for warehouse demand

E-commerce to further expand its position as key occupier group

Institutionalization of warehousing segment to accelerate

Warehouse footprint to expand in smaller cities



Key themes in the post Covid-19 era and implications

Consolidation of warehouses to accelerate'

- One nation, one tax, one market' premise of the central government led to a nationwide implementation of Goods and Services Tax (GST) on 1st July 2017. Amongst the most notable triggers in the Indian warehousing sector, GST led to the reorganization of supply chain where warehouse location and size strategy were rebased on efficiency rather than tax saving. As a consequence, fragmented small warehouses gave way to larger fulfillment centers around key markets.
- With Covid-19 pandemic, many cities faced longer and more serious business lockdown compared to others. This had a snowball impact on multi-city cargo movement as supply chain faced disruption even though points of sale (POS) were active. This benefited the fragmented warehousing model, however, we reckon that the gains of consolidated warehouse strategy outweigh temporary gains in this Covid-19 enforced lockdown and hence, consolidation is a trend that will gain momentum.

Stocking levels to increase

- Lean supply chain with a focus on inventory carrying cost has been a key consideration for enterprises. In the Covid-19 circumstances, many such businesses, mainly in the essential segment like F&B, groceries, and pharmaceuticals, faced stock-out as raw material sourcing as well as production was disrupted. Learning from the experience, many businesses may look at increasing the level of inventory in the short to medium term.
- The increased stocking need will lead to a greater demand for warehousing. However, this demand will be served by greater cubic capacity utilization of vertical space rather than mere increase in floor area.

Cold storage warehousing to capture attention as focus shifts to essential supplies

- With a Covid-19 pandemic induced slowdown in economic activities, where discretionary segment has taken a big hit, essential supplies segment has emerged as a ray of hope with its sustained business performance even during the health crisis and peak of lockdown.

- With supply chain disruption, a huge variation in price of essential supplies, mainly of perishable food items, was seen across the country. This also led to a supply shock induced increase in inflation. These developments lay a strong premise for developing cold storage capabilities on a nation-wide scale.
- Cold storage market remains an unorganized and fragmented play in the country. The need for a variety of temperature-controlled solutions extends from perishable categories like fruits, vegetables, dairy, fish and meat to pharmaceuticals and others. With increasing category focus, supply shock and consequent price inflation concerns, cold storage segment will receive greater attention from government and stakeholders alike.

Third party logistics (3PL) segment to be at the forefront for warehouse demand

- Until a few years ago, in-house logistics operations were the mainstay for supply chain activities. However, since the implementation of GST in 2017, specialized service for storage and distribution of goods offered by third-party logistics, has gained prominence.
- Besides the flexibility and cost efficiencies achieved by outsourcing to 3PL, input tax credit on GST also played a role in increasing consideration for 3PL services.
- As a result, we have seen the 3PL segment taking up the largest share in warehouse demand in recent years. Its share of space take-up across top 8 cities increased from 35% in FY 2018 to 36% in FY 2019. This has remained steady at 36% in FY 2020. We expect that the uncertainty created by the current crisis and producer ambitions of exploring newer markets will lead to greater dependence on third party logistics segment.

E-commerce to further expand its position as key occupier group

- Even before Covid-19 struck, e-commerce had established itself as a key occupier group. At 14% share in warehouse demand in FY 2018 and 24% in FY 2019, it was second only to the third-party logistics segment. In FY 2020, the sector's share stood at 23%. Other segments like manufacturing, retail, FMCD and FMCG followed in the demand pie..

- Even while the lockdown and movement restrictions served as a temporary propeller for e-commerce sales with the threat perception on the spread of corona virus infection, 'home delivery' service has come to the forefront. During the lockdown, many brick and mortar enterprises adapted to provide the same; however, it is the e-commerce segment which has perfected the art of home delivery. Large organized retailers too have ventured into e-commerce in the wake of these developments.
- With restricted mobility, many first-time customers experimented with purchase on e-commerce channels during the lockdown. Many of these customers are likely to turn loyal due to the convenience offered and become permanent customers even after the pandemic ends. Going forward, the fear of coronavirus infection will accelerate adoption of e-commerce purchases as consumers restrict mobility over a short to medium term until there is a cure for the virus.
- Restricted movement on social gatherings and stricter lockdown norms for shopping malls will further serve as tailwind for e-commerce demand in the near term and help new customers adopt the practice.

Institutionalization of warehousing segment to accelerate

- In the Covid-19 crisis, uninterrupted warehouse park operations came up as a key differentiator of warehouse

quality, and institutional space was better prepared to ensure business continuity for occupiers.

- Warehouse lease tenures are getting longer, ranging from 6-9 years and longer still in some cases. With increasing interest from global investors, the size of investment per deal has witnessed an increase of 25%, growing to USD 282 million per deal in the three-year period ending 2019, compared to USD 225 million in a similar period ending 2016. Demanding occupiers and key policy interventions have ensured a push towards institutionalization of the warehousing segment in the country. We expect that in the current uncertain environment, institutional abilities will be valued even more and lead to participation of bigger developers and investors in the country's warehousing segment.

Warehouse footprint to expand in smaller cities

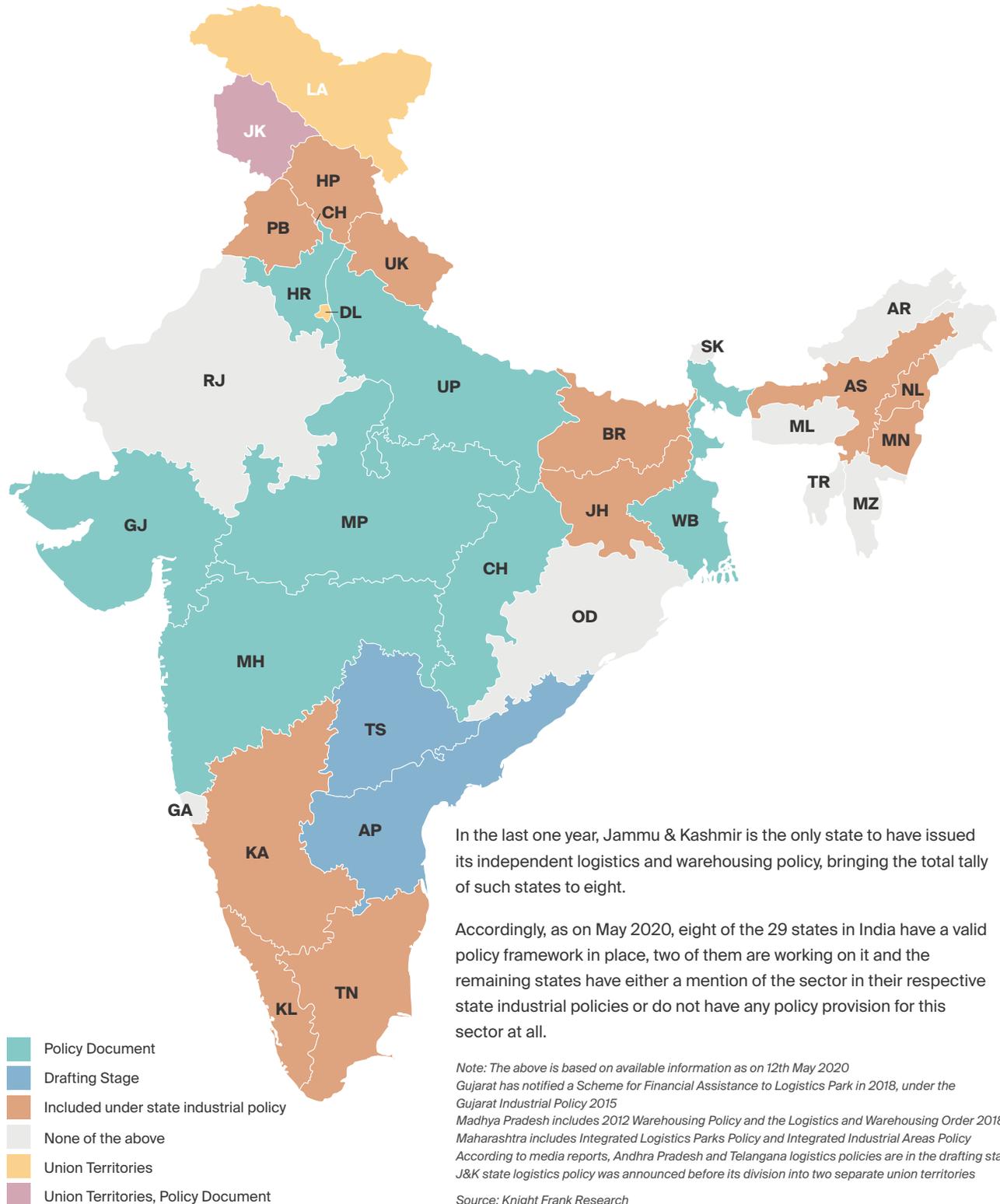
- Rising consumerism and the emergence of e-commerce has created a need for faster deliveries even in markets beyond the top 8 cities. These smaller cities which include markets like Ludhiana, Coimbatore, Vapi, Guwahati, Bhubaneswar, Surat, Lucknow, Patna and Siliguri are witnessing warehousing demand from e-commerce players. We expect this trend to further strengthen, as e-commerce and 3PL players capitalize on this consumption driven demand in smaller cities.



Logistics
and warehousing
POLICY
INFRASTRUCTURE
in India

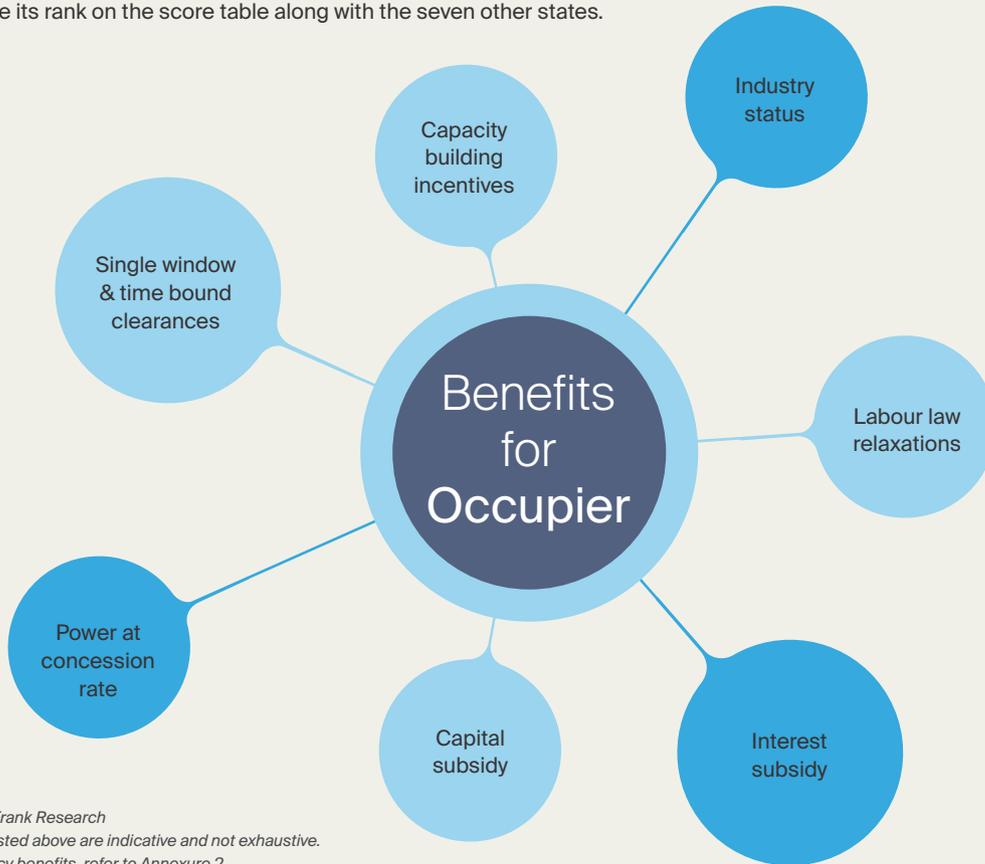
In the last edition, we looked at the overall policy environment in the country for the logistics and warehousing sector. We analysed the Draft National Logistics Policy 2018 and reviewed the status of an independent logistics and warehousing policy infrastructure across all 29 states. Further, for the states that had independent policies, we reviewed their provisions and benefits across a fixed set of parameters and ranked them based on benefits to occupiers and benefits to developers. In this edition, we continue to review the status of existence of an independent logistics policy framework across states and evaluate their provisions.

To begin with, let us review the status of existence of an independent logistics and warehousing policy framework across each state in India.



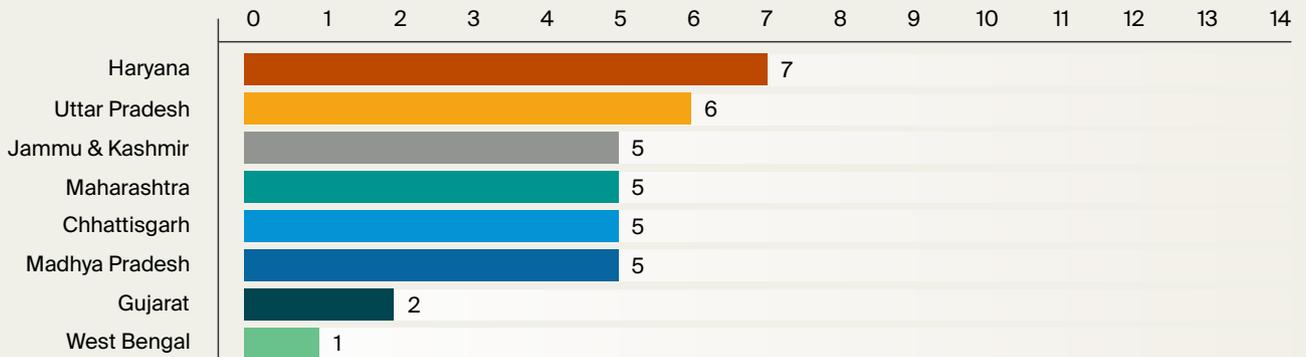
Benefits

Now, we evaluate the Jammu & Kashmir logistics and warehousing policy across the benchmark set of parameters given below, separately for developers and for occupiers, and calculate its rank on the score table along with the seven other states.

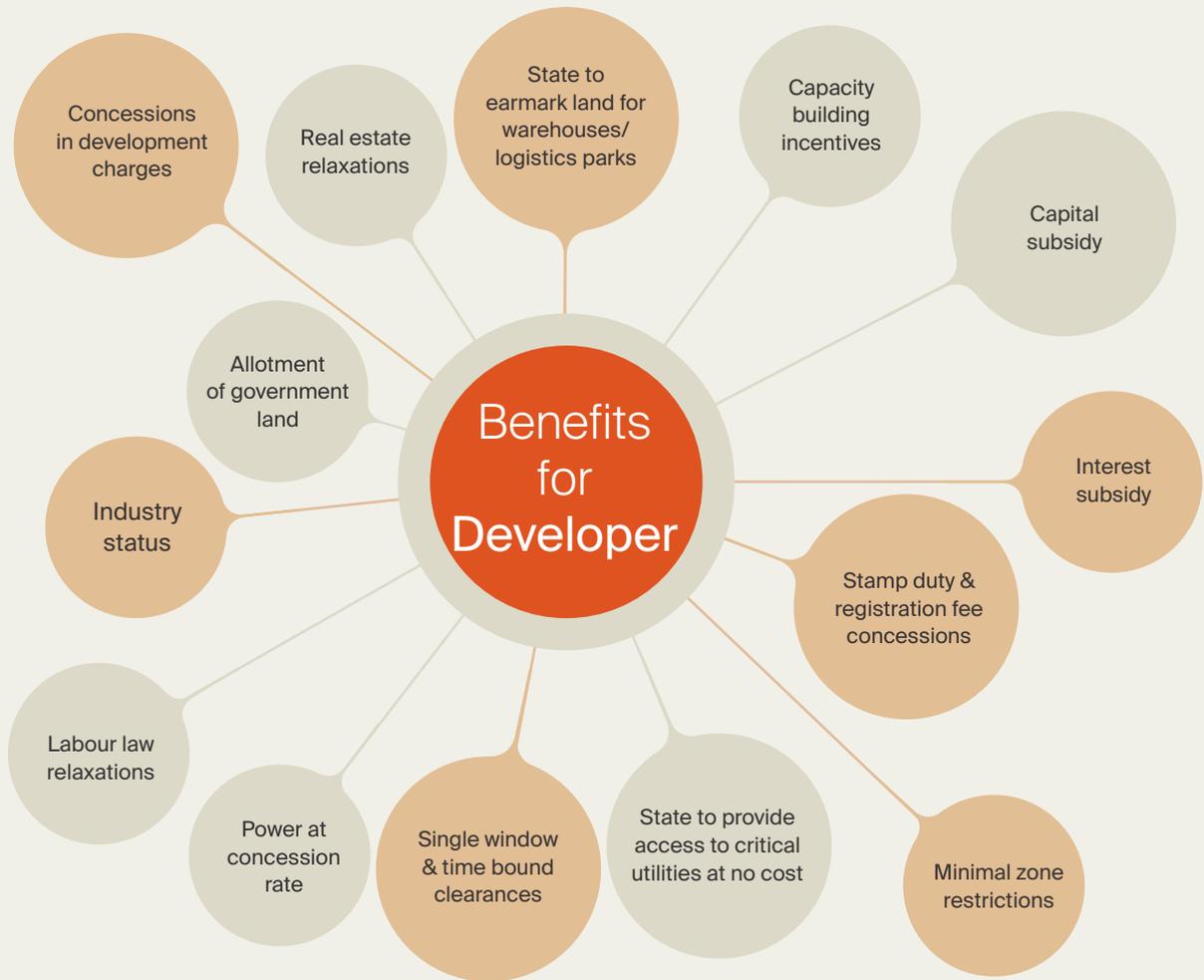


Source: Knight Frank Research
 Note: Benefits listed above are indicative and not exhaustive.
 For detailed policy benefits, refer to Annexure 2

Based on the above set of benefits for occupiers, we rank the eight state logistics policies as follows:

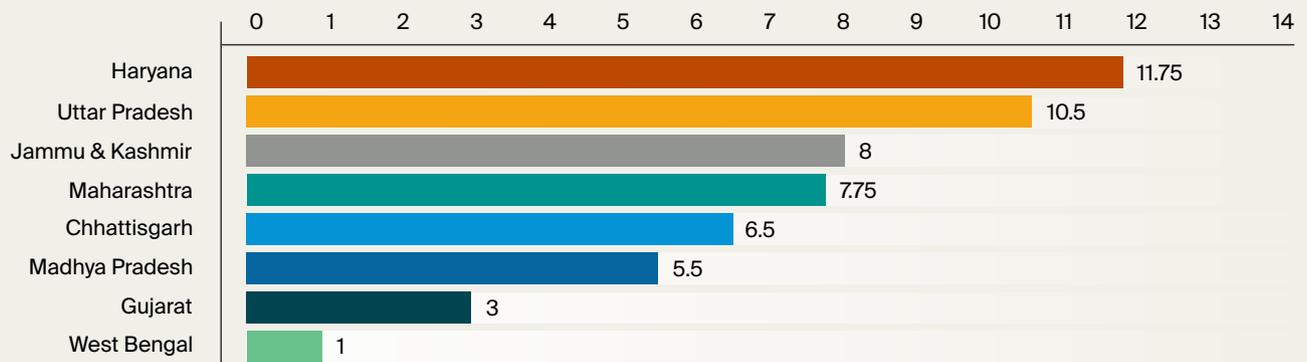


Source: Policy Documents, Knight Frank Research.
 For detailed analysis, refer to Annexure 1



Source: Knight Frank Research
 Note: Benefits listed above are indicative and not exhaustive.
 For detailed policy benefits, refer to Annexure 2

Based on the above set of benefits for developers, we rank the eight state logistics policies as follows:



Source: Policy Documents, Knight Frank Research.
 For detailed analysis, refer to Annexure 1

Having the first ever national logistics policy in place, albeit at a draft stage, and states taking steps to form their own policies, are definitely significant positives for the logistics and warehousing industry in India. Nevertheless, enough and more needs to be done, and soon. A fully-operational statutory framework is a must have to achieve any success at policy level. Therefore, emphasis needs to be laid on getting state policy frameworks up and running at the earliest; the national policy can lay down strict timelines and a monitoring mechanism for the same. Further, the Logistics Division at the Centre can provide regular updates on the status of state policies on its digital platform making authentic information easily available to all consumers. Centre may enlist an indicative set of policy inclusions or parameters to not only guide states on policy formulation but also to help universalise the broad contents of different state policies. This will also help expedite the process of state policy formulation. Notwithstanding that logistics is an inter-state activity and development goals are national, states have to remember that they are in competition with each other in fetching private investments. Attractive fiscal incentives and a friendly regulatory environment is the only way to stay in the race.



Anshul Singhal
Managing Director
Welspun One Logistics Parks

The “The COVID-19 pandemic has taken the world through unprecedented times and changed the way we have been doing business. We all know that COVID-19 and the resultant lockdowns have accelerated the transition of retail to online and increased the adoption of e-commerce faster than expected.

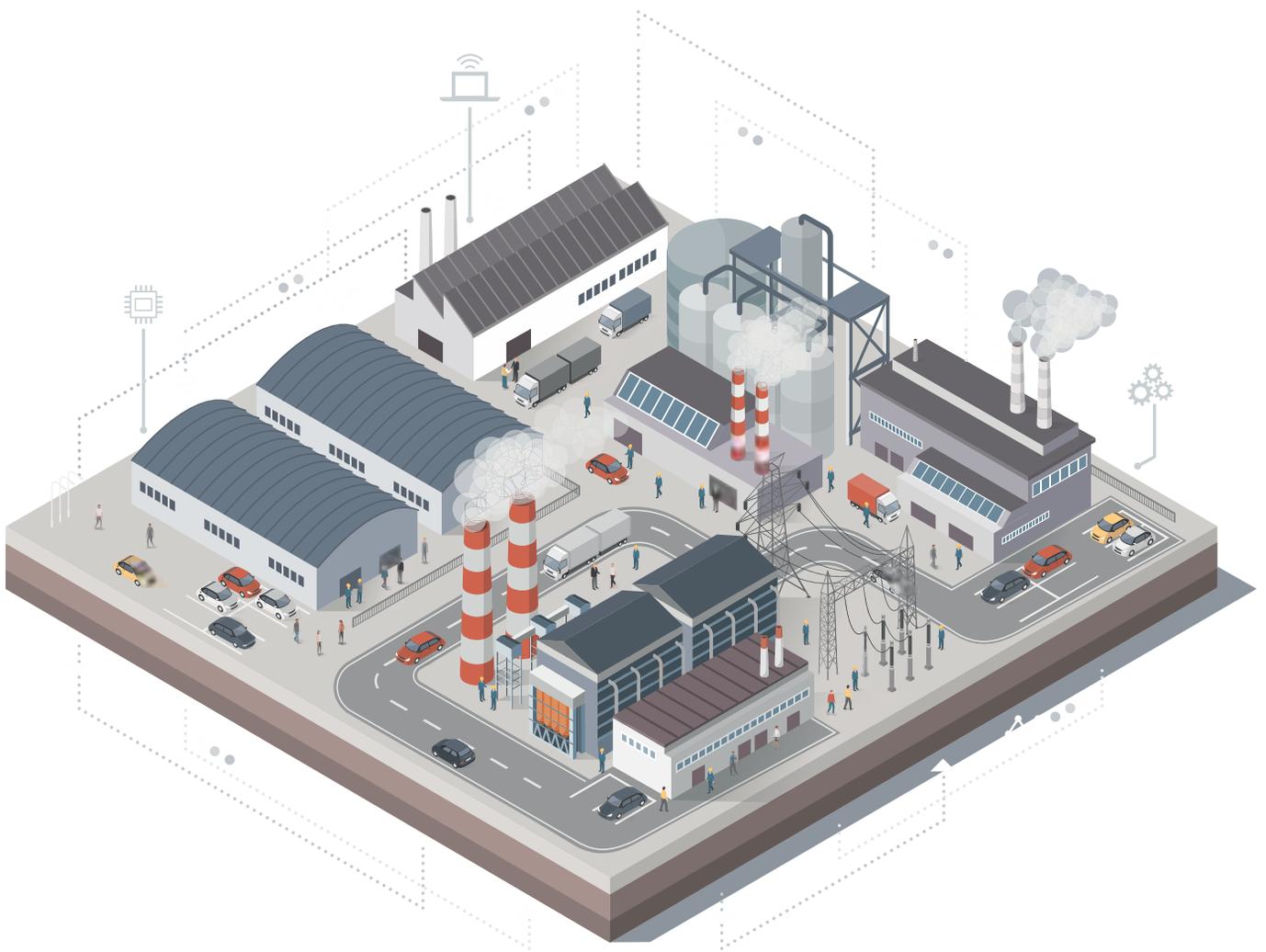
With more sustained behavioural shifts, increasing confidence in the e-commerce story, and a probable shift in the supply chain patterns; we foresee a need for warehousing to cater to the back end of this transition.

India has been facing a fundamental lack of Grade A warehousing. Pre-COVID-19, the industry had already pegged Grade A supply to grow at ~25% Y-O-Y. We estimate that with the impact of COVID-19, the Y-O-Y growth rate will need to increase by ~10% to meet additional unmet demands once things settle.

Also, with mature policy initiatives like the GST, 100% FDI allowance in Warehousing, and an increased Government emphasis on trunk infrastructure, the warehousing sector is ready and equipped to respond to the increase in demand. The low credit risk of the sector due to the limited NBFC exposure only adds to the attractiveness from an investment lens as well.

As Global organizations start expanding or setting up operations in India, there will be a preference for Grade A facilities that offer compliance, human safety, hygiene, and enable automation and IoT while adhering to Global standards and industry best practices.

If India is to remain pursuant to its 5 trillion-dollar economy aim by 2025, the logistics and warehousing industry will serve as the backbone for its upcoming, rapid growth.”



INSTITUTIONAL INVESTMENTS

in Warehousing

The warehousing industry of India which was earlier dominated by unorganised players is evolving towards using services offered by the organised segments. The inflection point of this evolution was the implementation of the Goods and Services Tax (GST) in 2017, a tax reform that had awaited implementation for over 16 years. There were several other changes that had been taking place in the background before the implementation of GST, which added tailwinds to the growth of organised segments.

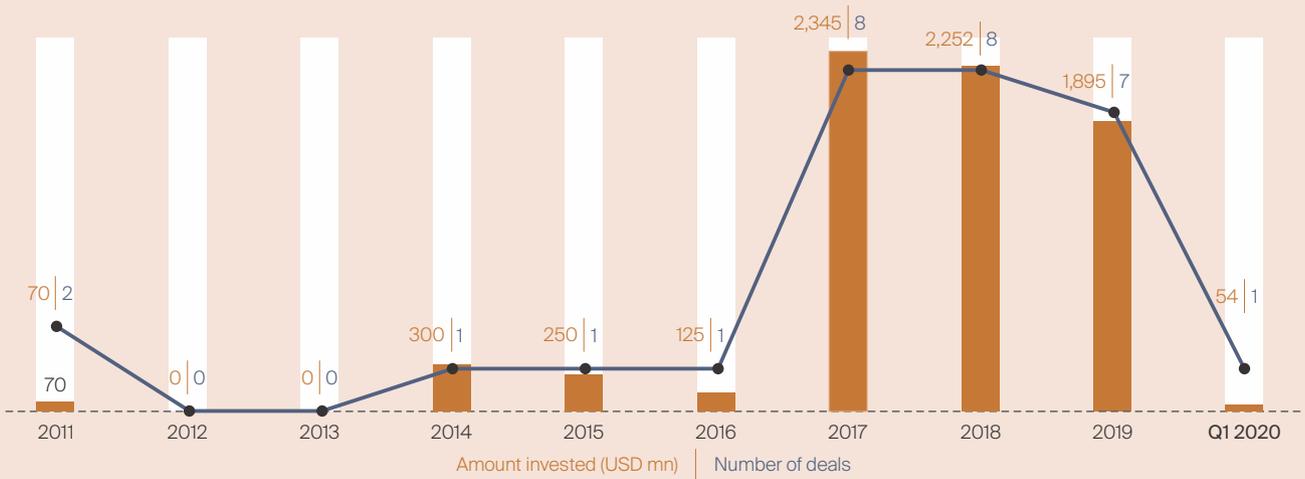
Some of these are:

- Government granting infrastructure status to logistics industry that includes warehousing
- Creation of logistics park policy
- Development of multimodal infrastructure corridors
- Requirement of stringent quality controls from compliance regulators (in case of the pharmaceutical industry)
- Stringent enforcement of penalties on non-compliant warehousing facilities by local authorities
- Economies of scale being achieved through larger warehouses
- Safety and security of goods and efficiency in operations
- Demand for quicker turnarounds
- Need for efficient warehousing designs
- Advent of e-commerce; and
- The entry of multinational businesses in the country that prefer to occupy only compliant facilities

Citing the potential growth opportunities for organised segments, private equity investors (which include real estate funds, alternate investments funds (AIF), sovereign funds, pension funds, sector specific funds and traditional private equity funds) have collectively invested over USD 6.5 billion since 2017.

Since 2017, the warehousing industry has garnered second highest share in equity investments after office and much higher than retail. Office segments witnessed the highest equity investments at USD 9.3 billion, followed by warehousing at USD 6.5 billion and retail at USD 1.9 billion

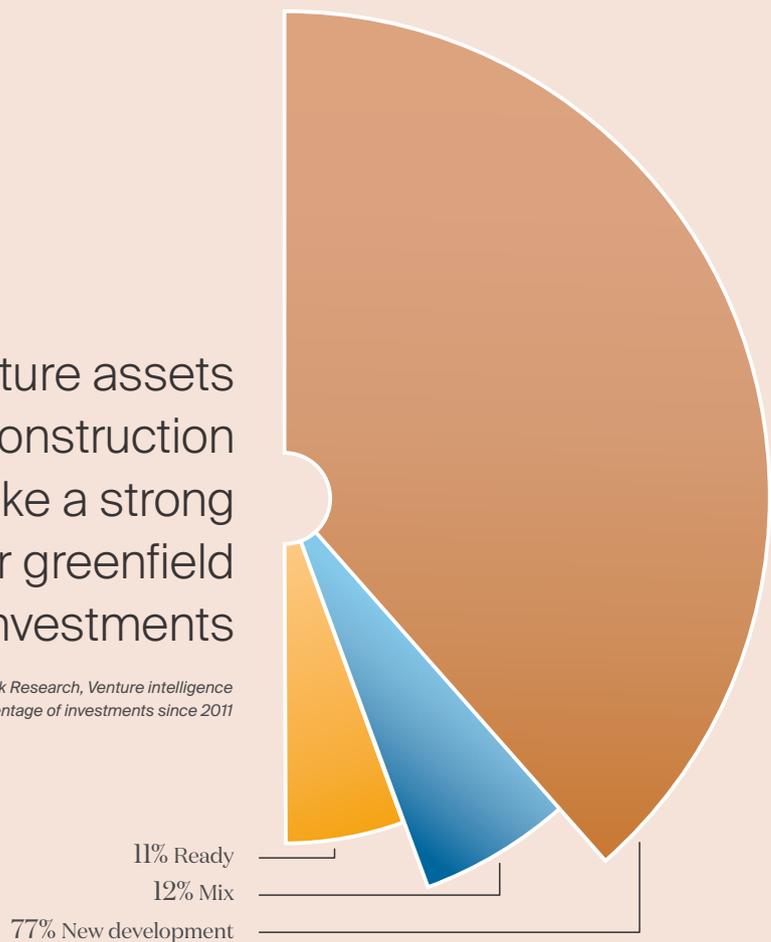
PE investments in warehousing in the last decade



Source: Knight Frank Research, Venture Intelligence

Dearth of mature assets and shorter construction timelines make a strong case for greenfield investments

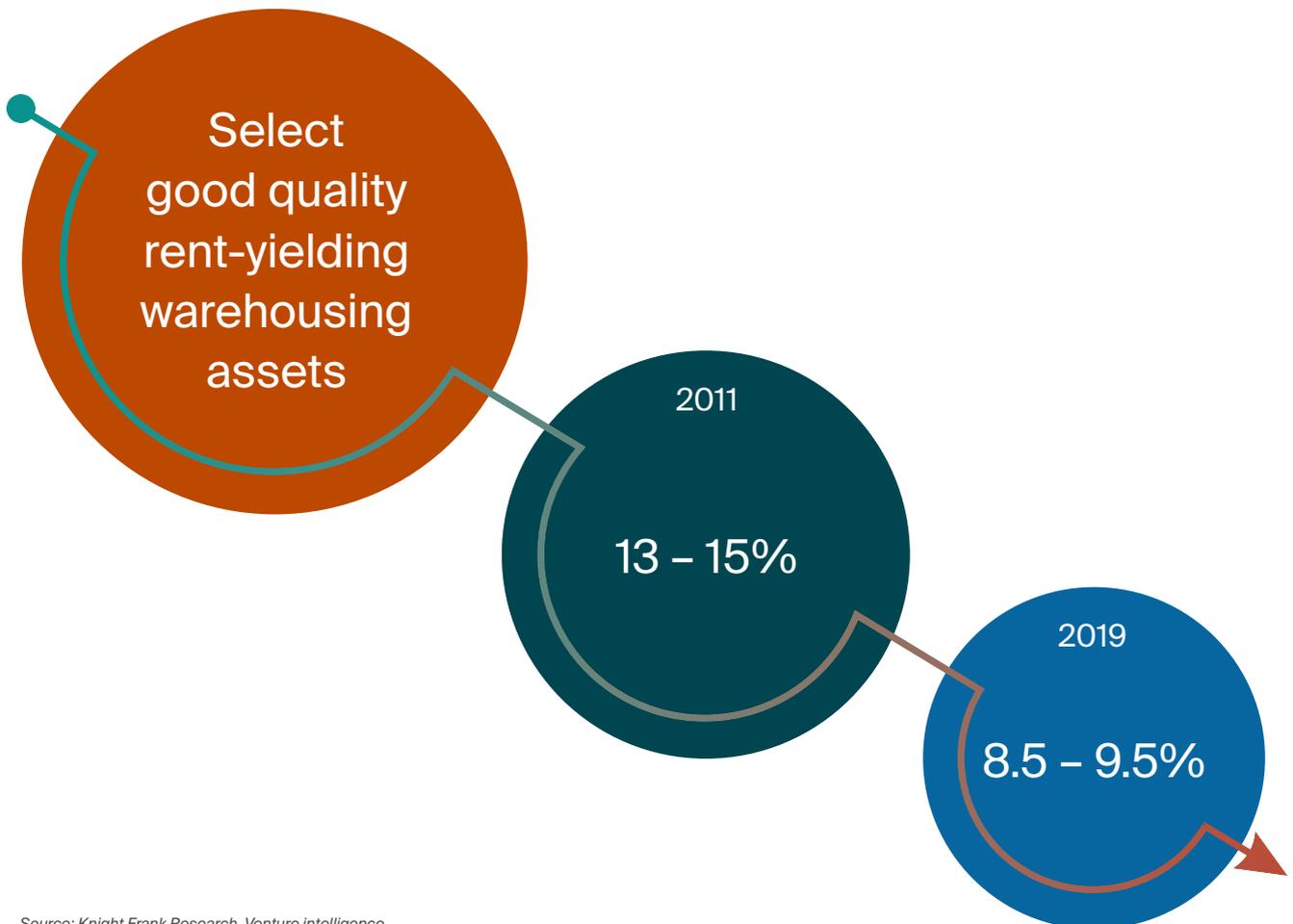
Source: Knight Frank Research, Venture intelligence
 Note: The break-up is as a percentage of investments since 2011



Warehousing assets require relatively less time (around 12-18 months) to construct compared to office and retail assets. As the warehousing industry in India has largely been fragmented, there are not many large pan-India organised players in the industry whose acquisition price can have a meaningful impact on the investors' fund size. Due to a dearth in projects of a certain size, which can have a meaningful impact on the funds' size, investors preferred to go for creating such assets that can eventually become worthy for REITs or secondary sale. Thus, 77% of investments in the sector has gone in greenfield / new development projects and 12% into a mix of ready and new development. Only 11% of the inflows went into acquisition of ready projects.

The cost of constructing a good quality Grade A warehouse structure varies between INR 12,917-19,375 per sq m (INR 1,200-1,800 per sq ft) depending on the contour of land. The cost of land in India varies by a huge margin depending on the location and quality of infrastructure near the land parcel. If we consider the cost of construction (including the cost of land) for a warehouse in India, it is unlikely to exceed INR 26,910 per sq m (INR 2,500 per sq ft). We have considered the higher side of the cost of construction at INR 26,910 per sq m (INR 2,500 per sq ft), for calculating the scale of new warehouse supply. Accounting for the leverage on construction finance, the PE investments of USD 5.8 billion for new development is estimated to create warehousing space of over 300 million square feet.

Cap rates have declined significantly in the previous decade



Source: Knight Frank Research, Venture intelligence

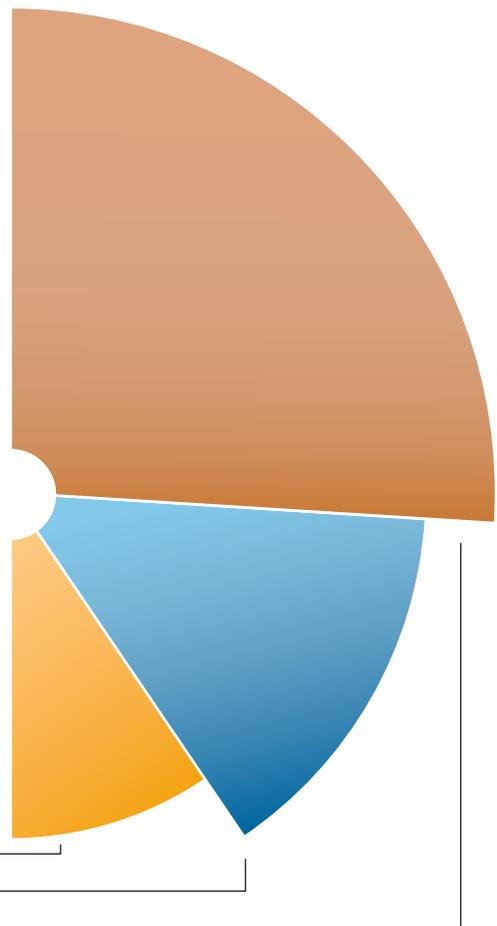


There are not many good quality mature warehousing assets available in India as compared to office and retail assets. The high cap rates in 2011 was on account of low investor interest, dearth of mature good quality assets, unorganized structure of the industry, poor demand to use the services offered by the organized segments and lack of impetus from policymakers to support the growth of the industry. However, as the years progressed things started to fall in place for the warehousing sector and the cap rates compressed significantly in the last decade. Good quality assets in major metros are transacted at the lower end of the range and similar assets in smaller cities are transacted at the higher end of the range.

PE and long-term capital providers alike actively participating in creating warehousing assets

Source: Knight Frank Research, Venture intelligence

19% Developer
29% Sovereign/Pension fund
52% PE



Investors from Singapore and UAE invest the most



Investor origin	Amt (USD mn)	Number of deals
Singapore	1,731	8
UAE	1,600	2
Germany	1,000	1
US	996	6
Canada	900	2
India	814	8
France	150	1
China	100	1
Grand Total	7,291	29

Source: Knight Frank Research, Venture Intelligence
 Note: Grand total represents investments announced since 2011

The warehousing industry had been witnessing strong investor activity until the Covid-19 outbreak. The Covid-19 induced lockdown in India, was enforced from March 25th 2020, but the investors had become jittery much before that. Many PE investors who had real estate exposure in China witnessed a big hit on their real estate portfolio due to the virus outbreak there in November 2019. They anticipated a similar situation to play out in India as well as the rest of the world and went slow on real estate investments. Further, the investments which have come in over the past 3 years are awaiting deployment. On account of all these factors, investors went slow before announcing new investments and investments volumes declined in Q1 2020. In Q1 2020, the warehousing sector

witnessed only one deal worth USD 54 million.

The world economy is projected to plunge into recession in 2020 due to the Covid-19 induced lockdown globally. This recession is expected to be severe than the global financial crisis (GFC) of 2008. India had enforced some of the most stringent lockdown measures globally extending over 65 days from March 25th 2020 to May 31st. For some of the major metros like Mumbai, Pune, Delhi, Ahmedabad and many more, the lockdown has been extended with some relaxations till end of June. Hence, the economic impact is expected to be severe in the case of India. Further, in the event of a global recession in 2020, valuations across asset classes worldwide is likely to plummet and PE investors would find attractive opportunities for investments. As the opportunities in their home countries will not entail any currency risk, investors may prefer it over investing abroad or in developing economies.

While in the short-term, the picture for the warehousing industry appears to be gloomy and the industry may not witness investor activity similar to that witnessed over the past

3 years, the prospects of the industry are not as grim as it appears to be. There are many structural changes as indicated the earlier sections of the report that are being brought about by the Covid-19 induced lockdown. These trends would give a significant fillip to the warehousing demand in India.

Moreover, investors are expecting warehousing industry to emerge stronger from the crisis globally. They believe that warehousing would be the fastest to bounce back from the current crisis while other segment in real estate would languish for a longer period. Consequently, a huge amount of capital is now being directed towards acquiring warehousing assets globally and the Indian warehousing sector would also benefit from this.

As the dust of the pandemic starts settling in India and as the emerging trends start to unfold, investors would also return to the warehousing sector with renewed vigour and greater investor interest is likely to keep the cap rates in warehousing stable at 2019 levels.



Abhijit Malkani
Country Head
ESR India

Industrial and warehousing has emerged as the most resilient real estate segment in India, which is likely to recover quickest and strongest post-COVID-19 on the back of strong inherent demand, especially from sectors like e-commerce, 3PL, cold storage, FMCG and pharmaceuticals. The digital shift to online retail has been a success during these times and that will result in e-commerce firms growing, further automating and consolidating their operations, and also expanding to Tier 2 cities leading to an increase in demand for Grade A warehouses across the country. Groceries commerce which has been developing in the past few years has seen an increased demand due to the pandemic leading to a spike in urban logistics and in-city warehousing. Amidst the demand, the labour shortage is going to continue for the next 2 quarters leading to reduced supply. Debt availability will be a challenge, and there is a foreseeable increase in JV's between local and institutional developers, or outright sale by local developers. With government initiatives to make India self-reliant, it could boost domestic production and create supply chains to meet internal demands.

WAREHOUSING

Market Analysis

The intense institutional interest in warehousing development and operations over the past few years has fuelled the growth of good quality warehousing parks. These have been instrumental in revolutionising the role of the warehouse from a plain storage depot to a virtual pit-stop that facilitates inventory management, secondary packaging, cross-docking and extraction of products in the least possible time. The enhanced role of warehouses in the entire supply chain and the increasing availability of good quality warehousing facilities is reflected in the strong demand numbers over the past three years.

Annual demand analysis – Market and sector split

FY 2019 experienced a 77% YoY growth in transaction volumes that followed an even higher 87% YoY growth in transactions during FY 2018. FY 2020 saw a relatively lower level of transaction activity in comparison to the preceding year due to the slowdown in the economy.

While the warehousing space taken up in FY 2020 has fallen by 11% YoY, it has still grown by a robust 44% CAGR in the FY 2017-20 period. The relatively limited supply of Grade A warehouses in the right locations has also been a contributing factor to subdued transaction levels in FY 2020, especially in Bengaluru and Hyderabad.

Annual warehousing transactions

City	FY 2020 in mn sq m (mn sq ft)	Growth FY 2020 YoY	Growth FY 2017-20 CAGR
NCR	0.8 (8.6)	-32%	45%
Mumbai	0.7 (7.5)	8%	69%
Ahmedabad	0.5 (5.1)	5%	43%
Pune	0.5 (4.9)	42%	35%
Bengaluru	0.4 (4.3)	-23%	50%
Kolkata	0.4 (3.9)	-14%	43%
Chennai	0.3 (3.4)	-19%	22%
Hyderabad	0.3 (3.4)	-14%	41%
Total	3.8 (41.3)	-11%	44%

Source: Knight Frank Research

Organised warehousing is gaining traction in the Indian market as regulatory compliance requirements and economic efficiencies demanded by contemporary businesses can only be met by this segment. The 3PL and e-commerce players are the biggest adopters of organised warehousing and as in the preceding year, they continue to dominate the space taken up in FY 2020. The share of 3PL operators has been growing steadily, fuelled by the increasing need for e-commerce logistics as well as a strengthening trend of most companies outsourcing their logistics requirements to 3PL operators. The FMCG and retail sectors were already increasingly outsourcing their warehousing requirements to 3PL operators. This trend has also caught up with the e-commerce industry which now outsources an estimated 10-20% of incremental demand to 3PL operators.

Sector-wise share of transactions



Source: Knight Frank Research



Stock and supply – Development potential assessment

Knight Frank has conducted a ground-up survey of warehousing stock in the top eight markets of India to arrive at an accurate assessment of the supply scenario that exists in the market today.

The top eight markets of India held an estimated 28 mn sq m (307 mn sq ft) of warehousing stock at the end of FY 2020. The Mumbai market accounts for a massive 40% of this stock which along with NCR houses nearly 58% of the same. Strong warehousing demand in the Mumbai and NCR markets have kept vacancy levels low at 10.7% and 13.9% compared to other markets such as Bengaluru and Pune that have vacancy of 29.7% and 21.8% respectively. The high weightage of Mumbai and NCR in the total stock keeps the combined vacancy level of all eight cities at a relatively healthy 15.5%.

Warehousing stock and supply

Market	Total warehousing land (Acres)	Total warehousing FSI Potential in mn sq m (mn sq ft)	Existing Stock in mn sq m (mn sq ft)	Vacancy	Development potential in mn sq m (mn sq ft)	Development potential multiple
Mumbai	6,625	15.5 (167)	11.2 (121)	10.7%	4.2 (45)	1.37
NCR	4,178	9.3 (100)	5.3 (57)	13.9%	4 (43)	1.75
Chennai	2,361	4.6 (49)	2.2 (24)	14.7%	2.3 (25)	2.02
Bengaluru	2,210	4.5 (48)	2.3 (25)	29.7%	2.1 (23)	1.89
Pune	1,814	3.9 (42)	2.4 (26)	21.8%	1.5 (16)	1.61
Ahmedabad	1,587	3.4 (37)	1.7 (18)	13.2%	1.8 (19)	2.09
Hyderabad	1,291	2.7 (29)	1.2 (13)	22.4%	1.5 (16)	2.19
Kolkata	1,098	2.6 (28)	2 (21)	20.6%	0.6 (6)	1.29
Total	21,163	46.5 (500)	28.3 (307)	15.5%	18 (193)	1.63

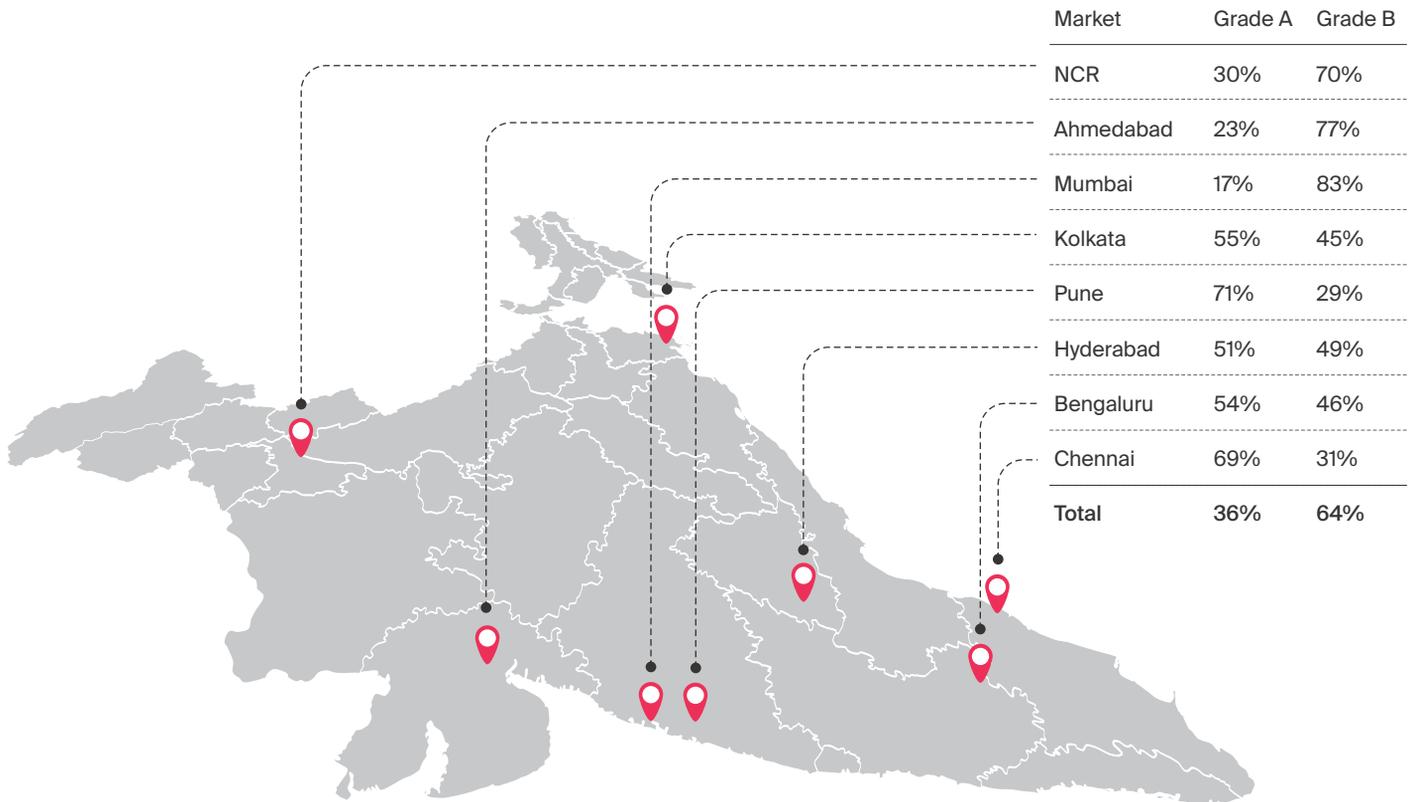
Source: Knight Frank Research

Note: The 'Development Potential Multiple' depicts the total development potential of the warehousing stock in a market, as a multiple of its existing stock. For example, Total Development Potential Multiple of 1.63 implies that there is potential of 63% more supply from the existing land committed to warehousing

We estimate that the total land committed to warehousing development amounts to 21,163 acres in the top eight markets and translates to a total buildable potential of almost 47 mn sq m (500 mn sq ft), after factoring in property level FSI dynamics. Given that 307 mn sq ft of warehousing stock already exists on this committed land, this leaves nearly 18 mn sq m (193 mn sq ft) of potential warehousing space that can come up on these warehousing land parcels. This potential supply amounts to almost five years of warehousing demand going by the FY 2020 absorption rate.

The eight markets have a total development potential of 1.63 times the warehousing stock that is currently operational in these markets. Compared to other property types, warehousing development takes relatively lesser time. A high-quality warehousing facility can be fully developed from the ground-up within a period of one year, depending on the extent of treatment such as filling and levelling that the land requires. Considering these factors, it does seem like demand can be met by the existing land available for sizeable requirements even in the short term. However, while land is available to build warehousing facilities, it is the relative scarcity of land which fulfills compliance requirements of occupiers and institutions, that causes a supply constraint. Bhiwandi and the Nashik Highway in the Mumbai market are a case in point where there is very strong occupier demand but issues with land titling curtail institutional interest.

Stock split by grade



Source: Knight Frank Research

While the development of Grade A warehousing facilities has been increasing in recent years, Grade B still constitutes around 64% of total stock. The larger warehousing markets of Mumbai and NCR have a significantly lower proportion of Grade A warehouses as they are much older markets and bulk of their stock had been built before the demand for Grade A warehousing gathered momentum. Pune and Chennai have the highest concentrations of Grade A stock due to their primary demand base of auto and auto ancillary occupiers. Notably, only Mumbai, NCR and Ahmedabad have more than a 50% share of Grade B properties. Interestingly, Mumbai, even with a high proportion (83%) of Grade B stock still enjoys market level occupancy of around 90%. This underscores the strong potential that this market offers for the upcoming Grade A spaces.

Considering the need for high quality warehousing facilities, close to \$6.5 bn have been committed by private equity players in the warehousing market since the GST reforms were applied in 2017. At different stages of capital deployment and project development cycle, this is equivalent of an estimated 28 mn sq m (300 mn sq ft) of Grade A warehousing space.

The warehousing market in India has been comparatively less impacted by the recent economic upheavals caused by the pandemic. While the current warehousing land seems adequate to accommodate close to 5 years' demand at a static rate of demand, the need for fully compliant Grade A properties that increase the efficiency of the supply chain continues to gain momentum.



Aditya Virwani
COO Embassy Group & Spokesperson
Embassy Industrial Parks

The warehousing and logistics sector will be one of the quickest, most tactical asset classes to recover from the current pandemic. All this credited to the sharp increase in domestic demand and a possible global major manufacturing shift, making India the preferred destination. From what we see, India intends to take full advantage of the sentiments against China. Our domestic market, manpower capabilities, government provided economic package and the upgraded FDI application are a huge incentive for other countries to enter local manufacturing. GST has allowed for a unified market place in the country and made exports across sectors lucrative. The government has come up with reduced corporate taxes for setting up a new manufacturing plant in India; more initiatives like this will help increase the manufacturing operations in India. Due to higher volume demands, FMCG and Agri clients look for Grade A warehousing around strategic locations. The increasing industrial corridors along with suitable roadways make for easy accessibility across the entire country. We have seen a huge transference in the purchase behaviour of consumers with e-commerce and online payment being the preferred order of the day. Warehousing serves as the backbone for online grocers and e-commerce players who not only have to meet the heightened loads but also need to scale up as soon as possible. To endure this competitive environment, most commercial businesses when possible will create an online trail. Due to sanitation, safety, compliance and social distancing norms, companies would prefer dealing with enabling Grade A warehouse developers. To avoid shortages, there will be enough storing of inventory going forward. Companies would also prefer having multiple warehouses to avoid dependency on any one location. We have recently also witnessed a new change in the functioning of the workforce, this will impact the geographical layout of businesses and create even more regional demand.



Warehousing in E-COMMERCE

The e-commerce market in India as well as globally is one of the fastest growing markets today. E-commerce essentially means buying, selling, marketing and distribution of goods and services through an electronic network. Driven by the fast pace of digitisation in the country, Indian e-commerce market has been growing rapidly and is expected to surpass the US to become the second largest e-commerce market in the world by 2034¹, with China being the largest market.

The Indian e-commerce market has witnessed strong growth in the last few years. Estimated to be at ~USD 70 bn in 2019, the e-commerce market has been forecasted to reach ~USD 160 bn+ by 2022². This increased growth momentum can be attributed to the rising internet penetration in the country which has grown from 4% in 2007 to 52% in 2019¹. Going forward, as internet penetration in India continues to grow, consumer base of the e-commerce industry will continue to rise. Along with business, the pan-India reach and presence of e-commerce players is also growing and this can be seen in their increased warehousing transaction activity. The sector's appetite for warehousing grew at 55% CAGR during the FY 2017-20 period, culminating in over 0.8 mn sq m (8.5 mn sq ft) absorbed during FY 2020.

At present, the pan-India footprint of e-commerce warehousing is estimated to be around 4.6 mn sq m (50 mn sq ft) and more than half of it is occupied by a single player, Amazon. Flipkart comes next with around 15% share and the total occupancy of these two players is estimated to be around 70-75%. As the market grows, more and more players will continue to enter the market and the demand for warehousing space will continue to grow. Further, rising smartphone penetration, launch of 4G networks, rising consumerism and increasing per capita income in the long-run will continue to fuel the growth of e-commerce in India and the warehousing industry will continue to benefit from this.

Draft National e-Commerce Policy

India's first national e-commerce policy was released in February 2019. The policy states that despite the high rate of growth of e-commerce in India, the sector is still at a nascent stage. In order to help the sector reach its full potential and in order to benefit from this tremendous growth opportunity, the Indian government is working towards creating an enabling environment for e-commerce in the country.

The Draft National e-Commerce Policy was released by the Ministry of Industry and Commerce. As stated in its tag line 'India's Data for India's Development', the policy revolves around the cross-border data flows and the overall digital space of e-commerce markets. It aims to create a framework

for achieving holistic growth of the e-commerce sector along with existing framework of Make in India and Digital India policies. Given that the e-commerce sector is driven by technology and data, the policy aims to address issues pertinent to the sector such as consumer protection, data privacy and maintenance of a level-playing field across all stakeholders including investors, manufacturers, retailers, traders and consumers. There are six focus areas of the policy: data, infrastructure development, e-commerce marketplaces, regulatory issues, stimulating domestic digital economy, and export promotion through e-commerce. It also encourages foreign investments in the marketplace model of e-commerce.

¹IBEF E-Commerce April 2020

²Redseer



Covid-19 and the e-commerce industry

The ongoing Covid-19 pandemic brought economic and business activity at a standstill as nations were reeling through imposed lockdowns. India went through a stringent pan-India lockdown of around two months and after that there has been restricted re-opening and resumption of economic activity. E-commerce was impacted too as it suffered more than 80% drop in activity from January 2020 to April 2020³. A jolt to the discretionary and luxury spending caused the e-commerce activity to fall significantly. However, e-commerce players could continue to operate even during the lockdown thanks to the essential goods. In fact, as a result of the lockdown, a much larger number of people have now been introduced to the idea of online purchases, especially of essential items such as vegetables, fruits and groceries, thus widening the consumer base of e-commerce players. Further, the new normal of social distancing is likely to push people to make most of their purchases online and benefit from easy-to-pay, contactless delivery. Consequently, brick and mortar retailers are also likely to adapt to this changing demand trend.

The e-commerce industry was already registering a strong growth and would have continued to do so, irrespective of the pandemic induced demand. After the near-term hit to e-commerce demand due to the crisis, the growth in the segment is likely to accelerate as more and more people find merit in online shopping, especially of essentials. The entry of JioMart, a venture by Reliance Retail, will intensify the competition in the e-commerce industry. Based on the hyperlocal delivery model, JioMart will deliver groceries in more than 200 towns across India. Reliance Industries digital arm, Jio platform has been able to raise about USD 15 bn during the current crisis period, highlighting the opportunity of the digital platform in India. E-commerce player, Swiggy, was able to raise funds to the tune of USD 43 mn during the crisis, re-iterating the growth opportunity present in this industry.

In terms of e-commerce warehousing, the Covid-19 pandemic has created scope for a structural change. Owing to the

restrictions of the lockdown and the increased demand for essential commodities, e-commerce players were seen opting for in-city warehousing. There could be two reasons for this: one, their usual warehouses situated at the city outskirts were full with their regular stock and of this, essential commodities formed a miniscule 8-10%. Second, restrictions on movement made it difficult to transport goods from the city-periphery warehouses, especially for perishable items such as vegetables and fruits, and therefore the need to have temporary stockpiles spread across the city. Currently, perishable food items and grocery forms a small percentage of the big e-commerce players overall product offering. Going forward, this share could increase as people increasingly shift to online purchases of basic necessities due to the COVID 19 crisis. This will result in more demand for in-city warehousing. Given the high rentals, the progress of multi-storeyed in-city warehousing has been a challenge in India so far. However, as the shift to e-commerce gathers pace and competition amongst e-commerce players intensifies, we may see development of multi-storeyed in-city warehousing in select metro-cities over a longer period of time.

Another trend that the Covid-19 pandemic could bring in the warehousing consumption of e-commerce players is increased presence in smaller towns and cities. While e-commerce presence in tier-II cities and towns was already being driven by demand, the crisis is most likely to have accelerated this process by introducing a wider population base to e-retail and therefore increasing demand further.

E-commerce warehousing demand had been recording healthy growth in the last few years and we saw its share in warehousing demand increasing from 15% in FY18 to 23% in FY20. With COVID 19, induced shift in buying behaviour, the e-commerce growth is likely to accelerate. This will further increase the share of e-commerce in the warehousing demand in the medium to long-term.

³Redseer, SSL

E-commerce: A major driver of technological innovation in warehousing

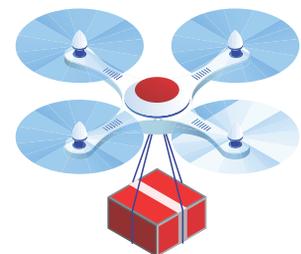
E-commerce warehousing is highly competitive on account of its 'high-volume, quick-delivery' nature and accordingly, all variables that impact efficiency are extremely critical. Technology enables immense time and labour efficiency which in turn bring in cost efficiency. It is therefore no surprise that the e-commerce sector seeks increased intervention of technology in its operations, including in warehousing, which eventually drives further innovation in technology, all in the continual pursuit of increased efficiency.

Globally, e-commerce has caused a wave of technological innovation in warehousing. It started with Warehouse Management Software (WMS) that reduced the burden of data entry and paper records, to conveyor belts and pick-to-light systems that helped increase the speed of sorting and picking. Globally, warehouses have come leap years ahead in a matter of just two decades. Smart warehouses, like smartphones, have become common parlance. Also referred to as intelligent warehouses or warehouses that think, all gadgets and devices within a smart warehouse are connected to each other via internet and can effectively perform multiple operations simultaneously. Another trending feature in global e-commerce warehouses is Internet of Things (IoT). IoT is a system that connects and integrates electronic devices via Internet such that they can send and receive data from each other and perform their respective functions in sync with one another. One more important innovation is augmented reality, a real time integration of digital information with the existing environment,

e.g., vision picking. Besides, there is 3D printing, robotics, self-driving vehicles and drones that have greatly enhanced e-commerce warehousing efficiency in the West. The quest for innovation is ongoing and new technologies continue to enter warehouses.

In India, on the contrary, warehouses are still rudimentary and far behind their global counterparts in terms of technological penetration. The warehouses aren't completely devoid of the technological aspect, but its presence is minimal, and its nature very basic. These include handheld devices like Radio Frequency Identification (RFID) scanners, conveyor belts, wearable technologies like smart glasses, and basic forklifts. Further, this limited technology is used by just a select few industry warehouses viz., e-commerce and Third Party Logistics (3PL) players. The unorganised nature of India's warehousing market, lack of technology-enabling infrastructure inside warehouses and large-scale availability of human capital in the country are the primary reasons why Indian warehouses are technologically deficient. However, with increased activity by institutional players, organised and good quality warehouses are now easy to find. The entry of organised players has also facilitated the entry of robots, albeit at a very small scale, in Indian warehouses. Nevertheless, owing to the high dependence on human labour, technological revolution in Indian warehouses has been slow so far.

The recent Covid-19 crisis, however, caused an interesting turn of events. Logistics was significantly stressed owing to the restrictions of the lockdown, and this prompted the Directorate General of Civil Aviation (DGCA), India to grant special permission to 13 e-commerce players to test and use drones for deliveries until September 2020. Could the gloom of the pandemic in fact be the silver lining for technological transformation in Indian warehouses? Only time will tell.





Rajesh Jaggi
Vice Chairman - Real Estate
Everstone Group

Warehousing sector is a pivotal link in the Indian logistics ecosystem and has been growing significantly in the last few years. As per Knight Frank's India Warehousing Report 2019, total warehousing space for the manufacturing sector is projected to grow at a compounded annual growth rate (CAGR) of 5% in the next five years till 2024.

Government reforms like introduction of GST and granting Infrastructure status to the sector have also provided the impetus which has led to greater interest amongst investors. Many state governments also offer incentives such as subsidies on capital interest and infrastructure interest as well as waiver of stamp duty, to set up warehousing and logistics park in their respective state.

As the sector is categorized under essential services, it has been active during the periods of successive lockdowns in India. The prime focus now is to maintain the highest degree of hygiene and safety standards in the warehouses, therefore organized national level players have an edge over the unorganized sector. At IndoSpace, we took a cue from our international partners and had taken proactive measures to prevent the spread of the virus from February 2020 itself.

Businesses and their supply chains are undergoing a significant transformation to align themselves with the evolving business landscape and changing consumer preferences. Some key themes driving supply chain related transformation are - Digitization and Automation for efficient and speedy fulfilment, cost management and Supply Chain Resilience. The warehousing segment is also seeing a conscious shift towards technological advancement, modernization and optimization along with increased affinity to Grade-A facilities and infrastructure. The advent of the pandemic might have slowed down the growth rate of the sector, however the growth is expected to pick up pace in the last quarter of FY 2021. Certain policy level decisions are expected to be made to cope with the variable demand-supply metric this year, post COVID-19. We anticipate strong growth in medium to long term, however in the short term, we need to be watchful.

The time has also come for the warehousing sector to integrate sustainability in their standard operating procedures. Designs needs to be adopted which reduce carbon footprint and sustainable technology needs to be incorporated for businesses to operate more efficiently. As a testament to our 'green' design thinking, our parks have been awarded the esteemed EDGE certification and we are also the founding member of the Indian Green Building Council and follow the environmental and social governance norms defined by the International Finance Corporation (IFC) Performance Standards.

Stability

in e-commerce growth to drive warehousing space demand in India and Brazil

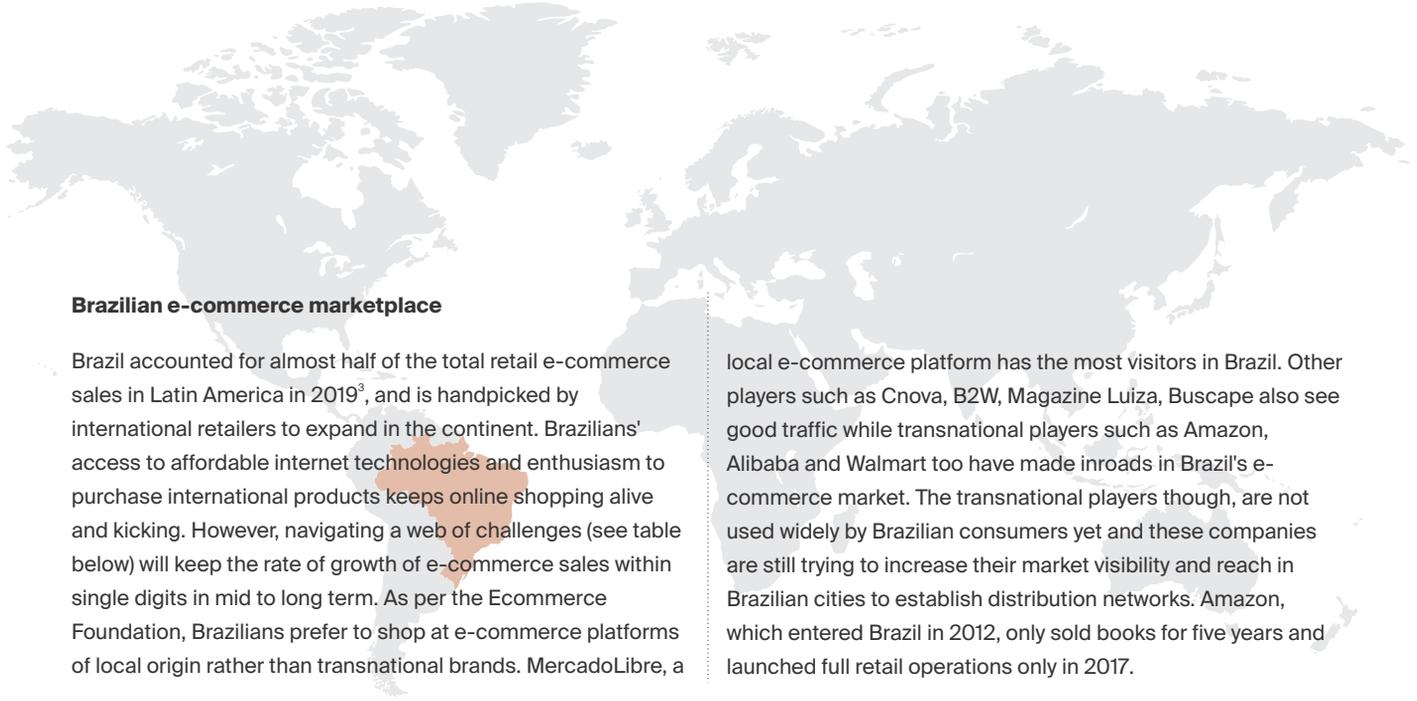
India and Brazil are both multi trillion-dollar economies and are the most watched emerging markets globally. While India has a large population of 1.34 billion compared to Brazil's 210 million, characteristics common to both include a burgeoning young population, growing internet subscribers and a large number of mobile phone users, which bodes well for the growth of e-commerce in both countries.

India	Brazil
2nd largest smartphone market in the world	6th largest smartphone market in the world
2nd biggest country in terms of world population	5th biggest country in terms of world population
2nd largest internet market globally	4th largest internet market globally
12% of global internet users	4% of global internet users
52% internet penetration	70% internet penetration ¹

At 3.8 billion², the number of global internet users comprises more than half the world's population. E-commerce continues to grow when compared with physical retail, as direct-to-consumer brands capitalise on consumer data to target personalization and use innovative strategies. The rise in internet adoption has opened up a plethora of opportunities for retailers and online marketplaces. However, the e-commerce ecosystem and competitive landscape in Brazil and India are very different, and this impacts the overall warehousing space requirements in both countries. Before trying to understand the e-commerce sector's warehousing requirement, it is important to understand how the e-commerce ecosystem is evolving in each of the two countries.

¹Ecommerce Report: Global 2019, Ecommerce Foundation

²Internet Trends 2019, Mary Meeker

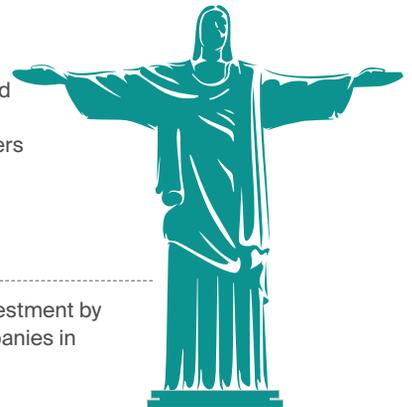


Brazilian e-commerce marketplace

Brazil accounted for almost half of the total retail e-commerce sales in Latin America in 2019³, and is handpicked by international retailers to expand in the continent. Brazilians' access to affordable internet technologies and enthusiasm to purchase international products keeps online shopping alive and kicking. However, navigating a web of challenges (see table below) will keep the rate of growth of e-commerce sales within single digits in mid to long term. As per the Ecommerce Foundation, Brazilians prefer to shop at e-commerce platforms of local origin rather than transnational brands. MercadoLibre, a

local e-commerce platform has the most visitors in Brazil. Other players such as Cnova, B2W, Magazine Luiza, Buscape also see good traffic while transnational players such as Amazon, Alibaba and Walmart too have made inroads in Brazil's e-commerce market. The transnational players though, are not used widely by Brazilian consumers yet and these companies are still trying to increase their market visibility and reach in Brazilian cities to establish distribution networks. Amazon, which entered Brazil in 2012, only sold books for five years and launched full retail operations only in 2017.

Type of Challenge	Challenges for E-commerce players in Brazil	Impact of these challenges on transnational e-commerce players
Taxation	6.4% tax applicable on all international purchases is a deterrent for buyers 60% flat tax rate applicable on all imported items valued between US \$ 50-500 ⁴	High taxes make products very expensive for customers and discourage purchase
Payments	Only 20% of Brazilian shoppers have access to a credit card National credit cards by local banks only issue payment in Brazilian Real	A major drawback which creates a huge bottleneck for transnational e-commerce players to establish footprint and expand
Operational	More than a month taken by customs to release products to consumers Too many strikes and labour issues Poor infrastructure leading to high operational cost	Delay in delivery and a bad shopping experience for buyers
Logistical	Cargo theft is common and at times, e-commerce merchandize is looted on the roads before it reaches the godown or the customers	Requires heavy investment by e-commerce companies in securing cargo



³EOS Intelligence

⁴Slight difference in this range in different states

Since Portuguese is the official language of Brazil, transnational e-commerce platforms and retailers have a huge task cut out for themselves to establish wide online presence, customer service support in the local language and tying up with potential fintech partners to create payment platforms in order to compete with the local players for a bigger market share. Coupled with unforeseen force majeure events such as the COVID-19 pandemic outbreak of 2020 and contraction in economy, buyer behaviour and willingness to shop online will also see a setback. However, in the long-term, the retail e-commerce market in Brazil will continue to grow on the back of a tech-savvy and consumption driven middle class once the challenges posed by the public health emergency are behind us.

Poor infrastructure a challenge for the e-commerce business in Brazil

The distribution centres in Brazil do not function 24 hours a day due to security concerns and costly overtimes. As a result, collection of packages at night does not work. Moreover, major Brazilian cities such as Sao Paulo and Rio de Janeiro have a massive traffic problem due to which same day or next day delivery orders are impractical to fulfil. Since cargo robberies are common in Brazil, e-commerce players and logistics companies invest heavily to protect goods, thereby increasing their security costs and reducing profit margins. In Sao Paulo, the cargo transportation and logistics companies spend between 10-14% of revenues on cargo safety, while in Rio de Janeiro, it is between 15-20% of the revenue.

Warehousing infrastructure

Warehousing infrastructure is very limited in Brazil and most industrial and commercial warehouses are operated by the companies themselves or via a contracted 3PL. Brazil's warehousing market has seen fast growth in the 3PL market and warehousing management is complex due to a growing number of SKUs, necessitating the need for larger warehouses. Traditionally, the local retailers have used 3PLs for distribution and delivery, and it is only with the entry of companies like Amazon that they started paying attention to storing and shipping of goods appearing on their websites even when offered by third-party sellers to speed up deliveries. With global e-commerce players vying to expand warehouse network and focus on creating warehouse infrastructure by local retailers, there is a huge opportunity for warehouse operators and developers to target e-commerce businesses specifically and capitalize on this demand. E-commerce is expected to grow steadily due to the factors mentioned above and will play a

significant role in increasing the warehousing demand.

Brazilian e-commerce warehousing opportunity

Since 2014, Brazil's economy has been in the throes of a deep economic crisis with a slow GDP growth rate which has impacted the retail sector. In 2015, retail sales in Brazil started declining, before coming back on a growth trajectory. However, despite sluggish growth, foreign and domestic retailers continued to invest in Brazil's growth story. As per the Sao Paulo Commerce Federation, nearly 48% of retail companies injected money in their businesses in 2015. With time, we expect warehouse demand by e-commerce companies to evolve into mature play with adoption of warehouse technology being key to accelerating warehouse space demand.

Indian e-commerce marketplace

India's e-commerce industry, propelled by the launch of 4G network and increasing consumer wealth, is attracting consumers from Tier 2 and Tier 3 cities, where rising aspirations, despite limited brand access is driving revenue growth. The total number of internet users in India stands at close to 52% of the Indian population. Key players in the e-tailing market are Amazon, Flipkart, Snapdeal, Myntra, Paytm Mall, Nykaa and Shopclues. Unlike Brazil, where local e-commerce platforms are preferred by consumers, Indian consumers shop at both types of online marketplaces. The top three players (Flipkart, Amazon and Snapdeal) dominate the e-commerce market in India and control almost 90% of the market share in the industry. The current COVID-19 pandemic and the ensuing lockdown in India came as a big shock for the e-commerce industry with discretionary and luxury spending curtailed. However, this situation too, has presented a host of opportunities for the e-commerce players with food delivery, essential commodities delivery, FMCG products delivery and pharmacies. The Indian e-commerce players are not untouched when it comes to facing challenges in the supply chain and have been struggling to bring down logistics cost, which is the highest in the world at 13-14% of the country's GDP.

Type of Challenge	Challenges for E-commerce players in India	Impact of these challenges on transnational e-commerce players
Taxation	GST Compliance	Most suppliers to e-commerce platforms are yet to become GST compliant which can lead to shortage of inventory in the short term. Till the time sellers get fully compliant, e-commerce firms will have to incur extra logistics cost by relying on own inventory for movement of goods to different demand clusters in the country
Operational	Reverse Logistics Disaster Management Personalization of offerings	Processes related to return management are yet to be streamlined and with the growing volume of returns, the logistics costs are going up for e-commerce players. Similarly, having a Plan B for seamless operations in times of public health emergencies and outbreaks will also eat into their profit margins
Logistical	Last-mile delivery	Last-mile delivery network is still poor and despite Logistics Service Provider (LSP), e-commerce players are struggling to bring down the last mile delivery costs which account for nearly 30% of all logistics cost

India's e-commerce industry has evolved over a period to enter a phase of maturity and consolidation with many e-commerce players strengthening not only their distribution networks but also paying attention to adoption of technology for route optimization and tracking of parcels. Hassle free return policies of e-commerce businesses in India has also led to a huge opportunity to organize the reverse logistics market which was fragmented and unorganized till now. The Indian government's investment in rolling out the fibre network for 5G will also positively influence e-commerce sales in India.

Warehousing infrastructure

E-commerce companies prefer to occupy warehouses that are compliant with their own specifications. E-commerce has been the front runner amongst other sectors to change the earlier attitude of cost cutting for warehouse spaces. Due to e-commerce demand for modern warehouse spaces, factors such as quality, consistency, assurance required by regulators, safety and security of goods and efficient warehousing designs became crucial parameters for 'leasable warehouse spaces' leading to a gradual shift in the kind of warehousing offerings that are now coming up in India. Post the GST implementation, several warehousing clusters across the length and breadth of

the country are now awaiting completion of large warehousing parks to cater specifically to e-commerce and 3PL players. From Dankuni on West Bengal's outskirts to Bhiwandi, emerging as e-commerce sector's favourite hub for fulfilment centres, there are plenty of examples across the country where e-commerce has led to new warehousing infrastructure being created.

With huge supply augmentation, the warehousing infrastructure in the country is getting a makeover like never before. Due to the COVID-19 outbreak, the domestic economy may have slowed down, but e-commerce companies will eventually expand their presence and invest heavily in new technologies to devise a mechanism for contact-less pickup and delivery models to ensure zero contact with customers in the likelihood of such events in future. This will be the need of the hour for them for business continuity under such scenarios in future when demand fulfilment for essential goods and FMCG products will help them keep their heads above water. Such contact-less methods could lead to more employment in the logistics and distribution arms of e-commerce players and retailers and strengthen India's warehousing infrastructure in times to come.

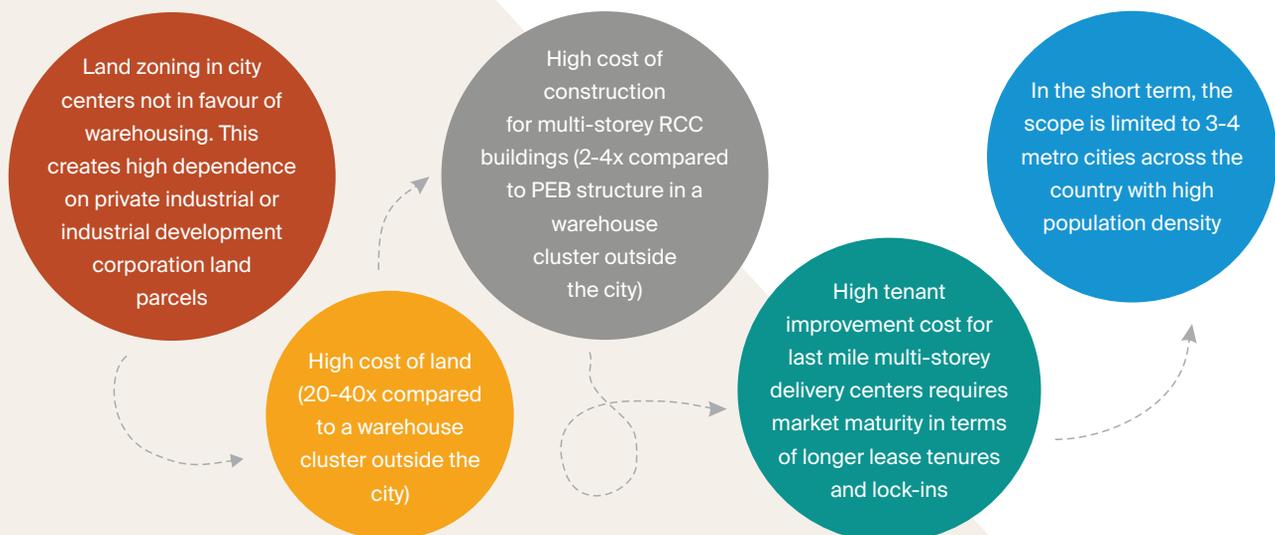
IN-CITY Warehousing in India

As the Indian warehousing market moves towards formalization, many new formats on warehouse development and operations will be explored in the country. One such format prevalent in developed markets globally and in Asian cities like Hong Kong, Singapore and Shanghai is the multi-storey in-city warehouse format. At present in India, old makeshift industrial galas and other commercial spaces are being utilized for such storage requirements and in-city warehousing in the true sense is yet to mark a beginning in the country. In fact, over the last decade we have seen warehouses moving out of the city to peripheral markets where abundant land is available at a relatively cheaper price, which directly reflects on the warehouse rents. For instance, land in peripheral markets like the Bhiwandi warehousing cluster in Mumbai Metropolitan Region (MMR) commands INR 15 – 30 million per acre. However, for an in-city warehouse proposition in Mumbai, the land cost will be upwards of INR 300 million per acre. Similarly, while warehouse rents in the Bhiwandi warehouse cluster ranges between INR 18 – 25/sq ft/month, in case of an in-city warehouse the consideration is upwards of INR 100/sq ft/month on the ground floor.

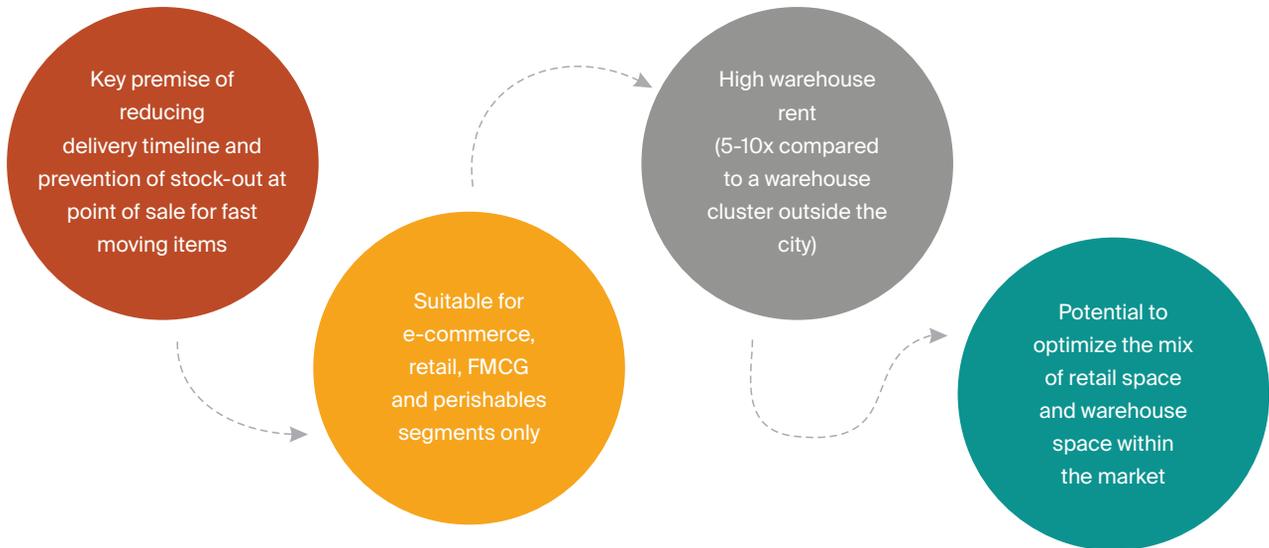
However, Indian e-commerce sector's rapidly increasing sales and shrinking delivery timelines only highlight the need to have such storage facilities within the consumption hubs. The in-city structures easily facilitate the short delivery timelines of e-commerce and fast-moving segments like retail, FMCG and perishables, thereby building a case for them in India too.

When it comes to multi-storey in-city warehousing in the Indian context, there are a host of considerations from the development side as well as the occupier side that become critical to chart the course on this account.

Key considerations from the development/supply side



Key considerations from the occupier/demand side



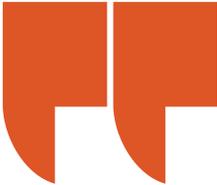
A multi-storey in-city warehouse can be any structure with more than 2 storeys (G+1 upwards). While a 5–6 storey warehouse is more popular in Japan and Singapore, 12-storey warehouses are popular in Hong Kong. In case of India, depending on the market, 2 storey (G+2) or 3 storey (G+3) structures are more suitable. Sophisticated equipment like freight elevators, vertical transfer systems and multi-floor random transfer machines are some other features found in these facilities. Access to higher floors is provided via ramp-up, cargo lifts and drive-up facilities. While provision of drive-up facilities is crucial, it adds up substantially to development costs.

In terms of other considerations for a multi-storey in-city warehouse in the country, land parcels of 4–8 acres would be suitable compared to peripheral market projects that are spread over a minimum of 30 acres. A challenge however will remain in finding such 4–8 acre land parcels with even shapes (rectangular/square) that can accommodate 50–60% ground coverage and FSI utilization of 1.2 – 1.5. Additionally, considering the need for high throughput requirement from such facilities, plot frontage and adequate access road for cargo vehicle movement would be required in these densely populated catchments.

In the Indian context, the cost of construction for Grade A warehouse in peripheral markets is INR 1,200–1,800 per sq ft when developed as a PEB structure. A multi-level warehouse in the city would cost INR 2,500–3,000 per sq ft for an RCC structure of 2–3 storeys. The costs go up significantly with higher levels, and appropriate consideration for achievable rent on those higher levels become an important consideration to decide on the number of storeys to be constructed.

The warehousing sector in India has been growing at a rapid pace since 2017 with the introduction of structural reforms including GST, grant of infrastructure status and sectoral policy interventions. With a strengthening eco-system in the logistics space, many international developers and sovereign funds have made long term commitments to the warehousing sector in the country. As the sector moves towards institutionalization, these global players will consider bringing their global best practices on development and operations including multi-storey in-city warehousing.

However, we believe that market participants will take note of the highlighted considerations and relatively lower rental levels in the Indian warehousing clusters which serve the city consumption hubs very well with 3–4 hours of transit time. Therefore, in the short term, it will be a very selective play for built-to-suit multi-level warehouse development in the country and we expect markets like Delhi, Mumbai and Bengaluru to be the initial beneficiaries of this exploration



N. Shridhar
CEO – Infrastructure
(Industrial & Logistics)
Group Director &
Chief Investment and
Strategy Officer
– Hiranandani Group

Thrust on digital, e-commerce, realignment and rethinking of supply chain models because of the unprecedented pandemic has led to growth in requirement of warehousing except that India as a country will continue to be having the long term factors positive for growth of this sector, realignment will take place and there will be more of regional balancing happening.

In the long term we expect the demand for Grade A warehouses to grow at an attractive rate on the back of the demand from e-commerce and FMCG with focus on Tier 2 and Tier 3 cities.

On the rental front a little push and pull is expected on the demand and supply dynamics in the short term and even though the demand won't grow as projected during the beginning of the year, supply will also be affected as smaller players will find it difficult to meet the capital requirements. We expect that deliveries and execution will be delayed by 3-6 months due to the covid lockdowns”

We are looking at increased automation and digitalization in the warehousing space going ahead with value engineering playing an important role in terms of design and innovation with remotely operated warehouses becoming a possibility. A key emerging trend post the pandemic will see corporate India moving away from Just in Time and towards stocking up their inventory as the Covid 19 induced lockdown has caused significant problems to companies employing JIT/VMI disrupting their supply chain.

Globally companies are also planning to reduce their dependence on one particular country for all their manufacturing needs and are looking elsewhere to meet their requirements. India is a unique position to attract these companies and the Prime Minister's recent push towards “vocal for local” is a significant step in that direction.

Focus on safety with vehicle sanitation and personnel scanning equipment at entrances, warehouses equipped with sanitation and containment equipment along with robust safety and security protocols in place are expected to be become the new norm.



Mehul Shah
CEO
LOGOS India

The COVID-19 pandemic has led to supply chains globally being challenged and pose serious questions on business continuity processes. Our fundamental habits are likely to change for the longer term and this change will cause existing manufacturing supply chain networks and logistics to be rewritten.

I believe India can seize this opportunity and contribute towards global trade. India has always bucked the trend during a world crisis due to lower contribution in global trade and its inherent large internal consumption base. This current situation provides a once in a lifetime opportunity for India to work on both counts.

India can take advantage by easing our market access to local and global players. Federal measures will trigger the increase in consumption, encourage private investments, take lead in green energy & create self-fulfilling health care eco-system. Majority organisations will also review their supply chains to make them more resilient and not just cost effective.

LOGOS believes that with these measures and global re-alignment of manufacturing and distribution supply chain networks would have positive impact on India's Industrial and Logistics infrastructure landscape over next 12 to 24 months:

- Manufacturing units will be set up across existing industrial clusters. Due to the challenges in land acquisition, companies will prefer to lease space in Industrial & Logistics Parks.*
- Due to “W” shaped recovery from COVID-19 disruptions, there is inclination towards increasing the inventory within the supply chains. This will further accelerate the demand for warehouses across Tier-1 and Tier-2 cities.*
- Online purchase will lead to growth in essential category amongst e-commerce players, which will lead to creating e-commerce infrastructure penetration beyond top 8 cities.*
- Increase in online demand of essentials & healthcare purchase will be a catalyst for last mile fulfilment centres in city areas.*

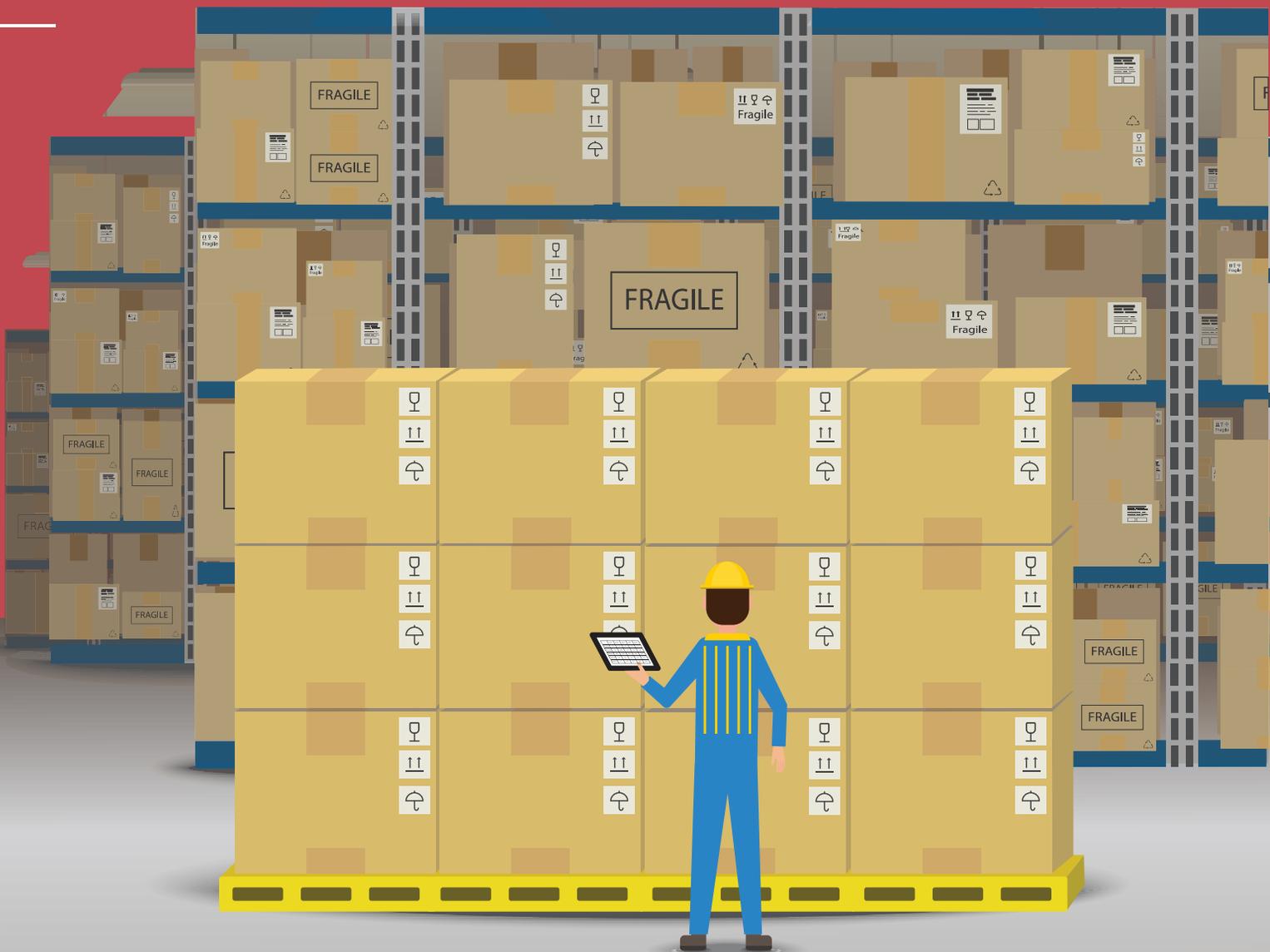
With the combination of all the above, we believe this sector will see higher velocity in uptake and transactions compared with other segments of real estate.

WAREHOUSING

Markets

Ahmedabad | Ambala-Rajpura | Bengaluru | Bhubaneshwar | Chennai
Coimbatore | Guwahati | Hyderabad | Kolkata | Mumbai | NCR | Pune





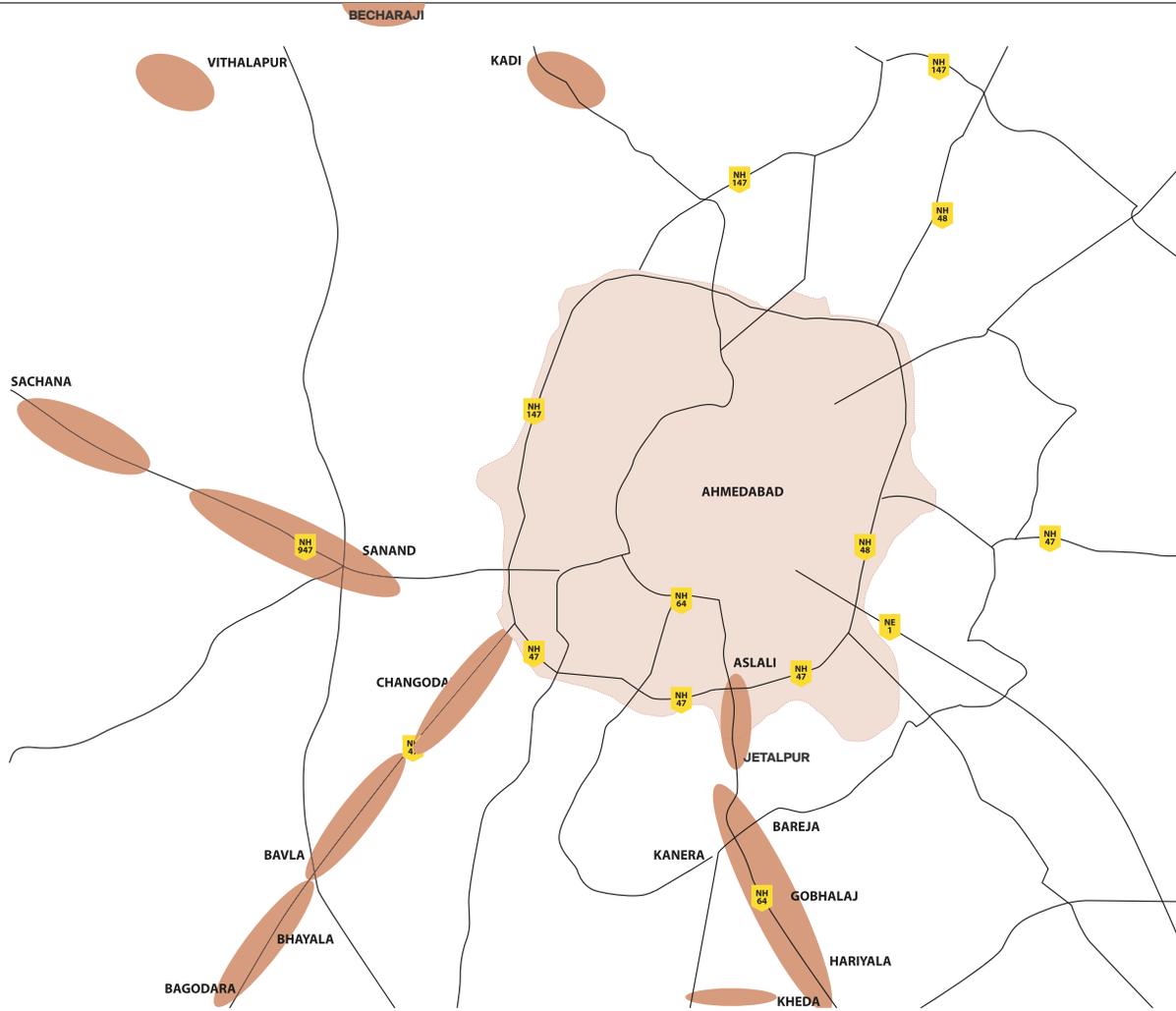
AHMEDABAD

WAREHOUSING MARKET

- The warehousing demand in Ahmedabad has been predominantly driven by the industrial and manufacturing segments followed by retail demand. However, in recent years, the rapid growth of e-commerce has made it one of the important occupier segments.
- There are 4 major warehousing clusters in Ahmedabad: Aslali-Kheda, Changodar-Bagodara, Sanand-Viramgam and Kadi-Vithalapur-Becharaji belt. Aslali-Kheda and Changodar-Bagodara belts are bigger and established clusters. The Sanand-Viramgam and Vithalapur-Becharaji belts have started gaining prominence after the emergence of automobile hubs in each of these regions.
- The Aslali-Kheda belt located along the 3x3 lane Mumbai-Ahmedabad highway is one of the oldest warehousing clusters of the city. The demand from the retail/consumption segment is the major driver of warehousing demand in this belt. High land prices and the expansion of Ahmedabad municipal limits have made it unviable to start a new warehouse in the Aslali-Jetalpur belt. The warehouses in this region are over 15-20 years old and lack modern offerings; besides, most of the supply is controlled by local landowners. Better quality warehouses can be seen in the Bareja-Kheda belt and the land prices along this route are lower compared to Aslali-Jetalpur.
- The Changodar-Bagodara belt is an industrial region with a large part of the warehousing demand coming from the manufacturing sector followed by e-commerce. This belt has good quality 3x3 lane roads with divider separation. Expansion of Ahmedabad municipal limits to Changodar and the subsequent increase in land rates has made it unviable to start a new warehousing facility. The land rates from Bavla to Bagodara are lower and supportive of developing a new warehousing facility. Many pharmaceutical companies and several large industries have their manufacturing facilities in the Changodar-Bagodara belt and the region offers a well-developed ecosystem as required by manufacturing companies. Many logistics and warehousing park developers are active in this region and the early movers have already built a fully operational modern warehousing facility here.
- The Sanand-Viramgam belt and Kadi-Vithalapur-Becharaji belt are the upcoming automobile hubs in India. Some of the largest automobile companies along with their ancillaries have their manufacturing facilities in these hubs. Much of the warehousing demand in this cluster comes from automobile companies. Some of the warehouses in this belt also cater to agriculture related demand. The Kadi-Vithalapur-Becharaji cluster had garnered 40% share of warehousing transactions in FY 2020.
- Ahmedabad's warehousing market witnessed leasing volumes of 5.1 mn sq ft (0.47 mn sq m) in FY 2020, a 4.6% year-on-year (YoY) growth over FY 2019. This growth was led by manufacturing and e-commerce segments. While the warehouse developers continue to scout for large land parcels to build industrial parks, many new trends mentioned in the earlier chapters have come to the fore, post the Covid-19 outbreak which will redefine warehouse space usage and uptake across sectors over the next 12-18 months.
- Rents have largely remained stable and we do not expect any rental growth due to the current shifts in existing warehouse space usage and future demand trends. Going forward, the manufacturing led demand is expected to remain low on account of the Covid-19 impact; however, the rise in demand from e-commerce and 3PL is likely to make up for it.

Major warehousing locations in Ahmedabad

Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Aslali-Kheda cluster	Aslali, Jetalpur, Bareja, Kanera, Gobhalaj, Hariyala, Kheda
Changodar-Bagodara cluster	Changodar, Bavla, Bhayala, Bagodara
Sanand-Viramgam cluster	Sanand, Sachna, Viramgam
Kadi-Vithalpur-Becharaji cluster	Kadi, Vithalpur, Becharaji

Source: Knight Frank Research

Major infrastructure in Ahmedabad

Name	Type
National Expressway-1	Road infrastructure
Ahmedabad-Rajkot National Highway (NH-8A)	Road Infrastructure
Ahmedabad-Sanand-Viramgam State Highway (SH 17)	Road Infrastructure
SP Ring Road	Road Infrastructure

Source: Knight Frank Research | Note: NH stands for National Highway

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Amazon	E-commerce	Changodar-Bagodara cluster
Delhivery	3PL	Changodar-Bagodara cluster
CMR	Manufacturing	Kadi-Vithalpur-Becharaji cluster
Johnson Controls-Hitachi Air Conditioning India	Manufacturing	Kadi-Vithalpur-Becharaji cluster
Suntara Cosmetics	FMCG	Aslali - Kheda cluster
Panasonic	Consumer Durables	Aslali - Kheda cluster
Udaan Express	3PL	Aslali - Kheda cluster
Flipkart	E-commerce	Changodar-Bagodara cluster

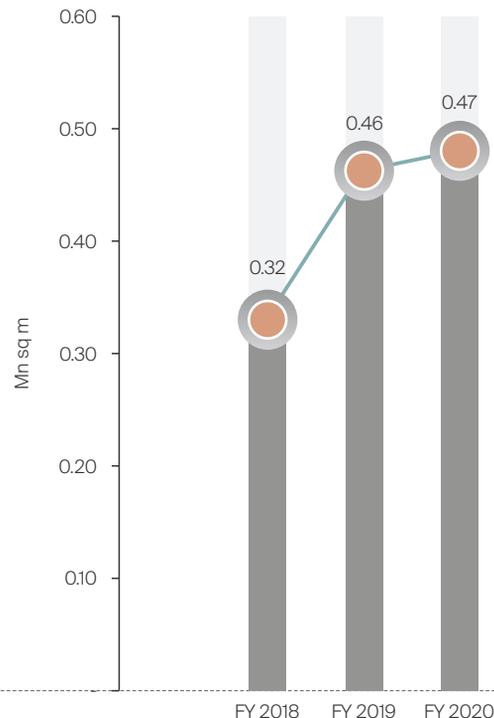
Source: Knight Frank Research

Select warehouse projects

Warehouse project	Warehouse cluster
Sumar Logistics & Industrial Park	Aslali-Kheda
Prime Indraprasth Industrial and Logistics Hub	Aslali-Kheda
Indospace	Changodar-Bagodara
Indus Industrial Park	Changodar-Bagodara
Titanium Logistics Park	Changodar-Bagodara
Mascot Industrial Park	Kadi-Vithalpur-Becharaji
Soko Industrial Park	Kadi-Vithalpur-Becharaji
Pinnacle Logistic Park	Sanand-Viramgam

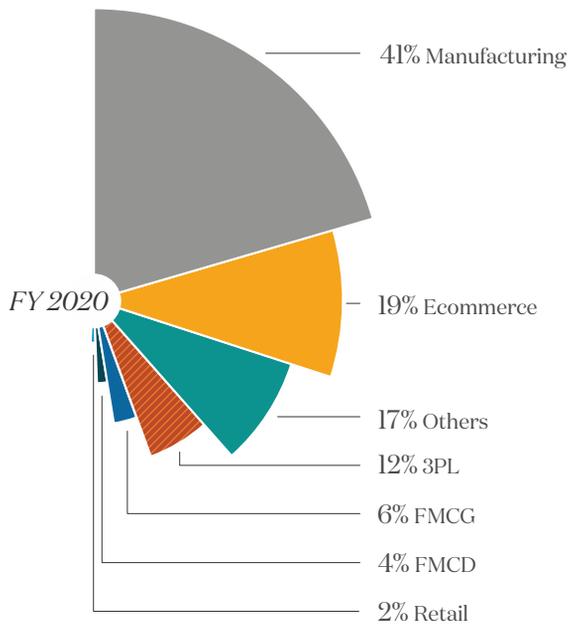
Source: Knight Frank Research

Warehousing market leasing volume



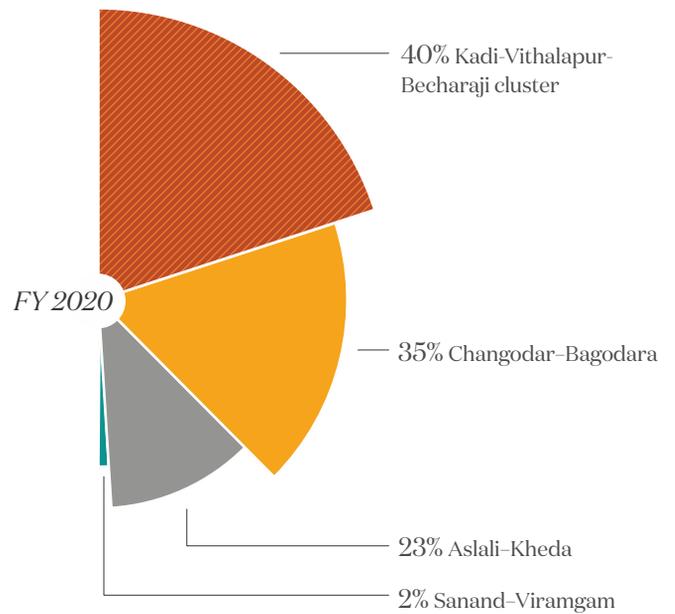
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Aslali - Kheda	Aslali	20 - 25	215 - 258 (20 - 24)	151 - 172 (14 - 16)
	Bareja	15 - 20	172 - 215 (16 - 18)	140 - 151 (13 - 14)
	Kanera	15 - 20	172 - 215 (16 - 18)	129 - 172 (12 - 14)
	Gobhlaj	12 - 15	161 - 172 (15 - 16)	129 - 172 (12 - 14)
	Kheda	10 - 15	151 - 172 (14 - 16)	108 - 140 (10 - 13)
Changodar - Bagodara	Changodar	20 - 25	194 - 237 (18 - 22)	151 - 172 (14 - 16)
	Bavla	12 - 16	172 - 215 (16 - 18)	140 - 151 (13 - 14)
	Bhayala	8 - 12	172 - 215 (16 - 18)	118 - 140 (11 - 13)
	Bagodara	8 - 9	140 - 172 (13 - 16)	108 - 118 (9 - 11)
Sanand - Viramgam	Sanand	20 - 25	194 - 215 (18 - 20)	151 - 161 (14 - 15)
	Sachana	10 - 15	161 - 172 (15 - 16)	129 - 151 (12 - 14)
Vithalapur - Becharaji	Kadi	12 - 15	172 - 194 (16 - 18)	129 - 151 (12 - 14)
	Vithalapur	8 - 10	161 - 172 (15 - 16)	129 - 151 (12 - 14)
	Becharaji	9 - 13	161 - 172 (15 - 16)	118 - 151 (11 - 14)

Source: Knight Frank Research

AMBALA-RAJPURA WAREHOUSING MARKET

- Rajpura is called the 'Gateway to Punjab' as it is situated at the junction of National Highway 44 (NH 44 or old NH 1) which connects New Delhi to Attari in Punjab and NH 7 (Old NH 64) which runs from Chandigarh to Dabwali. Together with Ambala in Haryana, it is strategically placed via road and rail transport to connect with other cities in Punjab and Jammu & Kashmir, making it a prime warehousing belt. Ambala-Rajpura belt has emerged as a warehousing and logistics region due to its proximity to Chandigarh, Patiala, Ludhiana and Zirakpur.
- The Ambala-Rajpura belt starts from the Punjab-Haryana border or the Shambhu barrier which is lined with a lot of unorganized warehousing facilities along the Grand Trunk Road between the barrier to Rajpura and then on the Banur – Zirakpur - Tepla Road. In FY 2020, the Rajpura cluster accounted for nearly 2.19 mn sq ft (0.20 mn sq m) warehousing leasing, a 23% yoy upswing over FY 2019. Of the total leasing, third-party logistics sector accounted for the maximum share.
- Rajpura has always been an industrial town and the Rajpura cluster is part of the district of Patiala in Punjab. From soap factories, household goods manufacturers, biscuit machines industry and steel works, a lot of small-scale industries are situated in Rajpura. It is also one of the top grain markets in Asia (besides Khanna) for grains from Punjab.

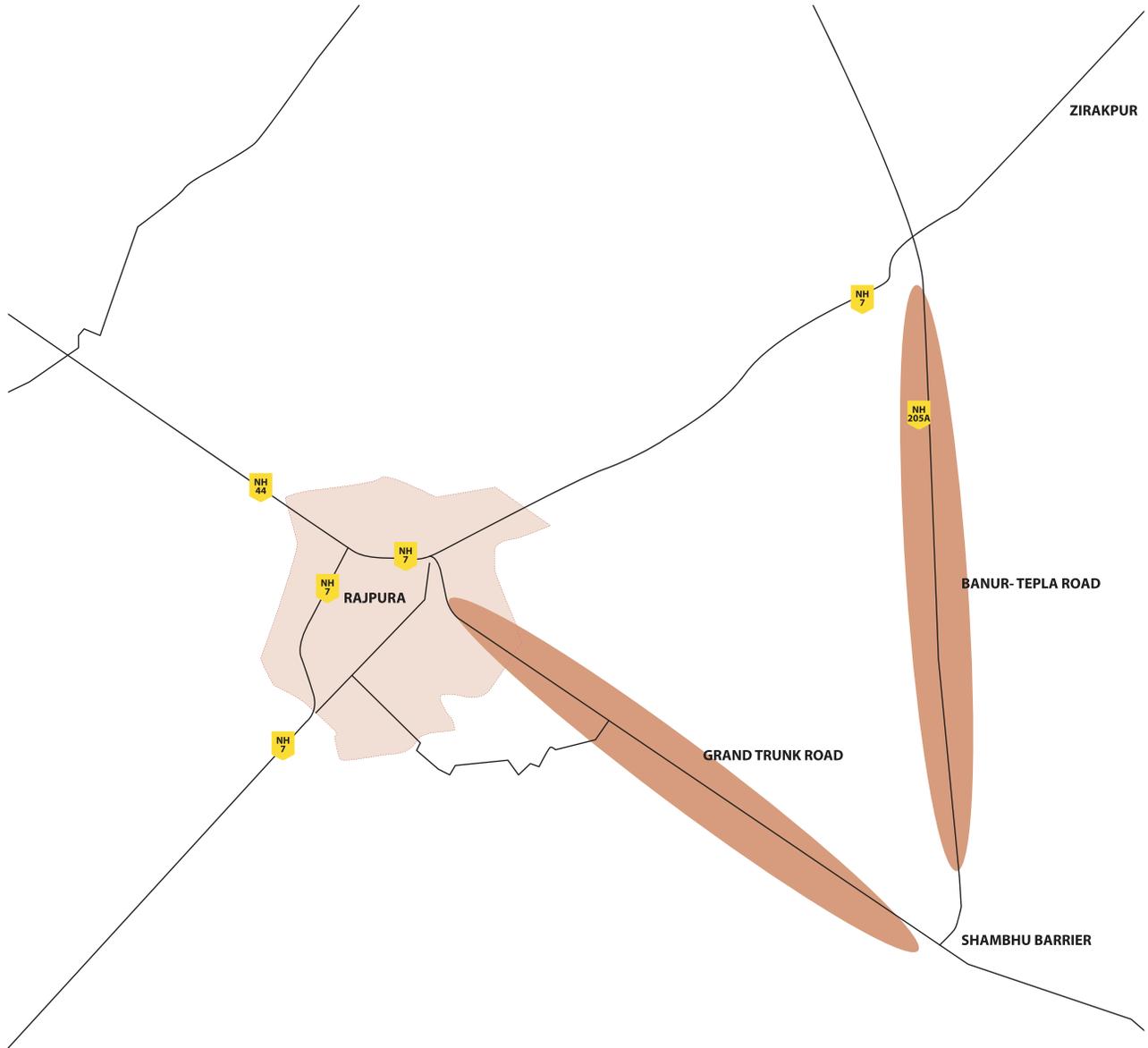
Rajpura is situated within 40 kms of Chandigarh, the capital of Punjab and is home to various large-scale industries such as Hindustan Unilever, AMTEK Group, Bunge India Private Limited, Seil Chemicals Limited etc.

- Significant warehousing demand in the Rajpura cluster comes from these industries. Due to its proximity to the tri-city (Chandigarh-Mohali-Panchkula), industrial real estate and logistics parks developers are launching parks in Rajpura to boost their Grade A warehousing portfolio near NH-44 and NH-7 which are well-connected to the industrial clusters of IMT Manesar, Dharuhera and Bhiwadi. Growth of Grade A warehousing infrastructure in this cluster will support modernization of the supply chain and attract occupiers from sectors such as e-commerce in future.
- The state government has proposed to set up a Global Manufacturing and Knowledge Park / Integrated Manufacturing Cluster (IMC) at Rajpura under the 'Invest Punjab' initiative in an area of 1,000 acres under the Amritsar-Kolkata Industrial Corridor (AKIC). The upcoming mixed-use development QuarkCity, along the Grand Trunk Road in Rajpura, will add to the cluster's attractiveness, with investment potential of INR 20 billion in the park across various sectors such as manufacturing, food processing, furniture and warehousing. Work on the first phase of 255 acres has already

begun. Some major players that have expressed interest in QuarkCity are IndoSpace, Geekan Design and Virgo Mark.

Major warehousing locations in Ambala-Rajpura Belt

 Warehousing cluster



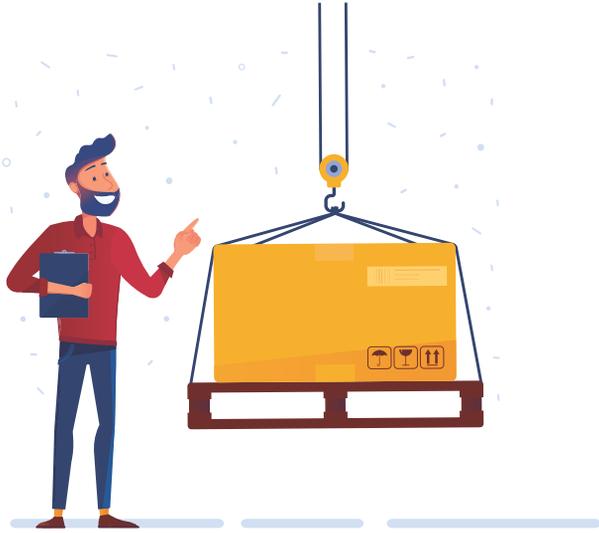
Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Ambala-Rajpura Belt	Along the Grand Trunk Road (GT Road) and Banur-Zirakpur-Tepla Road

Source: Knight Frank Research

Note: Only the most prominent warehousing locations in Ambala-Rajpura Belt are captured here.



Major infrastructure in Rajpura

Name	Type
NH 44 (Old NH 1)	Road - NH
NH 7 (Old NH 64)	Road - NH

Source: Knight Frank Research | Note: NH stands for National Highway

Select warehouse projects

Warehouse project	Warehouse cluster
Indoswift	Ambala-Rajpura Belt
Contract Logistics	Ambala-Rajpura Belt

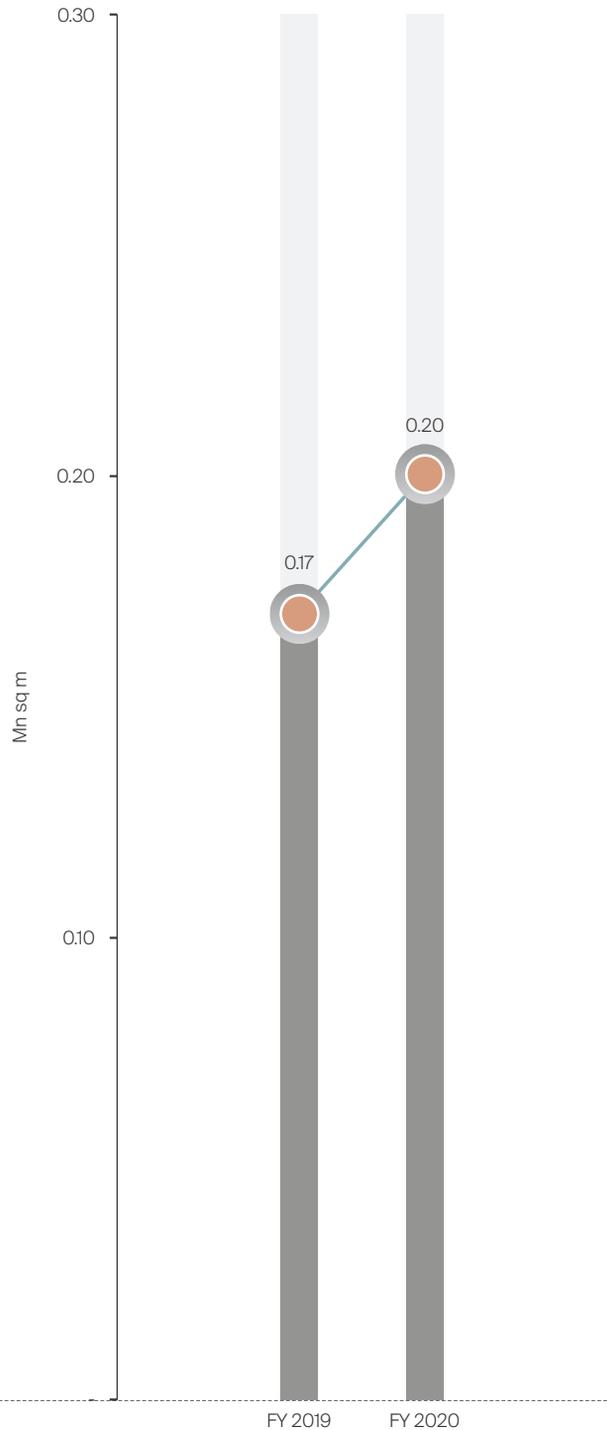
Source: Knight Frank Research

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Varuna Logistics	Logistics	Ambala-Rajpura Belt
DHL	Logistics	Ambala-Rajpura Belt
Procter & Gamble	FMCG	Ambala-Rajpura Belt
Mahindra Logistics	Logistics	Ambala-Rajpura Belt
Stellar Value Chain	Logistics	Ambala-Rajpura Belt

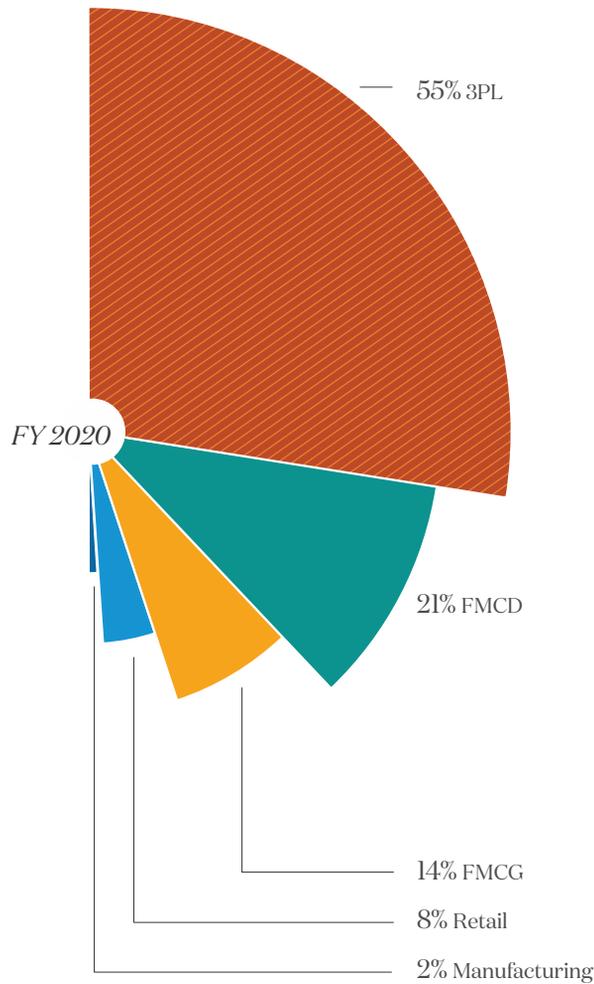
Source: Knight Frank Research

Warehousing market transaction volume



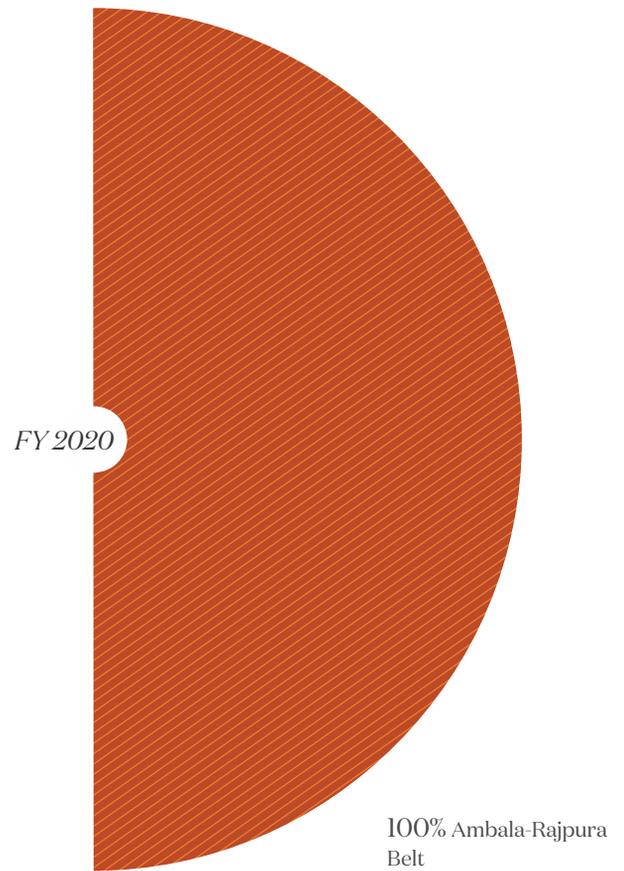
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Ambala-Rajpura Belt	Grand Trunk (GT), Banur-Zirakpur - Tepla Road	7 - 10	140 - 161 (13 - 15)	118 - 129 (11 - 12)

Source: Knight Frank Research

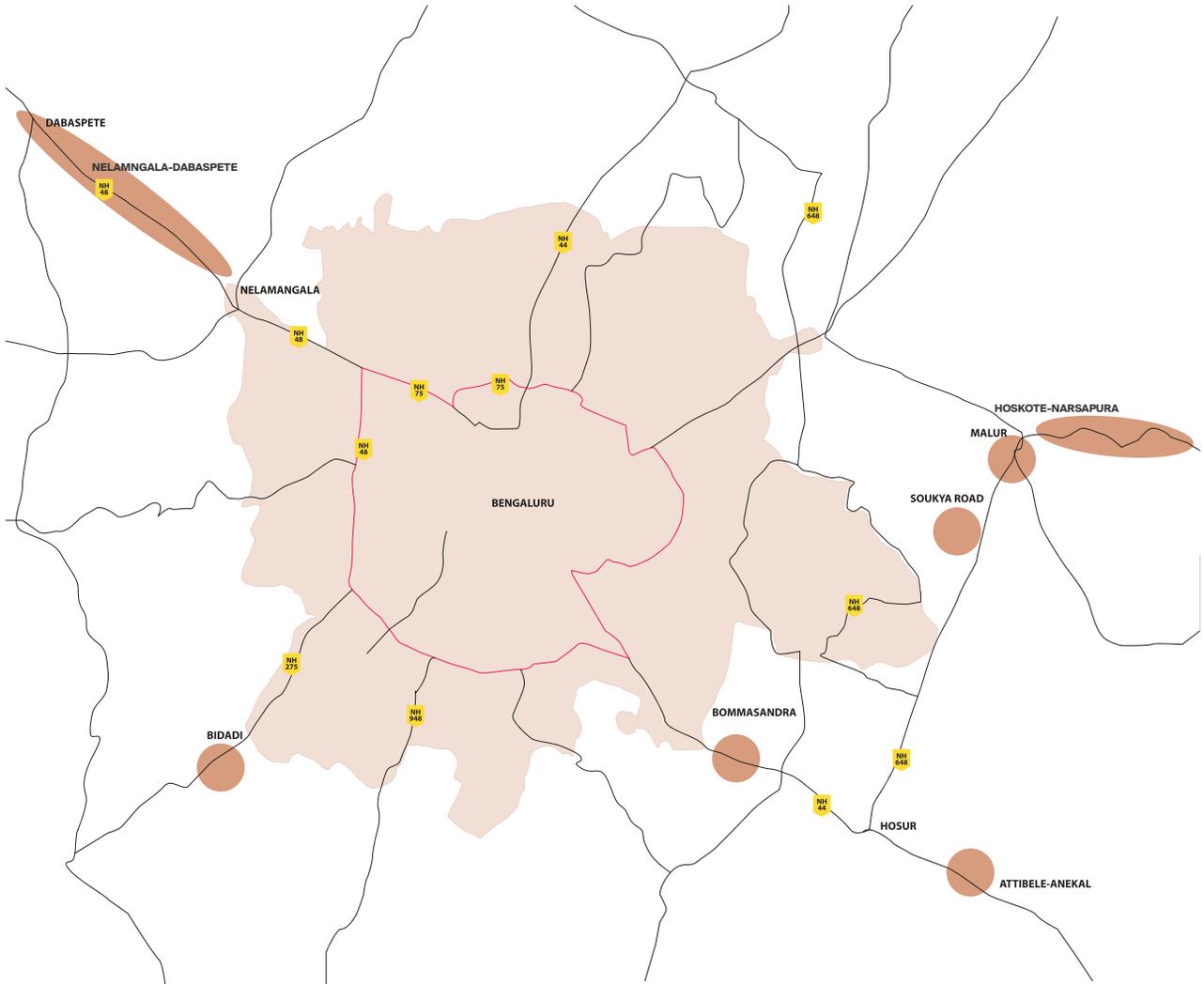
BENGALURU

WAREHOUSING MARKET

- In the past two years, Goods and Services Tax (GST) rollout facilitated the steady transformation of the warehousing market in Bengaluru Metropolitan Region's (BMR) peripherals where companies in e-commerce and logistics sector spearheaded rampant expansion activities due to consumer demand growth and parallel warehouse supply side augmentation.
- Both the Nelamangala– Dabaspete cluster in the city's north-west and the Hoskote–Narsapura cluster in the east, along the National Highway (NH)-48 are prime warehouse clusters due to proximity to Mumbai and Chennai respectively and have been occupiers' favorite for expansion.
- In FY 2020, Bengaluru's warehousing market witnessed 4.30 mn sq ft (0.40 mn sq m) leasing, a 23% year-on-year (y-o-y) degrowth over FY 2019 as many marquee deals were closed in FY 2019. With the warehousing market getting consolidated at large, developers have been venturing into Bengaluru's prominent clusters with land acquisitions for greenfield developments. While regional developers continued to scout for large land parcels to build industrial parks, many new trends have come to the fore post the Covid-19 outbreak which will redefine warehouse space usage and uptake across sectors over the next 12-18 months.
- The Covid-19 pandemic and associated lockdown has tested the operational resilience of companies across all sectors and disrupted supply chains which were carefully put in place to reduce the operational and logistics cost post the GST implementation. In few cases, e-commerce players in Bengaluru, unable to utilize surplus warehouse space, have started exploring opportunities to sublease them or renegotiate with the warehouse space provider(s).
- Contingency planning for Covid-19 like events in future has led many companies to scout for in-city warehouses so that dependency on fulfillment centres for supply can be reduced, without any adverse impact on deliveries. Escalating demand for grocery and essential services items may propel e-commerce players to commit to mid-sized and multi-storey warehouses nearer to consumption centres.
- Also, we expect stocking levels to increase which will lead to a greater demand for warehousing, especially in the essential services segment like F&B, groceries and pharmaceuticals.
- Investment in automation of warehouses to reduce the risk of human contact and limit infections in workforce will lead to deployment of automated guided vehicles (AMVs) or robots in delivery hubs. A leading e-commerce player had started deployment of 100 robots in one of its facilities in Bengaluru's outskirts in early 2019 for operational efficiencies and we can expect more companies to follow suit in this altered scenario.
- Additional warehouse requirements are also expected to come up from electronics, FMCG and FMCD companies on both the Nelamangala-Dabaspete and Hoskote-Narsapura cluster from Japanese, European and Korean companies as many will be shifting base outside China and will explore Bengaluru's peripheral locations on established warehouse clusters.
- In FY 2020, rents have largely remained stable and any rental growth is not expected due to the current shifts in existing warehouse space usage. In fact, as an aftermath of the lockdown, upcoming warehouse supply will also have to be deferred which will optimize rents in major warehouse clusters of Nelamangala-Dabaspete and Hoskote-Narsapura. In the next 12-18 months, warehouse space demand will also be impacted by the type of goods sold in the current environment. Along with e-commerce, occupiers in FMCG, electronics and 3PLs will be prime sectors dictating leasing going forward.

Major warehousing locations in Bengaluru

Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Nelamangala–Dabaspete cluster	Nelamangala, T Begur, Govenahalli, Dabaspete
Hoskote–Narsapura cluster	Hoskote, Nidagatta, Thavarekere, Narsapura
Others	Soukya Road, Bidadi, Bommasandra, Attibele-Anekal Road, Malur

Source: Knight Frank Research

Major infrastructure in Bengaluru

Name	Type
Peripheral Ring Road	Road
NH 48/ Mumbai Bengaluru Highway	Road - NH
NH 75 / Bengaluru Tirupati Highway	Road - NH
NH 648 / Nelamangala Hosur Road	Road - NH
NH 44 / Bengaluru Hosur Road	Road - NH
Electronic City Elevated Expressway	Tolled Expressway
Nandi Infrastructure Corridor Enterprises Road (NICE Road) or Bengaluru Mysuru Infrastructure Corridor (BMIC)	Tolled Expressway
Chennai – Bengaluru Industrial Corridor	Industrial Corridor
Bengaluru- Mumbai Economic Corridor	Industrial Corridor
Kochi-Bengaluru Industrial Corridor	Industrial Corridor

Source: Knight Frank Research | Note: NH stands for National Highway

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Amazon	E-commerce	Devanahalli Hardware Park
Flipkart	E-commerce	Thalli Road
D-Mart	Retail	Nelamangala-Dabaspete
Delhivery	Logistics	Nelamangala-Dabaspete
DHL	Logistics	Attibele

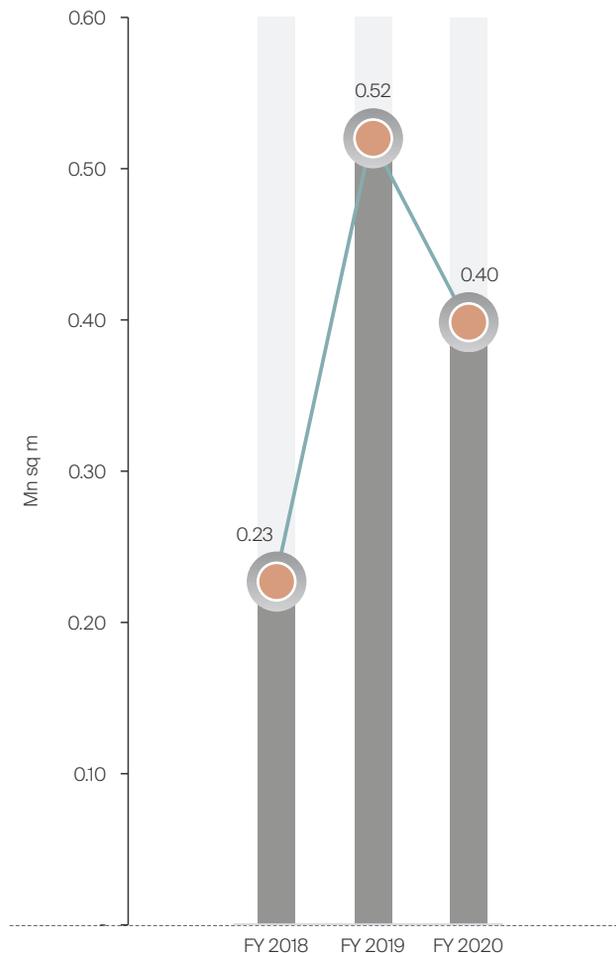
Source: Knight Frank Research

Select warehouse projects

Warehouse project	Warehouse cluster
IndoSpace	1. Nelamangala - Dabaspete 2. Bommasandra 3. Hoskote-Narsapura
Embassy Industrial Parks	Shoolagiri-Hosur Road
Individual landlords	1. Nelamangala-Dabaspete 2. Hoskote-Narsapura

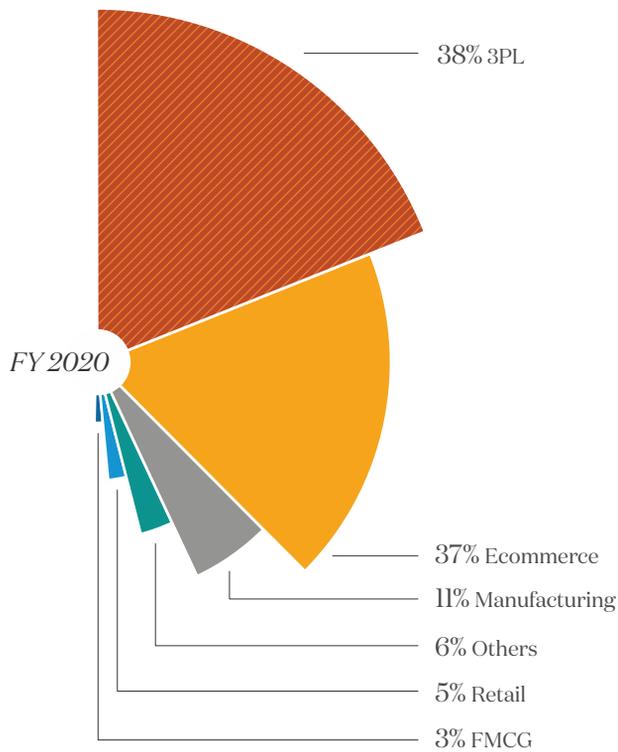
Source: Knight Frank Research

Warehousing market transaction volume



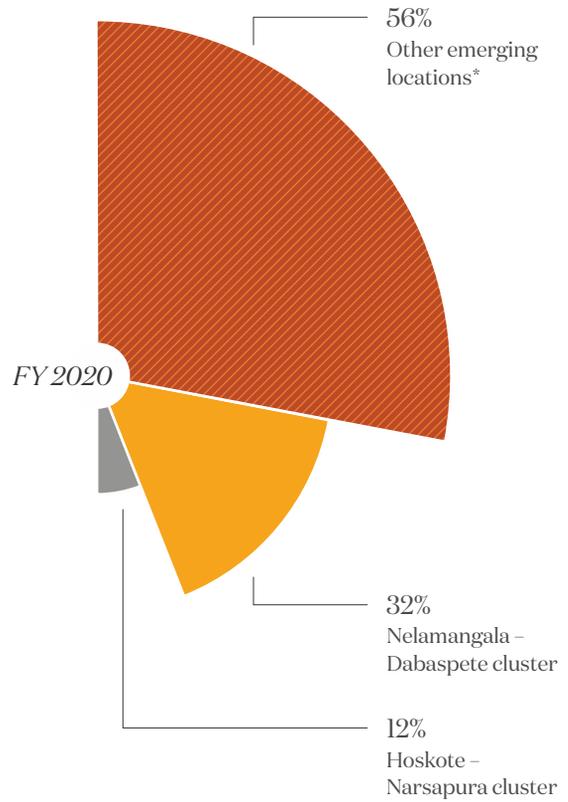
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

*Other emerging locations include Malur, Attibele, Bannerghatta Road and Devanahalli Hardware Park

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Nelamangala -Dabaspete cluster	Nelamangala	15 - 20	194 - 237 (18 - 22)	151 - 183 (14 - 17)
	Dabaspete	16 - 20	172 - 215 (16 - 20)	129 - 172 (12 - 16)
Hoskote -Narsapura cluster	Hoskote	14 - 18	215 - 248 (20 - 23)	172 - 215 (16 - 20)
	Narsapura	11 - 16	204 - 237 (19 - 22)	161 - 205 (15 - 19)
Attibele -Bommasandra cluster	Bommasandra - Jigni	No Large lands available	269 - 323 (25 - 30)	226 - 258 (21 - 24)
	Attibele - Anekal Road	18 - 28	215 - 258 (20 - 24)	183 - 215 (17 - 20)
Others	Malur	12 - 18	204 - 237 (19 - 22)	161 - 205 (15 - 19)
	Soukya Road	20 - 30	258 - 280 (24 - 26)	205 - 248 (19 - 23)
	Bidadi	20 - 30	237 - 248 (19 - 23)	161 - 205 (15 - 19)

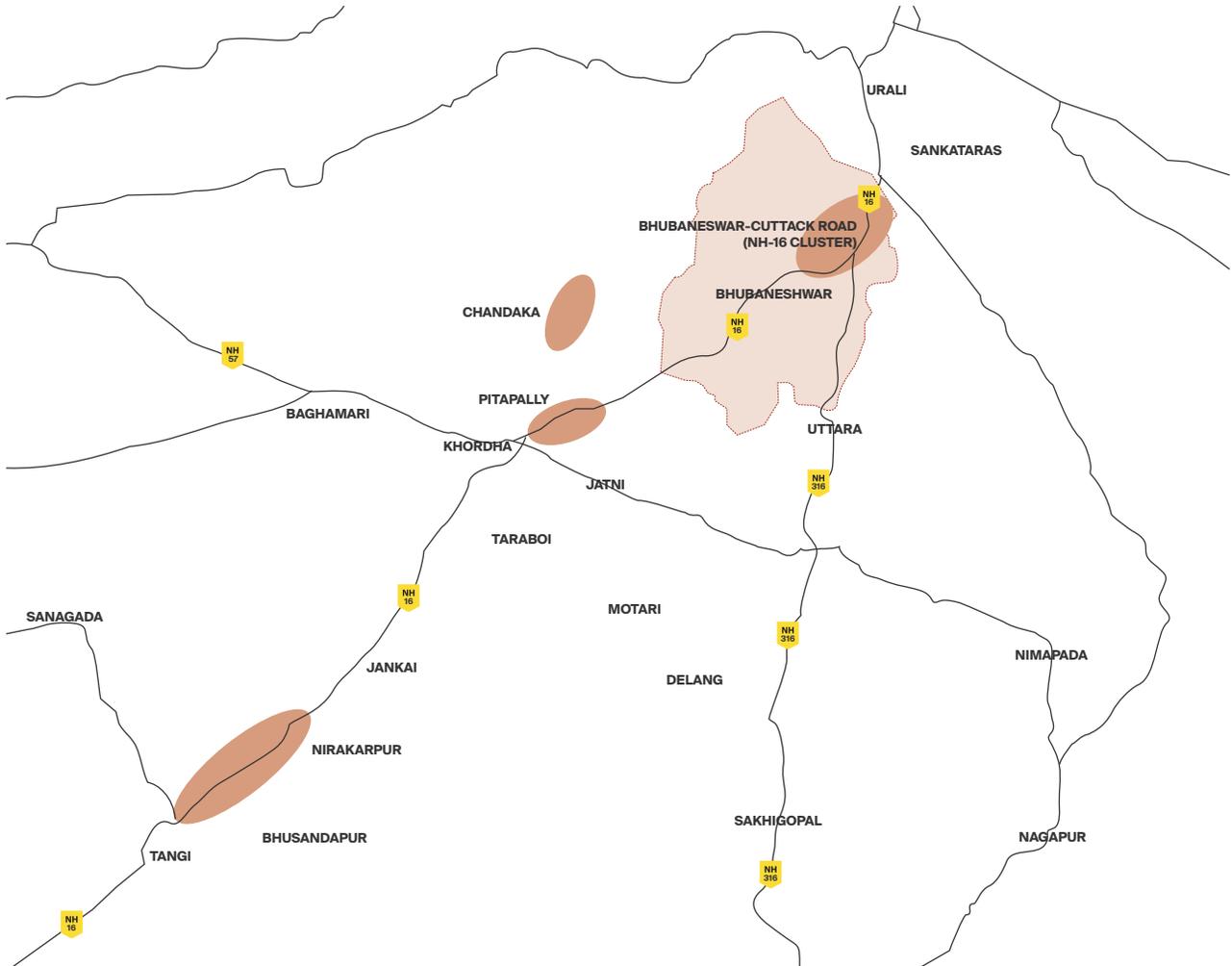
Source: Knight Frank Research

BHUBANESWAR WAREHOUSING MARKET

- Bhubaneswar is a pivotal Tier 2 city in India's eastern belt. It has an active warehousing market along major national highways and has some prominent clusters which have witnessed increased action from occupiers in the past two years. Bhubaneswar is Odisha's state capital and its largest city. It is well connected to Cuttack and other nearby towns which bodes well for warehousing sector's growth in the long term.
- Odisha's major warehousing clusters are Bhubaneswar-Cuttack Road (NH-16 Cluster), Tangi, Pitapally and Chandaka. Since the warehousing market is largely dominated by local players, the Grade A warehouse space supply is a bit constrained with many options for Grade B developments available in ample supply. Apart from FMCG, many ecommerce players have sat up and taken notice of Bhubaneswar's strategic location to serve a large consumer base in Odisha and have been gradually expanding on its outskirts along Bhubaneswar-Cuttack Road (NH-16 Cluster) and Tangi cluster. Nakhara, Mancheswar and Mongoli are some of the locations which have garnered a lot of interest from ecommerce multinationals in past 12-15 months.
- In FY 2020, 0.49 million sq. ft. (45,522 sq. m.) of warehousing space was leased in Bhubaneswar, which is exactly at par with the leasing activity in FY 2019. Of the total warehouse space leased in FY 2020, Tangi cluster accounted for 39% while Bhubaneswar-Cuttack Road (NH-16 Cluster) clocked in 31% of the total volume. The remainder was concentrated largely in Pitapalli cluster followed by Chandaka. In terms of industry-split, FMCG accounted for 33%, followed by 31% by ecommerce, 23% by other sectors and 13% by manufacturing.
- Warehouse requirements from most multinational occupiers ranged between 1,858 to 5,574 sq. m. (20,000 to 60,000 sq. ft.) and we expect this trend to continue unabated in a post Covid-19 world. Even before Bhubaneswar's warehousing market could attract investors and developers which could infuse Grade A supply in the market and lead to organised warehousing development, the course has changed and new trends emerging in the transitional and post Covid-19 scenario will define the direction that the market will take. A lot will depend upon how consumption of FMCG, FMCD and auto is impacted, though we expect ecommerce to continue this growth trajectory as focus on building warehousing capacities in Tier II markets and capital cities may emerge as a key theme for many players.

Major warehousing locations in Bhubaneswar

 Warehousing cluster

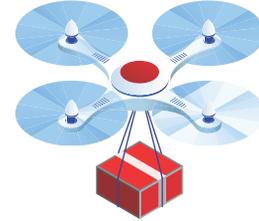


Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Bhubaneswar-Cuttack Road (NH-16 Cluster)	Rudrapur, Mancheswar, Nakhara, Pahala, Phulnakhara
Tangi	Tangi, Mongoli
Pitapally	Khurda, Off Khandagari
Chandaka	Kantabada, Barang area

Source: Knight Frank Research



Major infrastructure in Bhubaneswar

Name	Type
NH 16	Road - NH
NH 57	Road - NH

Source: Knight Frank Research | Note: NH stands for National Highway

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Amazon	Ecommerce	Bhubaneswar-Cuttack Road (NH-16 Cluster)
Flipkart	Ecommerce	Tangi Cluster
Coca-Cola	FMCG	Pitapally Cluster
Dabur	FMCG	Pitapally Cluster

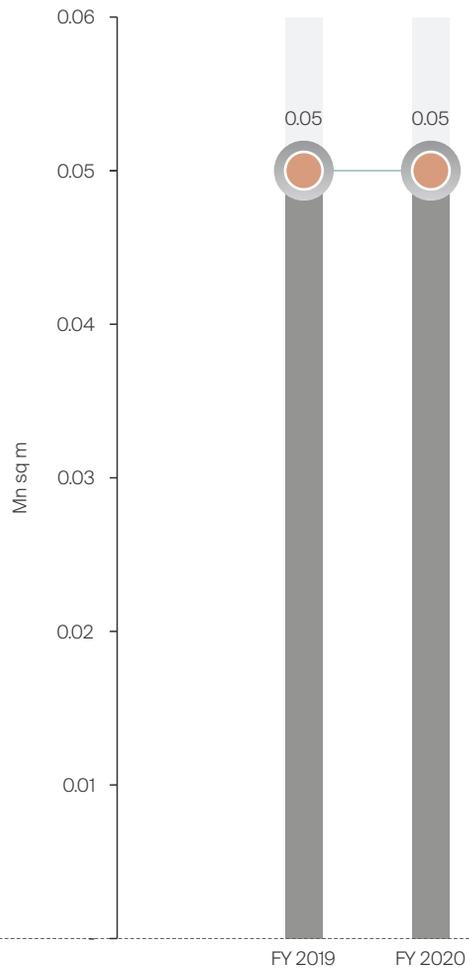
Source: Knight Frank Research

Select warehouse projects

Warehouse project	Warehouse cluster
Kingston Logistics Park	Others (Choudwar)
TVS industrial & Logistics Park	Chandaka

Source: Knight Frank Research

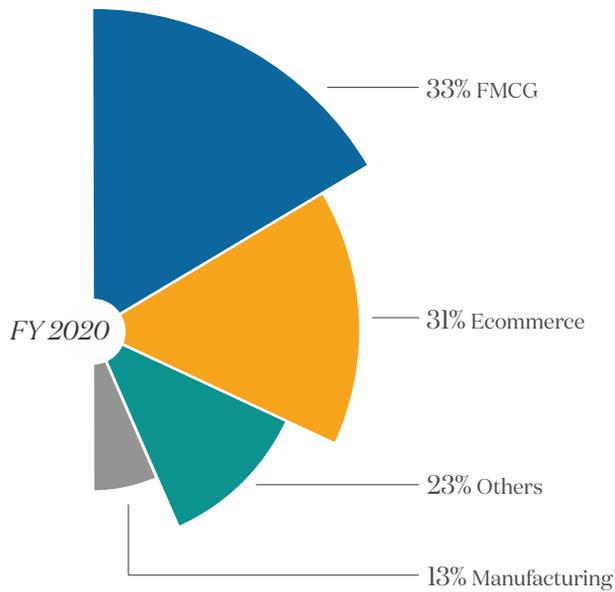
Warehousing market transaction volume



Source: Knight Frank Research

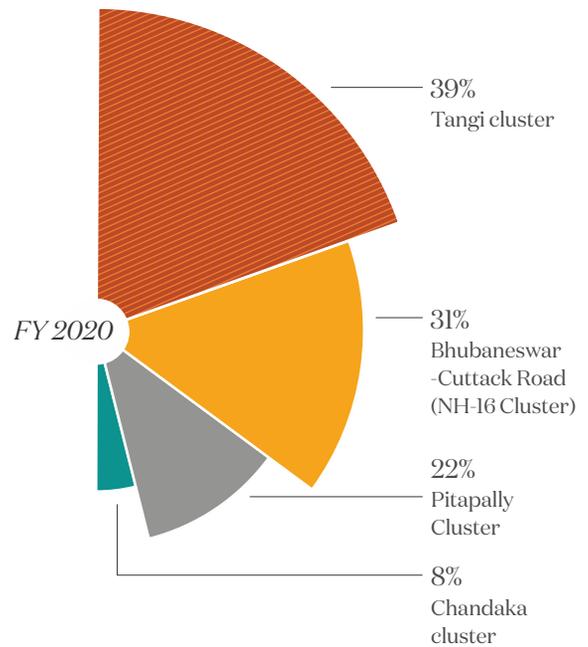


Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

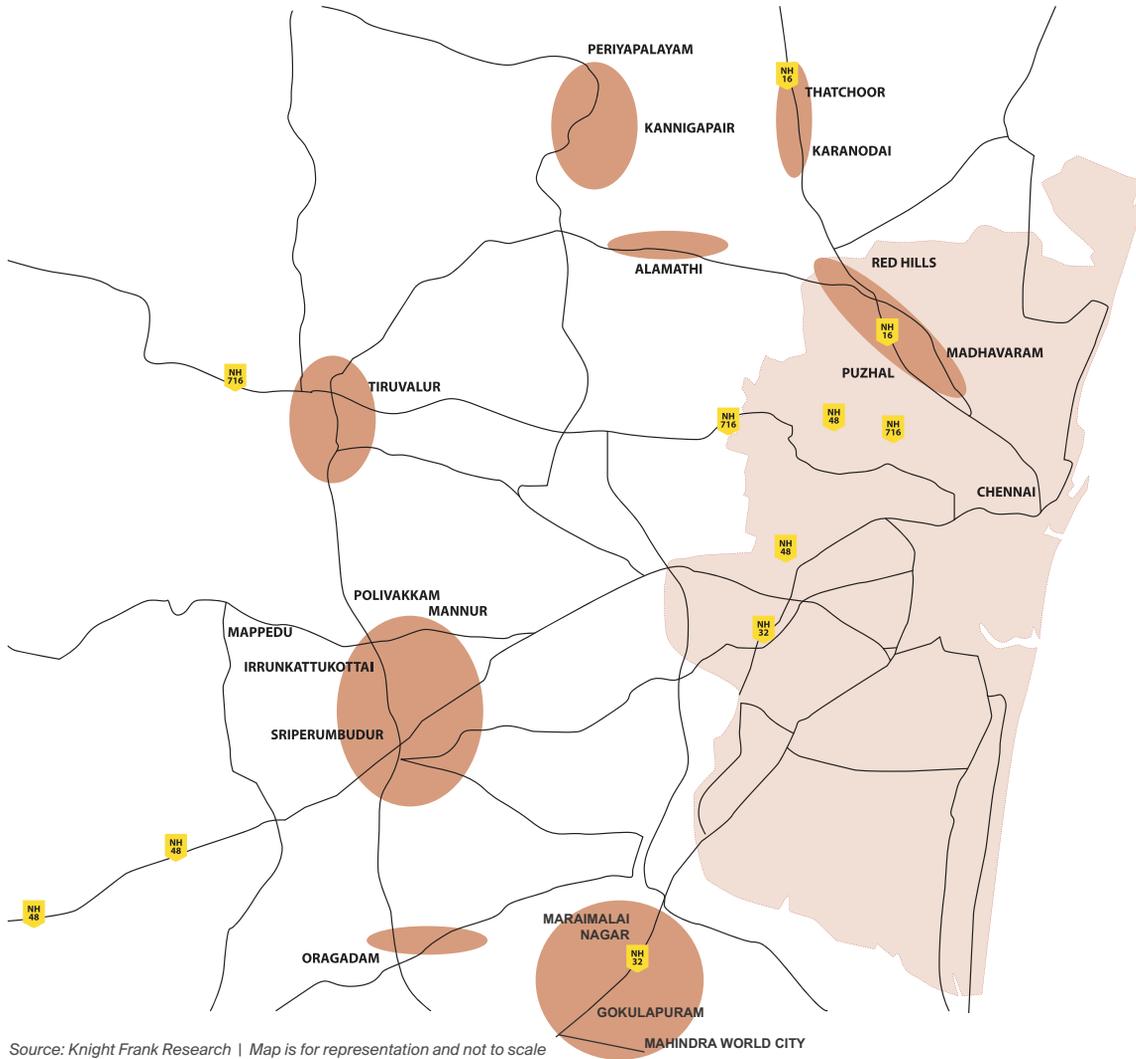
CHENNAI

WAREHOUSING MARKET

- The Chennai industrial and warehousing market had a comparatively low FY 2020 than the previous year. Transaction activity cooled down from 0.4 mn sq m (4.2 mn sq ft) to 0.3 mn sq m (3.4 mn sq ft), a 19% YoY fall. Dearth of quality supply and the slowdown in the auto sector were primary reasons for this decline.
- Known as the 'Detroit of India', the city has had a significant presence of the automobile industry for years. Textile and manufacturing for heavy industries are other trades that call Chennai their home. Undoubtedly, these three activities have been and continue to be the driver industries for the city's industrial and warehousing market.
- The city's geography has played a key role in its evolution and has made it a commercial centre since British India. Situated right at the sea, the city is the first major halt on the east coast of India in the Bay of Bengal. It is a key trade centre and has two major ports – Chennai Port (second largest container port of India) and Ennore Port, along with other newly built ports like the Kattupalli Port. This infrastructure forms the mainstay of the warehousing and industrial activity in the city.
- Warehousing activity in Chennai is largely concentrated in three clusters – one expanding over the south-west and west of the city, second stretching across the northern belt of the city and the third spread across the south of the city. Warehousing locations between the Grand Southern Trunk Road (GST Road / Chennai – Trichi Highway) in the south and the Poonamallee High Road (Mumbai Highway) in the west form the Sriperumbudur – Oragadam cluster. Known for manufacturing, this particular cluster is the home court of auto and auto ancillary industries. Northern locations around the Grand Northern Trunk Road (GNT Road / Chennai – Srikakulam Highway / NH 16 or the old NH 5) constitute the NH 16 – Periyapalayam warehousing cluster. This cluster conventionally has been an industrial belt and has recently drawn the interest of e-commerce players, Fast Moving Consumer Goods (FMCG) sector companies and major Third-Party Logistics (3PL) players. Warehousing locations spread along the eastern side of the south moving old NH 45 which include Maraimalai Nagar, Mahindra World City and Gokulapuram, constitute the Maraimalai Nagar cluster.
- FY 2019 saw increased transaction activity by the e-commerce segment, 8% of the total transactions pie, and they preferred warehouses in the Madhavaram – Red Hills belt of the NH 16 – Periyapalayam warehousing cluster. In contrast, in FY 2020, e-commerce sector's warehousing activity accounted for just 3% in the total transactions pie. However, contrary to being a threat, this alarming fall is in fact an outcome of redistribution of the warehousing demand. This year many e-commerce and FMCG players opted for 3PLs for servicing their logistics needs which caused their numbers to drop and the warehousing transactions number of 3PLs to jump to 36% which is the second highest for an industry in the total 2020 transactions.
- Highest activity was however seen in the manufacturing industry which accounted for more than half i.e. 53% of all warehousing transactions in FY 2020. Inevitably, this spiked the activity in the Sriperumbudur – Oragadam cluster, a remarkable 67% of the overall transactions, as it is the hub of manufacturing in Chennai.
- Rentals remained largely stable through FY 2020 with marginal appreciation in some pockets of the Sriperumbudur – Oragadam cluster driven by the increase in warehousing demand of engineering and manufacturing companies.

Major warehousing locations in Chennai

Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Sriperumbudur – Oragadam cluster	Oragadam, Sriperumbudur, Irrunkattukottai, Mappedu, Mannur, Polivakkam, Tiruvalur and other locations on the in-roads branching from Sriperumbudur
NH 16 – Periyapalayam cluster	Red Hills, Puzhal, Madhavaram, Karanodai, Alamathi, Poochettipedu, Thatchoor, Periyapalayam, Kannigaipair
Maraimalai Nagar cluster	Maraimalai Nagar, Mahindra World City, Gokulapuram, Chengalpattu

Source: Knight Frank Research

Major infrastructure in Chennai

Name	Type
Chennai Port	Port
Ennore Port	Port
NH 16 / Grand Northern Trunk Road	Road – NH
NH 32 / East Coast Road	Road – NH
NH 45 / Grand Southern Trunk Road	Road – NH
NH 48 / Poonamallee High Road	Road – NH
NH 716 / Chennai – Thiruvallur High Road	Road – NH
Chennai – Bengaluru Industrial Corridor	Industrial Corridor
Visakhapatnam Chennai Industrial Corridor	Industrial Corridor
Tamil Nadu Defence Industrial Corridor	Industrial Corridor
Chennai MMLP	MMLP
Chennai International Airport	Airport

Source: Knight Frank Research

Note: NH - National Highway

MMLP - Multi-modal Logistics Park

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
TPI Composite	Manufacturing	Sriperumbudur – Oragadam
Vistas	Manufacturing	Sriperumbudur – Oragadam
Future Supply Chain	3PL	NH 16 – Periyapalayam
Kerry Indev	3PL	Sriperumbudur – Oragadam
LS Automotive	Manufacturing	Sriperumbudur – Oragadam

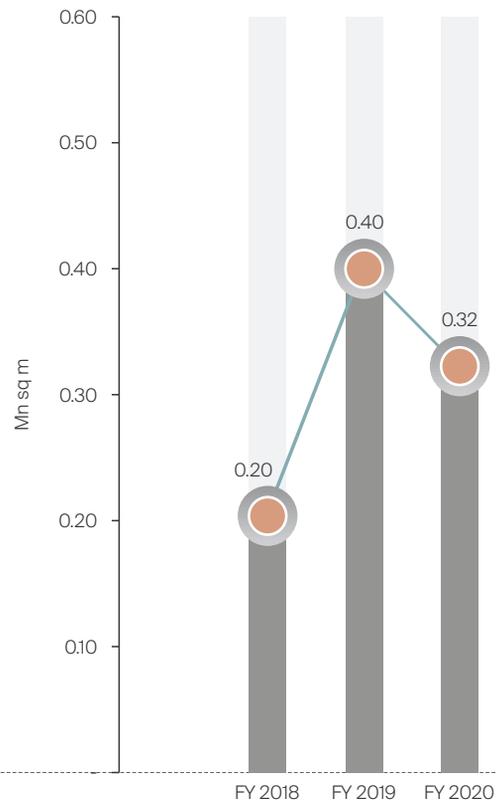
Source: Knight Frank Research

Select warehouse projects

Warehouse project	Warehouse cluster
Ascendas – Firstspace	NH 16 – Periyapalayam & Sriperumbudur – Oragadam
NDR Logistics	NH 16 – Periyapalayam & Sriperumbudur – Oragadam
Indospace	NH 16 – Periyapalayam & Sriperumbudur – Oragadam
LOGOS	Sriperumbudur – Oragadam
Hiranandani Park	Sriperumbudur – Oragadam
The House of Hiranandani	NH 16 – Periyapalayam

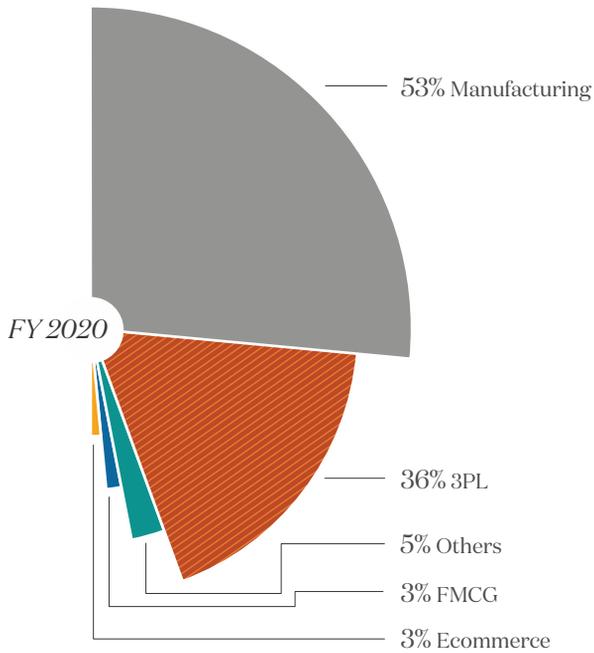
Source: Knight Frank Research

Warehousing market transaction volume



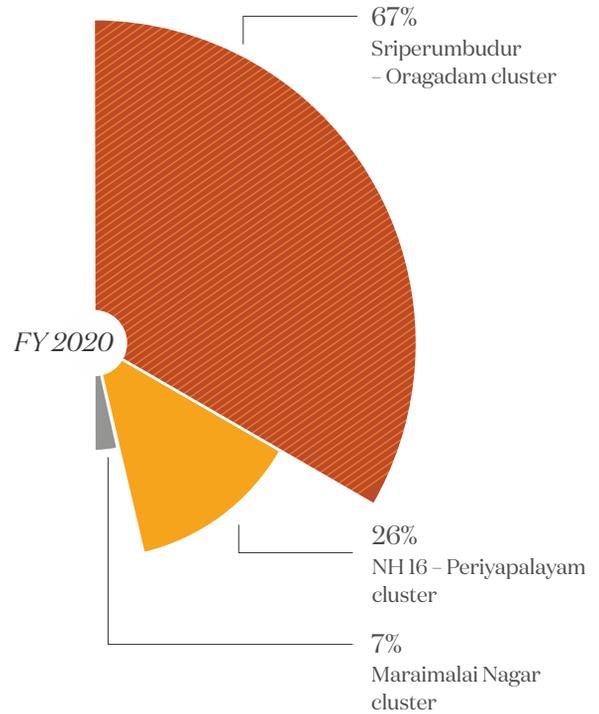
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Sriperumbudur - Oragadam cluster	Sriperumbudur	15 - 25	194 - 237 (18 - 22)	172 - 194 (16 - 18)
	Oragadam	20 - 30	247 - 301 (23 - 28)	215 - 237 (20 - 22)
	Mappedu	10 - 15	183 - 205 (17 - 19)	161 - 172 (15 - 16)
	Mannur	17 - 23	194 - 215 (18 - 20)	172 - 183 (16 - 17)
	Irungattukottai	25 - 30	194 - 247 (18 - 23)	194 - 205 (18 - 19)
	Pollivakkam	13 - 15	183 - 205 (17 - 19)	172 - 183 (16 - 17)
NH 16 - Periyapalayam cluster	Cholavaram	11 - 13	161 - 172 (15 - 16)	140 - 151 (13 - 14)
	Red Hills	13 - 18	172 - 194 (16 - 18)	151 - 161 (14 - 15)
	Karanodai	15 - 20	161 - 183 (15 - 17)	140 - 151 (13 - 14)
	Madhavaram	No large lands available	No Grade A	194 - 237 (18 - 22)
	Puzhal	No large lands available	No Grade A	194 - 215 (18 - 20)
	Periyapalayam	10 - 15	172 - 205 (16 - 19)	151 - 172 (14 - 16)
Maraimalai Nagar cluster	Mahindra World City	35	301 - 344 (28 - 32)	No Grade B
	Maraimalai Nagar	25 - 30	301 - 323 (28 - 30)	194 - 215 (18 - 20)

Source: Knight Frank Research

COIMBATORE WAREHOUSING MARKET

- The Coimbatore industrial and warehousing market has performed remarkably well in FY 2020 as transactions grew a massive 651% YoY, from 0.04 mn sq m (0.4 mn sq ft) in FY 2019 to 0.3 mn sq m (3 mn sq ft) in FY 2020. Large-scale activity by the manufacturing industry and the continued interest of Third Party Logistics (3PL) players and e-commerce companies is the reason for this massive jump in warehousing transactions.
- Coimbatore, known as the 'Manchester of South India', has been serving as a prominent trade centre since the British era. Its strategic location in the centre of the Southern Peninsula allowed it easy access to all key markets in South and this resulted in its evolution as a commercial hub. Textile mills, foundries and flour mills flourished here in colonial times.
- In present times, the city's industrial landscape is dominated by heavy pump manufacturing industries along with textile factories and metal casting industries that manufacture spare parts and components.
- Given its geographical advantage, the city provides quick access to west and south Tamil Nadu, north Kerala and south Karnataka including Bengaluru. This has incentivised many 3PL companies and e-commerce players to set up

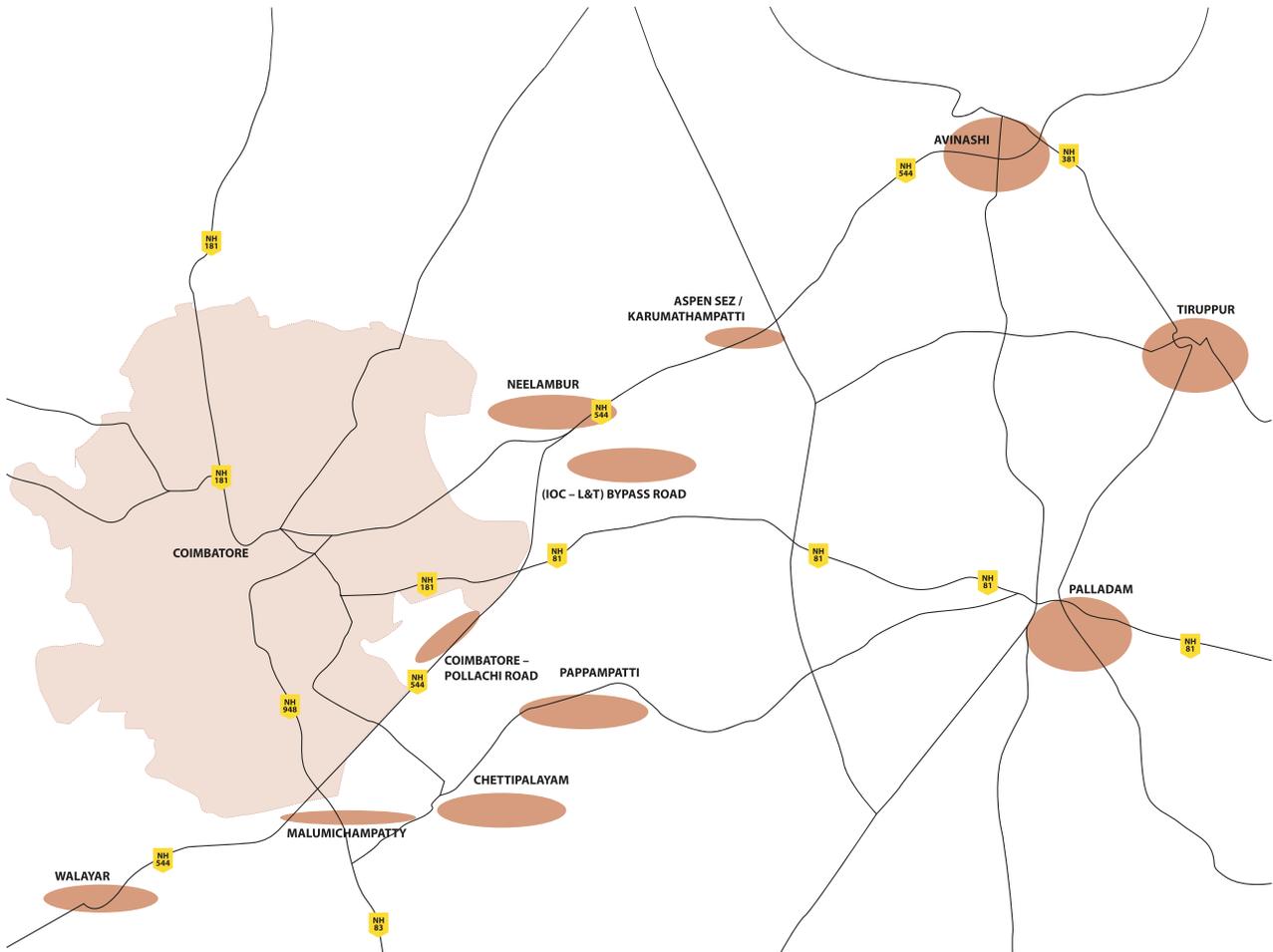
warehouses in Coimbatore to cover a wider base of consumption demand.

- Warehousing activity in Coimbatore is concentrated in two main clusters, the Avinashi Road cluster and the Pollachi + Palladam – Cochin Frontier Road cluster.
- The eastern locations including Neelambur, IOC – L&T Bypass Road and Avinashi have been clubbed into one homogeneous cluster, called the Avinashi Road cluster, and it primarily services the auto and auto ancillary industries being the home to spare part and component manufacturing factories.
- Southern locations such as Pollachi, Chettipalayam, Malumichampatty, Palladam and Walayar constitute the Pollachi + Palladam–Cochin Frontier Road warehousing cluster and it caters to the warehousing requirement of 3PLs, e-commerce players and Fast Moving Consumer Goods (FMCG) / Fast Moving Consumer Durables (FMCD) companies. This cluster gives smooth access to the consumption market within Coimbatore city as well as in Kochi from the adjacent state Kerala.
- More than 80% of the FY 2020 warehousing transactions took place in the Pollachi + Palladam –Cochin Frontier Road cluster and a significant 75% of the total transactions pie was contributed to

by the manufacturing sector. Micro-markets such as Neelambur and Palladam saw a 15-20% rental appreciation while rents across most other micro-markets remained steady in FY 2020

Major warehousing locations in Coimbatore

Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Avinashi Road cluster	Neelambur, Aspen SEZ / Karumathampatti, Avinashi, Tiruppur, other locations on Coimbatore - Avinashi Road (NH 544), and Indian Oil Corporation - Larsen & Toubro (IOC - L&T) Bypass Road
Pollachi + Palladam - Cochin Frontier Road cluster	Coimbatore - Pollachi Road, Malumichampatty, Chettipalayam, Pappampatti, Palladam, Walayar

Source: Knight Frank Research



Major infrastructure in Coimbatore

Name	Type
NH 544 / Salem – Kochi Highway / Avinashi Road	Road – NH
NH 948 / Bengaluru Road	Road – NH
NH 181 / Mettupalayam Road	Road – NH
NH 81 / Trichy Road	Road – NH
NH 83 / Pollachi Road	Road – NH
Tamil Nadu Defence Industrial Corridor	Industrial Corridor
Coimbatore MMLP	MMLP

Source: Knight Frank Research
 Note: NH stands for National Highway
 MMLP stands for Multi-modal Logistics Park

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Future Supply Chain	3PL	Pollachi + Palladam – Cochin Frontier Road cluster
Alstom	Manufacturing	Avinashi Road cluster
Schneider	Manufacturing	Avinashi Road cluster
LG	FMCD	Pollachi + Palladam – Cochin Frontier Road cluster
SafeExpress	3PL	Pollachi + Palladam – Cochin Frontier Road cluster

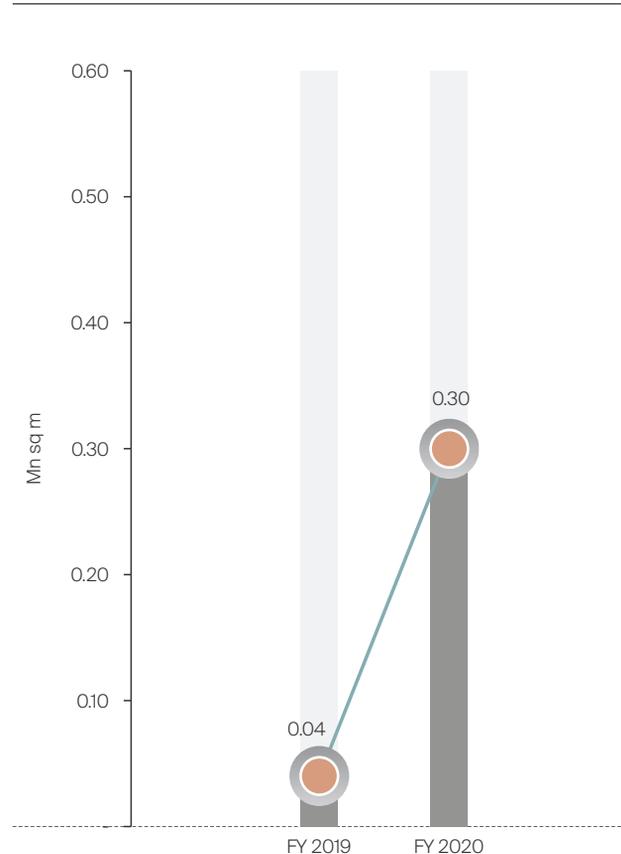
Source: Knight Frank Research

Select warehouse projects

Warehouse project	Warehouse cluster
TVS Industrial Park - Appanaickenpatti	Pollachi + Palladam – Cochin Frontier Road cluster
NDR Warehousing – Chettipalayam	Pollachi + Palladam – Cochin Frontier Road cluster
Indospace	Pollachi + Palladam – Cochin Frontier Road cluster
NDR Warehousing – Othakalmandapam	Pollachi + Palladam – Cochin Frontier Road cluster
NDR Warehousing – Ettimadai	Pollachi + Palladam – Cochin Frontier Road cluster

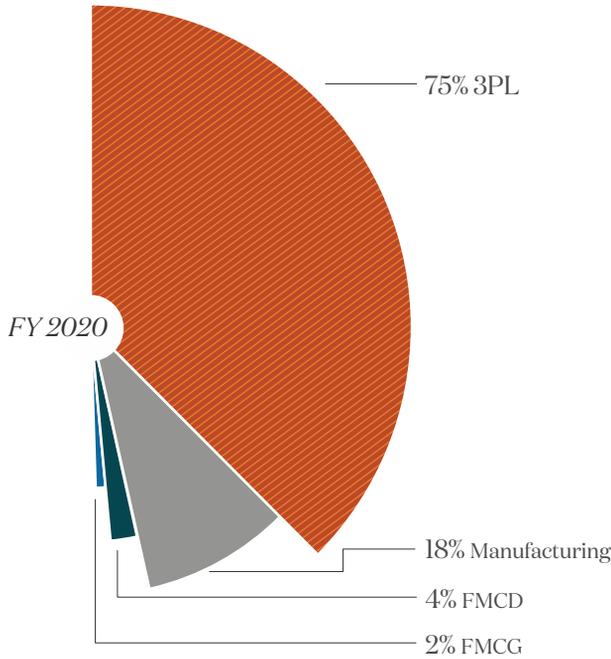
Source: Knight Frank Research

Warehousing market transaction volume



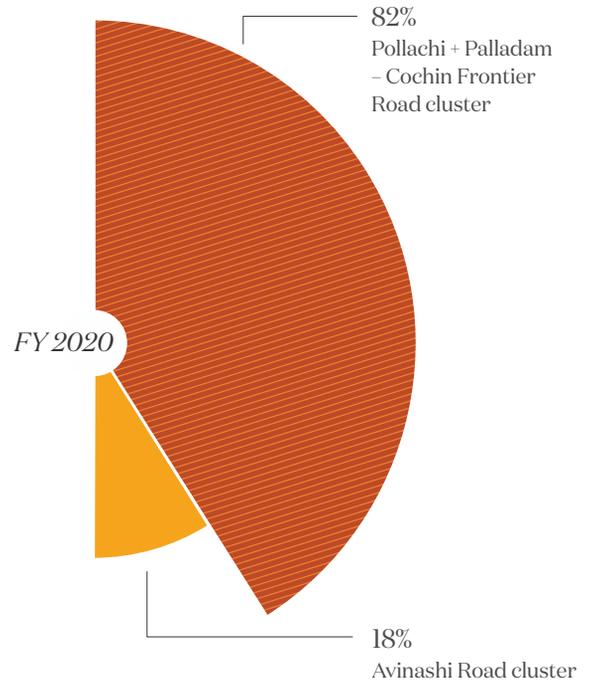
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Avinashi Road cluster	Neelambur	No more development of new warehouses	No Grade A	140 – 161 (13 – 15)
	IOC – L&T Bypass	No more development of new warehouses	No Grade A	140 – 161 (13 – 15)
	Aspen SEZ / Karumathampatti	No more development of new warehouses	No Grade A	140 – 161 (13 – 15)
	Avinashi	No more development of new warehouses	No Grade A	140 – 151 (13 – 14)
	Tiruppur	No more development of new warehouses	No Grade A	140 – 151 (13 – 14)
Pollachi + Palladam – Cochin Frontier Road cluster	Coimbatore–Pollachi Road	15 – 20	172 – 194 (16 – 18)	140 – 161 (13 – 15)
	Malumichampatty	15 – 20	172 – 194 (16 – 18)	140 – 161 (13 – 15)
	Palladam	10 – 15	172 – 194 (16 – 18)	140 – 151 (13 – 14)
	Walayar	10 – 15	172 – 194 (16 – 18)	140 – 151 (13 – 14)

Source: Knight Frank Research

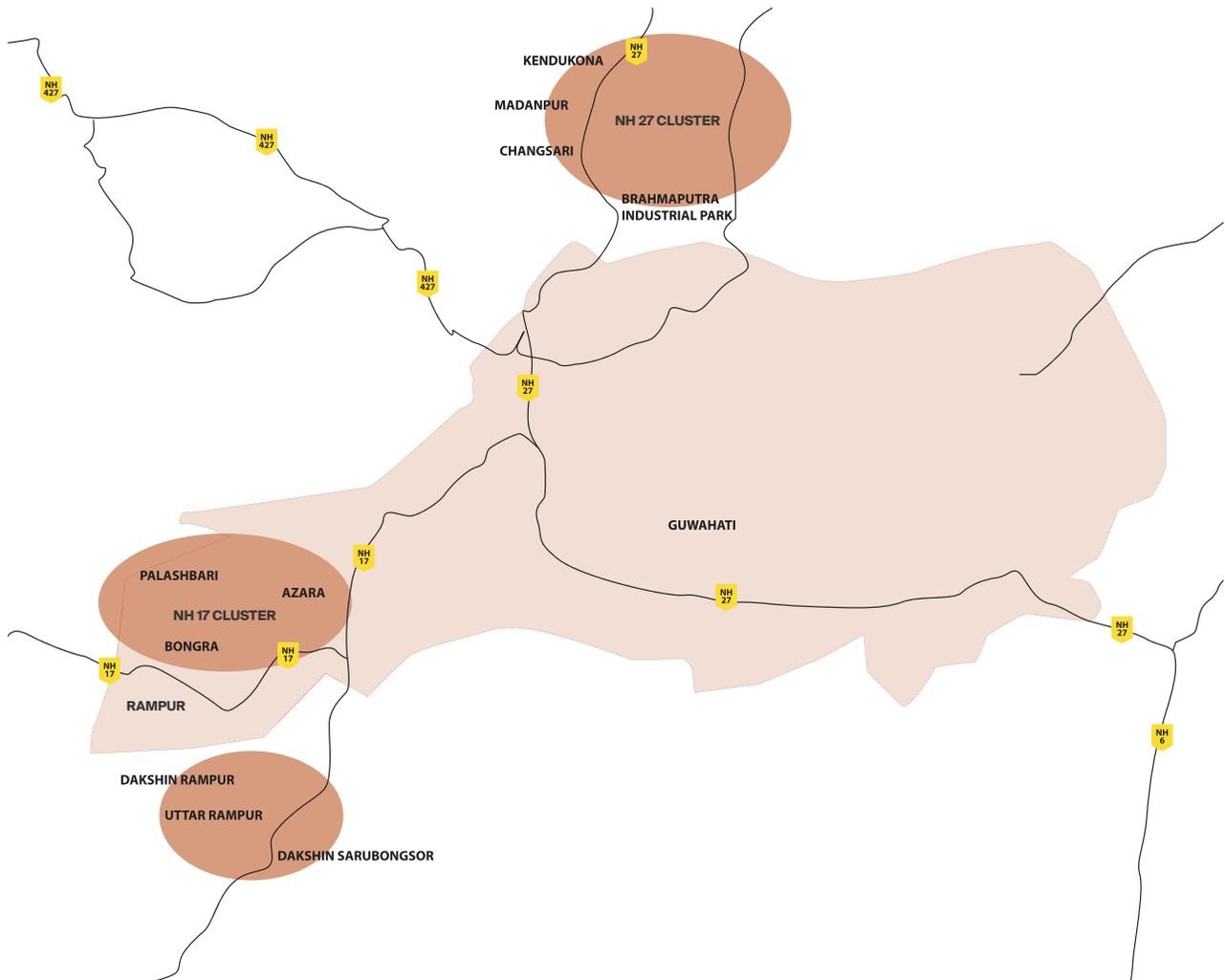
GUWAHATI

WAREHOUSING MARKET

- Guwahati has emerged as one of the fastest growing warehousing hotspots in India. Assam's excellent road network helps Guwahati to serve the eight north-eastern states, making it a frontier for warehousing expansion and advancements in the region. Cities like Kolkata, Jalpaiguri, Shillong, Dibrugarh, Imphal and Aizawl are accessible from Guwahati via a robust connectivity network.
- Availability of large land parcels has ensured a steady shift of new warehousing clusters to the northern city limits, also known as 'North Guwahati' where locations such as Changsari and Chowki Gate have witnessed great occupier interest for warehouses. All locations on the National Highway-27 (NH-27) cluster in the northern region after crossing the Saraighat Bridge are upcoming warehouse locations where large land banks are held either by industrial developers for self-use or Build-to-Suit (BTS) construction or available for aggregation. Occupiers from sectors including pharmaceutical, FMCG, FMCD and e-commerce have leased warehouses on this stretch. Parksons Packaging Ltd., Flipkart, FCI Depot, Jerico, ERIS Life Science and Rhino are some of the companies that have warehouse footprint in this cluster.
- Apart from NH-27, development of warehousing is also moving towards the National Highway 17 (NH-17) cluster. Palashbari and Azara are two prominent warehouse pockets on this stretch which are attracting occupier interest despite narrow road width and congestion, as they are near the airport which is preferred by pharmaceutical companies. Many pharmaceutical occupiers, such as Sun-Pharma Brahmaputra Group and Natco Pharma, have an established footprint in this belt.
- In FY 2020, nearly 0.74 mn sq ft (0.07 mn sq m) of warehousing space was leased in Guwahati, representing an annual 42% uptrend. Of the total warehouse space leased, 68% was in the NH-27 cluster whereas the remainder was in NH-17 cluster. Despite pharmaceutical companies having a strong warehousing footprint in Guwahati, new leasing in past two years has largely been dominated by e-commerce players. In FY 2020, e-commerce companies leased 46% of the total warehousing space followed by 3PL at 22%. FMCG, manufacturing and other sectors made up for the remainder 32% of the space leased.
- In view of the Covid-19 pandemic, several changes are set to unfold which will not only change the way occupiers operate, but also reset warehouse space demand, geographic footprint in future, tech infrastructure and sourcing. Mechanisation and automation will become the need of the hour in warehouses. This, along with modern warehouse distribution practices and omnichannel delivery networks will help Guwahati's warehousing market become organized in terms of new supply.
- Being an established hub for pharmaceuticals, Guwahati will also benefit from the large -scale demand for medicines, medical goods and healthcare products in the near to long term which will lead to existing occupiers and new occupiers from this sector to reassess their warehouse space demand and give fillip to new space take-up. Another emerging occupier segment of pharmaceutical logistics will also benefit in a post Covid-19 world and many more players may emerge in Guwahati to remain nearer to the pharma companies and cater to stockists, retailers, distributors and hospitals in the north-eastern region. Developers have a huge opportunity to cater to this niche occupier segment.

Major warehousing locations in Guwahati

Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

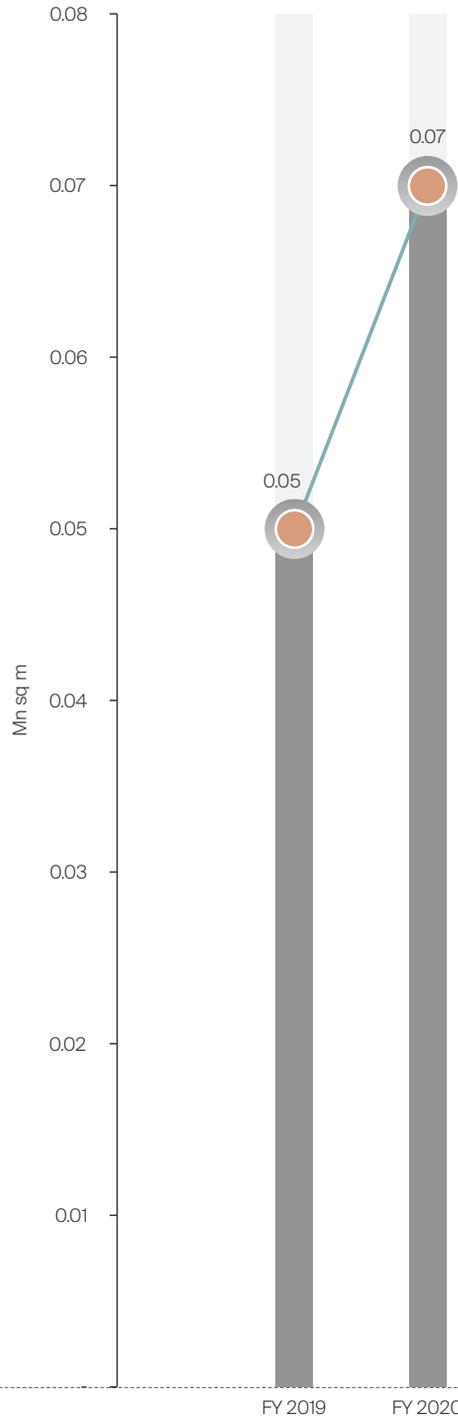
Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
NH-27 cluster	Brahmaputra Industrial Park, Changsari, Madanpur, Kendukona
NH-17 cluster	Bongra–Airport, Palashbari, Azara
Rampur	Dakshin Rampur, Uttar Rampur, Dakshin Sarubongsor

Source: Knight Frank Research



Warehousing market transaction volume



Major infrastructure in Guwahati

Name	Type
NH 27 Guwahati stretch	Road – NH
NH 17 / Guwahati stretch	Road – NH
Lokpriya Gopinath Bordoloi International Airport	Airport
East West Corridor	Road

Source: Knight Frank Research | Note: NH stands for National Highway

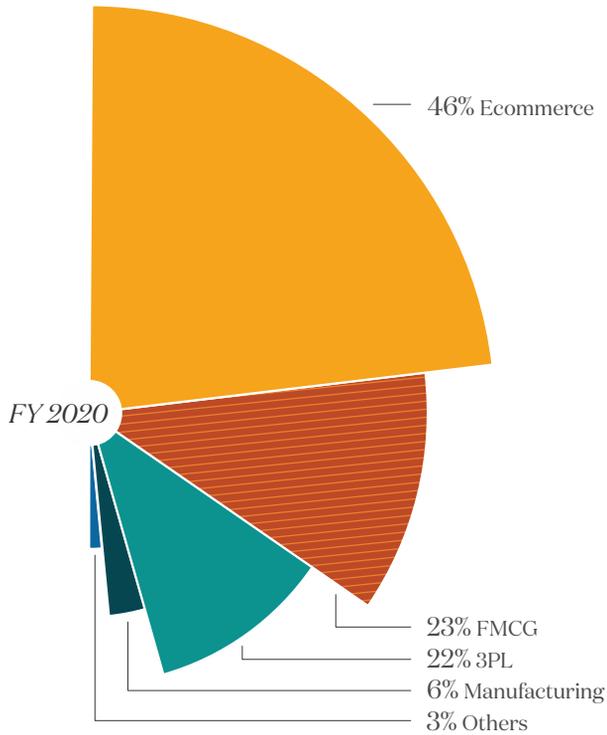
Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Udaan	Logistics	Others
Flipkart	E-commerce	NH-17 cluster
Procter & Gamble	FMCG	NH-27 cluster
Delhivery	Logistics	NH-17 cluster

Source: Knight Frank Research

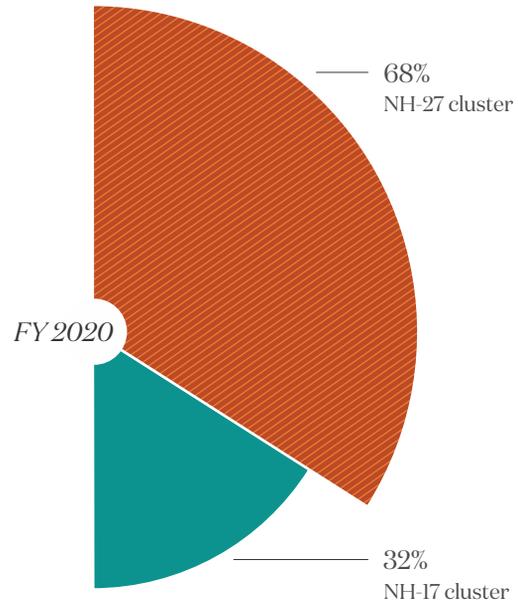
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
NH - 27 cluster	Brahmaputra Industrial Park	18 - 24	No Grade A	172 - 194 (16 - 18)
	Changsari	14 - 16	194 - 215 (18-20)	172 - 194 (16 - 18)
	Madanpur	13 - 15	194 - 215 (18-20)	172 - 194 (16 - 18)
	Kendukona	13 - 15	183 - 205 (17-19)	161 - 183 (15 - 17)
NH - 17 cluster	Bongra-Airport	25 - 30	194 - 215 (18-20)	172 - 194 (16 - 18)
	Palashbari	18 - 20	194 - 215 (18-20)	172 - 194 (16 - 18)
	Azara	18 - 22	194 - 215 (18-20)	172 - 194 (16 - 18)
Rampur	Dakshin Rampur	16 - 19	194 - 215 (18-20)	161 - 183 (15 - 17)
	Uttar Rampur	16 - 19	194 - 215 (18-20)	161 - 183 (15 - 17)
	Dakshin Sarubongsor	16 - 19	194 - 215 (18-20)	161 - 183 (15 - 17)

Source: Knight Frank Research

HYDERABAD WAREHOUSING MARKET

- The Hyderabad industrial and warehousing market witnessed relatively lower transaction activity in FY 2020 compared to the previous year. Total absorption decreased by 14% YoY, from 0.4 mn sq m (4 mn sq ft) in FY 2019 to 0.3 mn sq m (3.4 mn sq ft) in FY 2020. Lack of quality supply coupled with an almost double jump in transactions activity in FY 2019 that set a high comparative base for FY 2020, are the key reasons for this marginal fall in transaction numbers.
- While demand continued to remain strong, limited availability of Grade A warehouses put a constraint on the number of transactions in FY 2020. Further, FY 2019 was a remarkable year as Hyderabad warehousing activity almost doubled from 0.2 mn sq m (2.3 mn sq ft) in FY 2018 to 0.4 mn sq m (4 mn sq ft) in FY 2019. This spike in activity last year was a reflection of the growing demand and increasing penetration of e-commerce in Hyderabad catered to by the wave of incoming supply. By FY 2020, market stabilised and recorded an activity of 0.3 mn sq m (3 mn sq ft). While 0.3 mn sq m (3 mn sq ft) in transactions is indicative of a healthy market, the high base of FY 2019 reflects poorly on the otherwise stable FY 2020 growth numbers.
- Known as the 'city of pearls' after its once flourishing pearl industry, Hyderabad is primarily an Information Technology/Information

Technology enabled Services (IT/ITeS) driven market. Industrial presence in the city is limited and hence the mainstay of warehousing business is end user driven consumption categories. On account of the strong IT job market and the record growth in office market transactions in the recent years, the consumption base of Hyderabad is slated to rise which will in-turn fuel the city's warehousing activity.

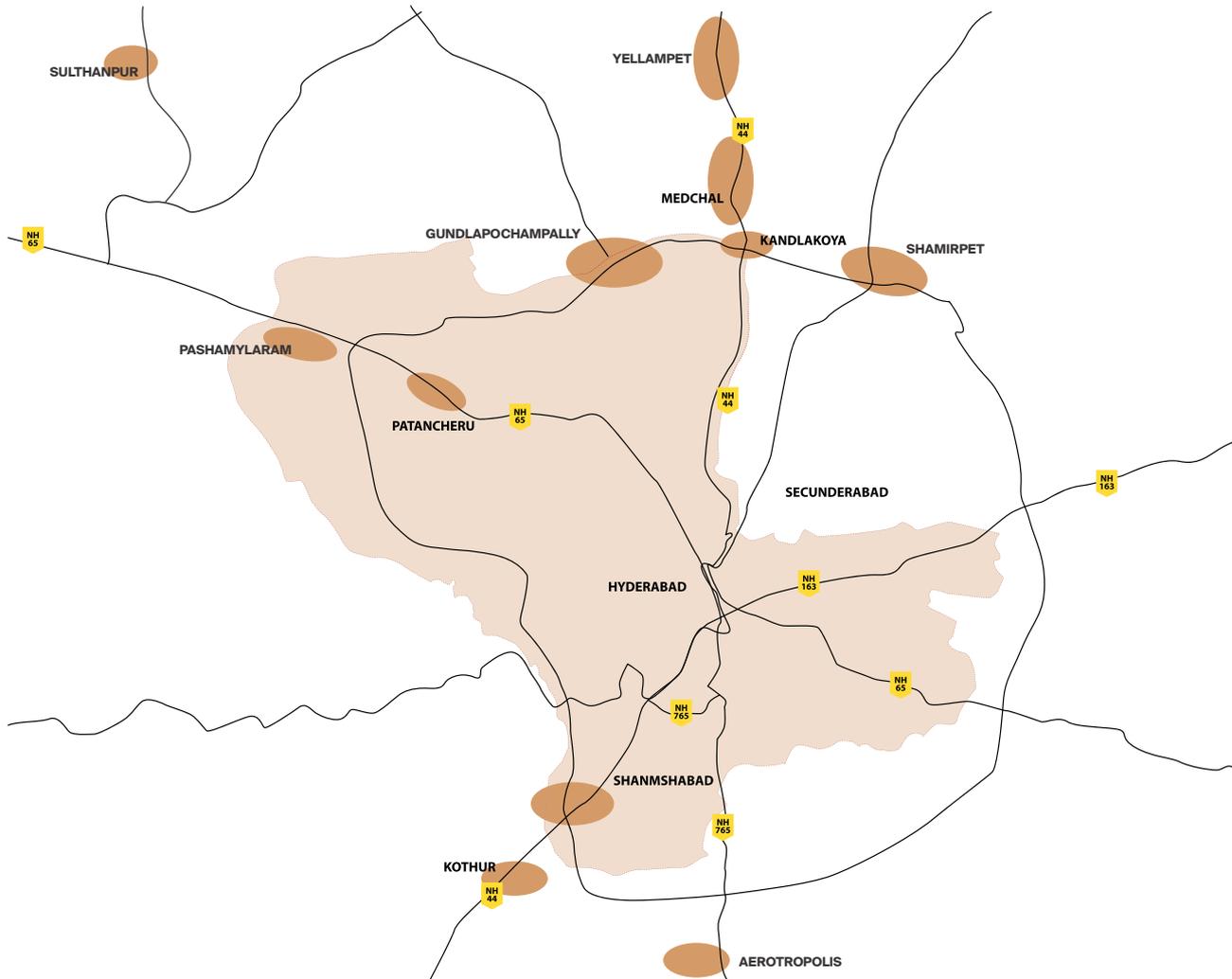
- The major drivers of the warehousing sector in Hyderabad are e-commerce, retail and the Fast Moving Consumer Goods (FMCG) / Fast Moving Consumer Durables (FMCD) industries. Of the total transacted space in the city in FY 2020, more than 50% of the space was picked up by these industries alone.
- Further, with a few major e-commerce and FMCG players preferring to outsource their logistics and warehousing needs, the share of 3PLs in the total industry split transactions pie went up to 31% in FY 2020.
- Warehousing activity in Hyderabad is largely concentrated in three major clusters. These are the Medchal cluster in north, located along the Hyderabad–Nagpur highway; the Patancheru cluster in west, on the Mumbai–Hyderabad highway; and the Shamshabad cluster in south, located along the

Bengaluru–Hyderabad highway.

- Of the three, a significant 87% of the FY 2020 transaction activity was concentrated in the Medchal cluster. An existing eco system, good distribution connectivity accessing the city's consumption hotspots along with cheaper real estate cost compared to the Patancheru cluster has made this cluster a favourite across all industries.
- Rentals appreciated across locations in the three warehousing clusters while land prices grew at a near 100% in some parts of the city. Availability of clear and contiguous titled lands at values suitable for this sector continued to be a challenge.
- Standalone and individually-owned warehouses continue to form a major portion of the Hyderabad warehousing market. However, with the advent of global players such as ESR, GMR and others in the market, dominance of organised warehousing seems to be on the cards for the city.

Major warehousing locations in Hyderabad

Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Medchal cluster	Medchal, Devaryamjal–Gundlapochampally, Kandlakoya, Yellampet, Shamirpet, Outer Ring Road onwards, Ravakol, Bandmailaram, Pudur, Toopran, Manoharabad
Patancheru cluster	Patancheru Industrial Area, Rudraram, Edulanagulapally, Pashamylaram, Sulthanpur
Shamshabad cluster	Shamshabad, Aerotropolis, Srisailam Highway, Bongloor, Kothur, Shadnagar

Source: Knight Frank Research

Major infrastructure in Hyderabad

Name	Type
Outer Ring Road	Road
Inner Ring Road	Road
Bengaluru-Hyderabad Highway / NH 44	Road
Mumbai-Hyderabad Highway / NH 65	Road
Nagpur-Hyderabad Expressway	Road
Rajiv Gandhi International Airport	Airport

Source: Knight Frank Research | Note: NH stands for National Highway

Select warehouse projects

Warehouse project	Warehouse cluster
GMR-ESR	Shamshabad
Zero Mile Warehousing	Medchal
All Cargo Logistics & Industrial Parks	Patancheru
K Raheja Corp – Industrial Park	Shamshabad
Musaddilal Projects	Medchal

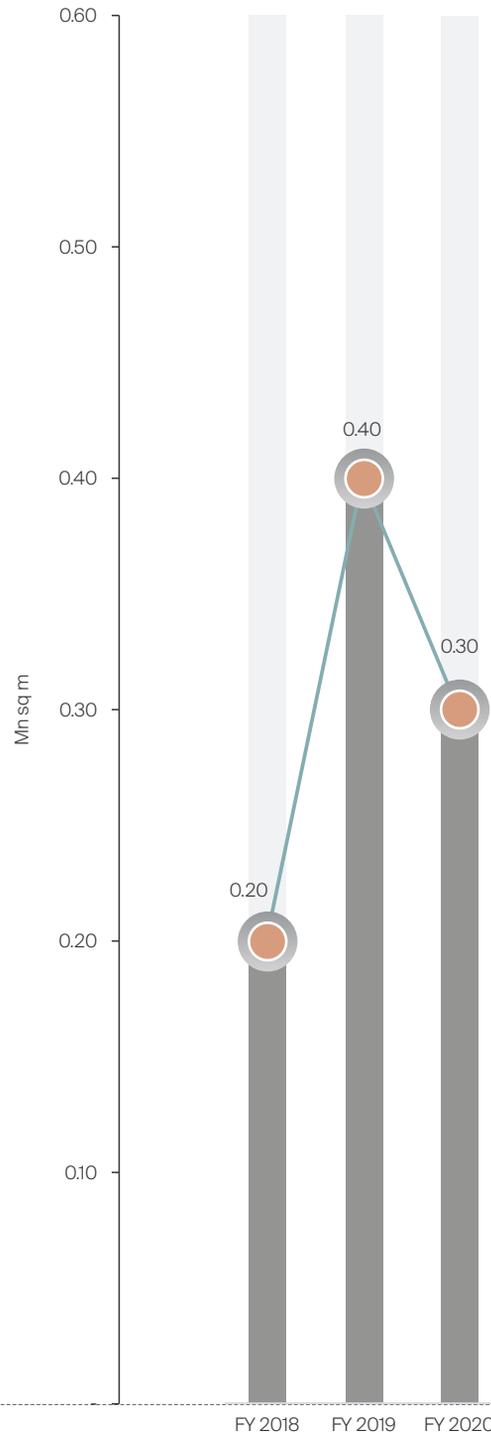
Source: Knight Frank Research

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Stellar Value Chain	3PL	Medchal
Reliance Retail	Retail	Medchal
Flipkart	E-commerce	Patancheru
Amazon	E-commerce	Medchal
Big Basket	E-commerce	Medchal

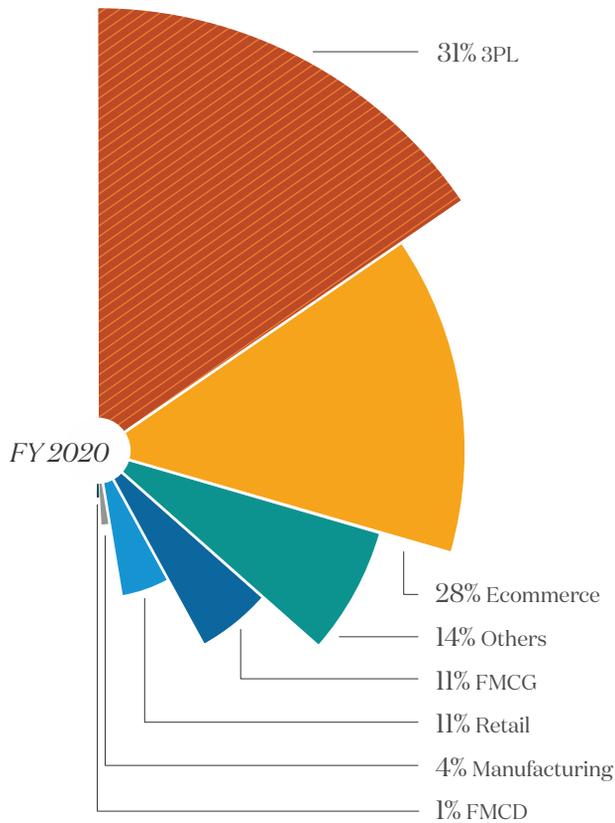
Source: Knight Frank Research

Warehousing market transaction volume



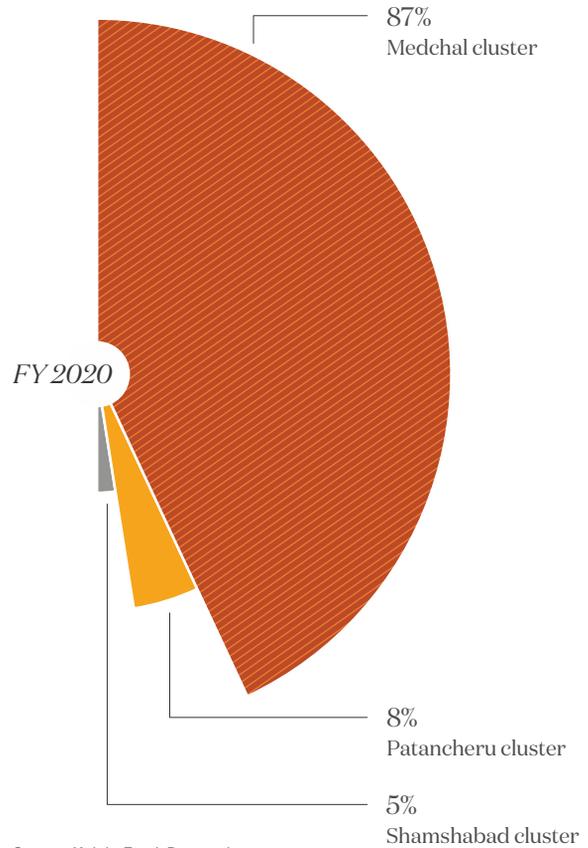
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Medchal cluster	Medchal	14 - 28	183 - 215 (17 - 20)	161 - 194 (15 - 18)
	Devaryamjal - Gundlapochampally	14 - 28	183 - 215 (17 - 20)	161 - 194 (15 - 18)
	Kandlakoya	14 - 28	183 - 215 (17 - 20)	161 - 194 (15 - 18)
	Yellampet	14 - 28	183 - 215 (17 - 20)	161 - 194 (15 - 18)
	Shamirpet	14 - 28	183 - 215 (17 - 20)	161 - 194 (15 - 18)
Patancheru cluster	Patancheru Industrial Area	12 - 45	183 - 204 (17 - 19)	150 - 172 (14 - 16)
	Rudraram	12 - 45	183 - 204 (17 - 19)	150 - 172 (14 - 16)
	Pashamylaram	12 - 45	183 - 204 (17 - 19)	150 - 172 (14 - 16)
	Edulanagulapally	12 - 45	183 - 204 (17 - 19)	150 - 172 (14 - 16)
	Sulthanpur	12 - 45	183 - 204 (17 - 19)	150 - 172 (14 - 16)
Shamshabad cluster	Aerotropolis	12 - 25	194 - 215 (18 - 20)	161 - 183 (15 - 17)
	Srisailam Highway	12 - 25	194 - 215 (18 - 20)	161 - 183 (15 - 17)
	Bongloor	12 - 25	194 - 215 (18 - 20)	161 - 183 (15 - 17)
	Kothur	12 - 25	194 - 215 (18 - 20)	161 - 183 (15 - 17)
	Shadnagar	12 - 25	194 - 215 (18 - 20)	161 - 183 (15 - 17)

Source: Knight Frank Research

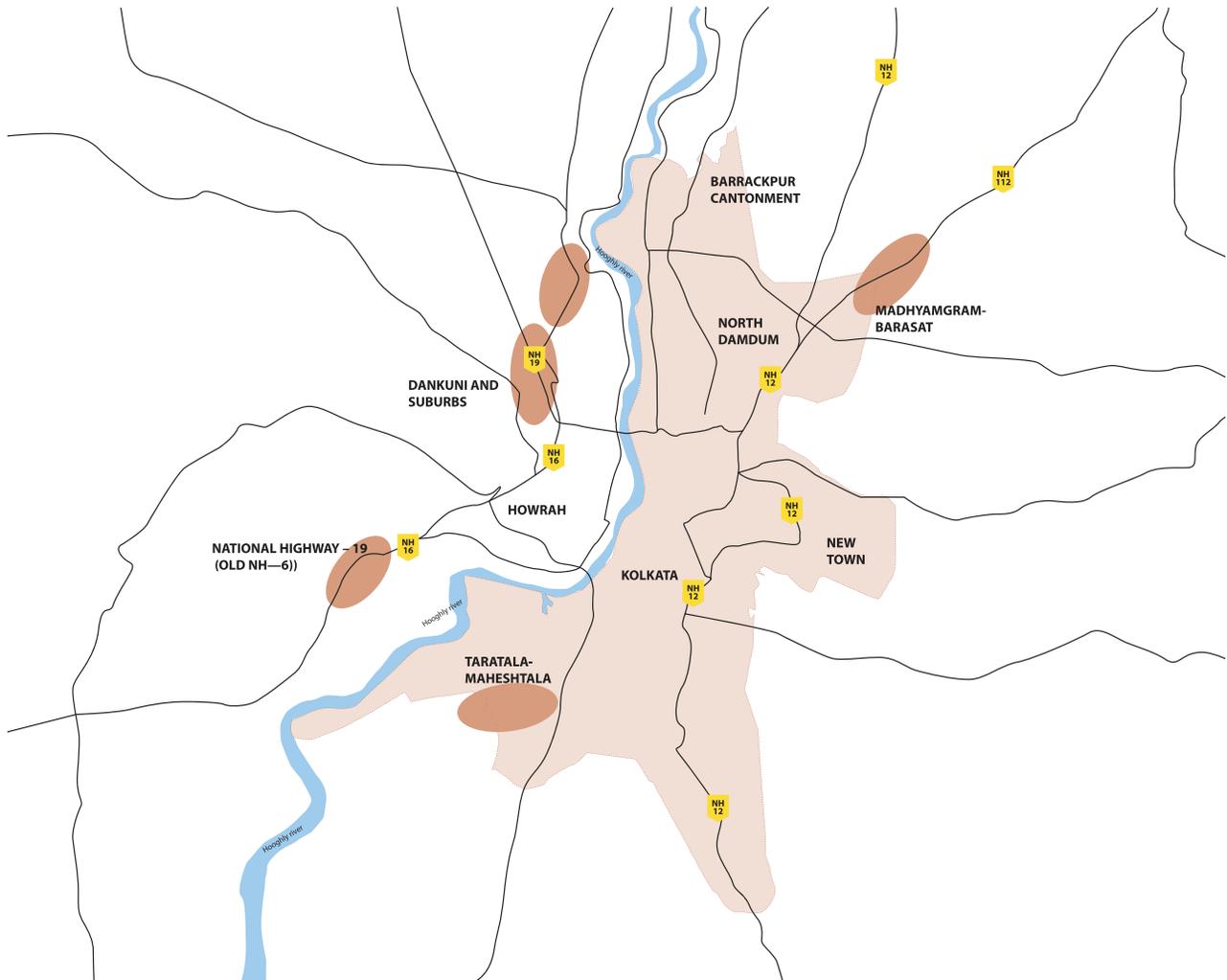
KOLKATA

WAREHOUSING MARKET

- Kolkata is eastern India's top warehousing hub where demand for warehousing spaces noted an exponential year-on-year (YoY) rise of 191% in FY2018, the highest across the top eight markets in India. Its well-connected transport corridors and strategic location have enabled it to serve multiple consumption centers, mainly in South Bengal. In FY 2020, healthy warehouse leasing of 3.93 mn sq ft (0.37 mn sq m) was noted in Kolkata. While it depicts a 14% YoY decline over FY 2019, large new industrial parks are under construction along the major warehousing clusters of Dankuni and suburbs and National Highway-16 (Old NH-6) which will attract occupier interest in the long term once the economy gets a kickstart.
- The enhanced focus on Eastern Dedicated Freight Corridor (EDFC) will enable fast-tracking completion for the Sonnagar-Dankuni stretch on this rail transport node. If implemented as planned, it will emerge as a key supply chain enabler to the east Indian cities, helping Kolkata secure a key position as a warehousing hub in years to come. In an altered scenario post Covid-19, it will ensure supply chain continuity by an alternate means of transport to companies in different sectors which will propel them to continue with expansions in Kolkata, albeit differently.
- Due to its easy access to labour, Dankuni and its suburbs will remain a much sought-after location even in a post Covid-19 world, with locations nearer to the city centre on this node receiving more enquiries going forward. E-commerce companies, due to a strong demand wave for essential services, will continue to expand footprint cautiously by leasing multiple mid-sized facilities to negate supply chain disruptions in a similar eventuality in future.
- Other clusters such as National Highway-16 (Old NH-6), with multiple small consumption centres along its node such as Bangan and Kharagpur will see requirements for mid-sized warehouses go up from e-commerce and FMCG companies. Proximity to Haldia Port will bode well for this cluster once the new normal sets in, as many huge vessels carrying freight from other countries dock at Haldia Dock Complex which will become strategically important given the land and air transport restrictions.
- Land rates and rents have largely remained stable since the lockdown was announced in third week of March 2020. However, given the shift in warehouse demand patterns, rising enquiries for in-city warehouses, multi-storey facilities, and omni-channel distribution strategy, we do not expect rent escalation for the next 12-18 months. Shift in demand patterns and enquiries for in-city warehouses may put land prices in peripheral warehouse clusters under pressure in mid to near term.

Major warehousing locations in Kolkata

 Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Dankuni and suburbs	Durgapur Expressway and Old Delhi Road (NH-19 [Old NH-2])
National Highway-16 (Old NH-6)	Chamrail, Dhulagarh, Sankrail, Uluberia
Taratala-Maheshtala	Hide Road, Taratala Road, Garden Reach Road
Madhyamgram-Barasat	Madhyamgram, Barasat, Agarpara, Ganganagar

Source: Knight Frank Research

Major infrastructure in Kolkata

Name	Type
Haldia Port*	Port
Kolkata Port	Port
Kulpi Port Project**	Port
Tajpur Port Project**	Port
Eastern Dedicated Freight Corridor	Freight Corridor
Amritsar Delhi Kolkata Industrial Corridor	Industrial Corridor
NH 19	Road - NH
NH 16	Road - NH

Source: Knight Frank Research | Note: NH stands for National Highway
 *Haldia Port is not in Kolkata but is a major dock complex that attracts large volume of cargo movement from Kolkata due to its throughput handling capacity and infrastructure to accommodate large vessels
 ** Upcoming ports in pipeline which will impact cargo movement from Kolkata

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Amazon	E-commerce	National Highway-16 (Old NH-6)
Delhivery	Logistics	Dankuni and suburbs
Reliance Retail	Retail	Dankuni and suburbs
Godrej & Boyce	FMCD	National Highway-16 (Old NH-6)
ITC	FMCG	National Highway-16 (Old NH-6)
Max Lifestyle	Retail	National Highway-16 (Old NH-6)

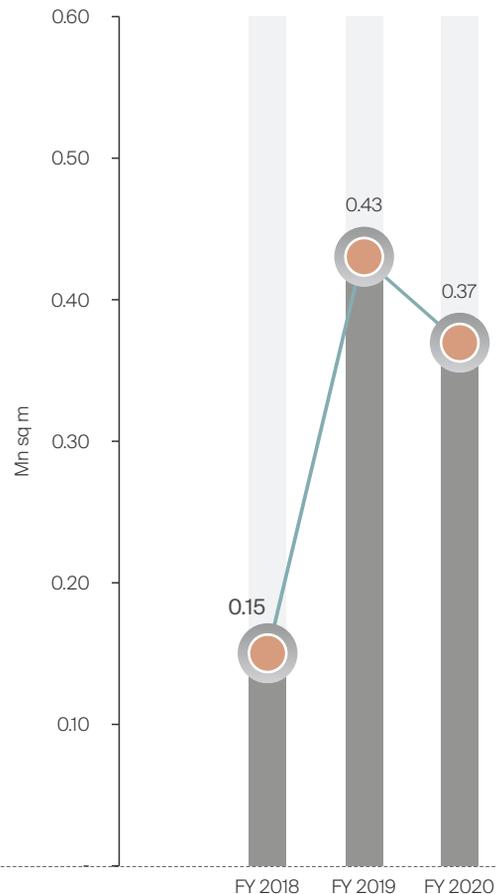
Source: Knight Frank Research

Select warehouse projects

Warehouse project	Warehouse cluster
Aarjav Industrial and Logistics Park	Dankuni and suburbs
Srijan Industrial Logistics Park	National Highway-16 (Old NH-6)
ESR Uluberia Industrial and Logistics Park	National Highway-16 (Old NH-6)
Diamond Industrial Park	Dankuni and suburbs
Sankrail Industrial Park	National Highway-16 (Old NH-6)

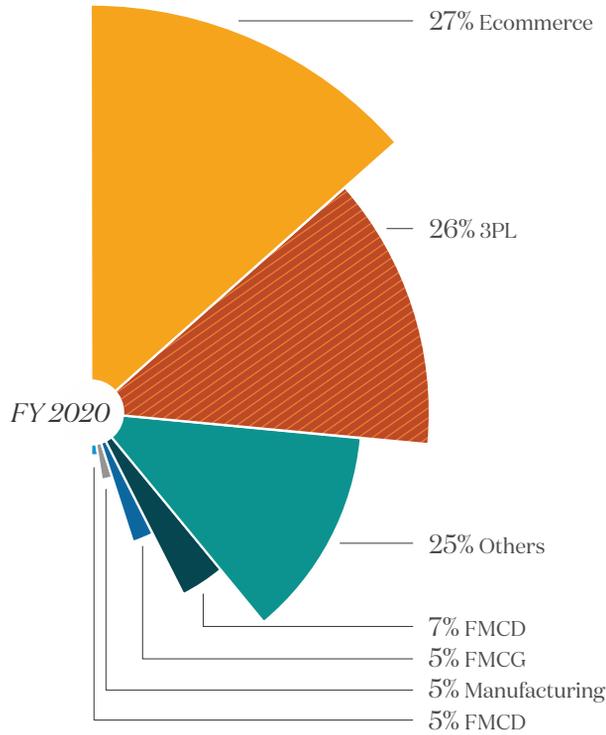
Source: Knight Frank Research

Warehousing market transaction volume



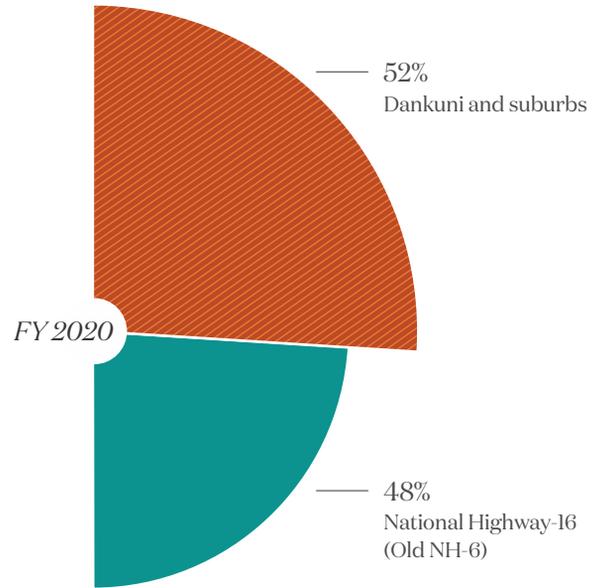
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Dankuni and suburbs	Dankuni – Before Toll	22 - 24	269 - 280 (25 - 26)	205 - 226 (19 - 21)
	Dankuni – After Toll	11 - 13	205 - 215 (19 - 20)	172 - 205 (16 - 19)
	Old Delhi Road	11 - 13	194 - 215 (18 - 20)	172 - 194 (16 - 18)
	– After Proposed toll			
	Old Delhi Road	20 - 23	205 - 237 (19 - 22)	194 - 215 (18 - 20)
	– Before Proposed toll			
National Highway-16 (NH-6) Bombay Road	Jangalpur	24 - 30	226 - 269 (21 - 25)	194 - 215 (18 - 20)
	Sankrail	22 - 25	237 - 258 (22 - 24)	194 - 215 (18 - 20)
	Uluberia	13 - 18	194 - 226 (18 - 21)	172 - 194 (16 - 18)
	Bagnan	11 - 13	183 - 194 (17 - 18)	161 - 183 (15 - 17)
Taratala-Maheshtala	Hide Road	No large lands available	No Grade A	No Grade B
	Budge Budge Trunk Road	No large lands available	No Grade A	No Grade B
Madhyamgram-Barasat	Badu Road	No large lands available	215 - 237 (20 - 22)	183 - 205 (17 - 19)
	Airport area	No large lands available	237 - 258 (22 - 24)	194 - 226 (18 - 21)
	Kalyani express	14 - 18	215 - 269 (20 - 25)	172 - 205 (16 - 19)

Source: Knight Frank Research

LUCKNOW

WAREHOUSING MARKET

- Uttar Pradesh (UP) is the most populous state in India and represents a large demand base for consumption goods. Private warehousing in Uttar Pradesh mainly caters to this consumption demand. Lucknow is one of the most important consumption markets in UP and is strategically located at the center of the state. By virtue of being the state capital, Lucknow has become an ideal location for development of warehouses with the development moving towards the Lucknow-Kanpur road and Unnao, since large land parcels are still available for a greenfield development. The Lucknow warehousing market primarily serves the cities of Kanpur, Agra, Jhansi, Rae Bareilly, Varanasi, Faisabad and Prayagraj besides its resident population.
- The warehousing market in Lucknow is largely unorganised, with quality facilities coming into operation only in the last decade. The major warehousing facilities are located in four major areas, which are either positioned close to the airport or are on the Lucknow-Kanpur national highway. Growing demand for warehousing facilities has kept rental levels buoyant in and around Lucknow. For instance, rental levels in locations of Transport Nagar, Bijnor and Nadarganj industrial area are in the range of INR 172-INR 215/sq m/month (INR 16-20/sq ft/month) for Grade B quality

warehouses, whereas, rents in the newer locations of the Lucknow-Kanpur national highway, such as Asha-Kheda, Kuseri and Sohramao, range between INR 183-INR 226 (INR 17-21/sq ft/month) for Grade A type warehouses and between INR 161-INR 194/sq m/month (INR 15-INR 18/sq ft/month) for Grade B type warehouse facilities.

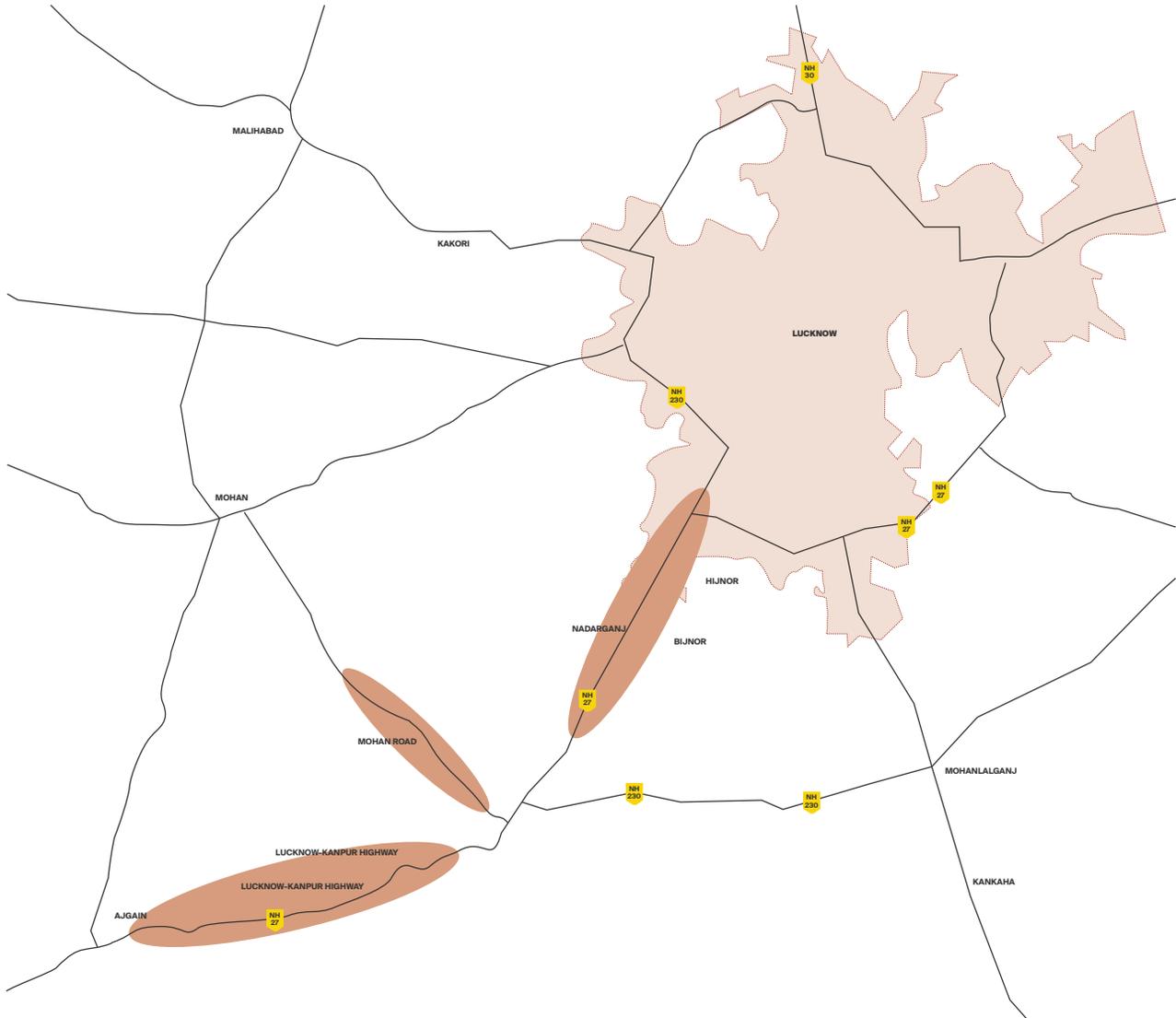
- In addition to the primarily consumption-based demand for warehousing, pharma is also a significant demand driver due to the presence of over 450 pharmaceutical companies in GB Nagar and along the Lucknow-Kanpur road. Demand for Grade A warehousing has been on the rise as occupiers look to comply with existing regulation and maximise efficiency of operations. Increasing enquiries have been observed even during the COVID-19 impacted period from e-commerce and 3PL players for Grade A facilities. Currently, few developers such as Plus Nine One Warehouse Parks and Escape Warehousing dominate the Grade A warehousing landscape in the Lucknow warehousing market.
- Close to 0.05 mn sq m (0.6 mn sq ft) was transacted during FY 2020, a healthy 26% increase YoY that can be attributed to the increasing availability of Grade A warehousing space on the Lucknow-Kanpur Highway. 3PL and e-commerce

companies accounted for 73% of the space transacted during FY 2020. Almost 0.2 mn sq m (2 mn sq ft) of Grade A built-to-suit space is scheduled for completion in the next 18 months.

- With an estimated stock of approximately 0.4 mn sq m (4 mn sq ft), the upcoming space works out to a significant 50% addition in a relatively short period of time. This could pose significant challenges to the market in case of a disproportionate hit on consumption demand as the fallout of a COVID-19 impacted economy. The Lucknow warehousing market has seen growing institutional interest in development of Grade A warehousing parks due to existing facilities approaching saturation.
- The Lucknow-Kanpur highway cluster is expected to witness the most market traction in terms of demand and development activity due to availability of reasonably priced large land parcels, good road connectivity and the benefits of the industrial land use classification under Lucknow Industrial Development Authority (LIDA).

Major warehousing locations in Lucknow

 Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Bijnor-Nadarganj cluster	Bijnor, Transport Nagar, Nadarganj, Mohanlalganj Road
Lucknow-Kanpur Highway cluster	Asha-Kheda, Kusheri, Sohramao, Mahnora, Mohan Road

Source: Knight Frank Research



Major infrastructure in Lucknow

Name	Type
Outer Ring Road (Phase I)	Road
Lucknow-Kanpur Highway (NH-27)	Road - NH

Source: Knight Frank Research | Note: NH stands for National Highway

Select warehouse projects

Warehouse project	Warehouse cluster
Escape Logistics	Lucknow-Kanpur Highway
Plus Nine One Logistics	Lucknow-Kanpur Highway
Bhandari Warehousing	Bijnor-Nadarganj Cluster

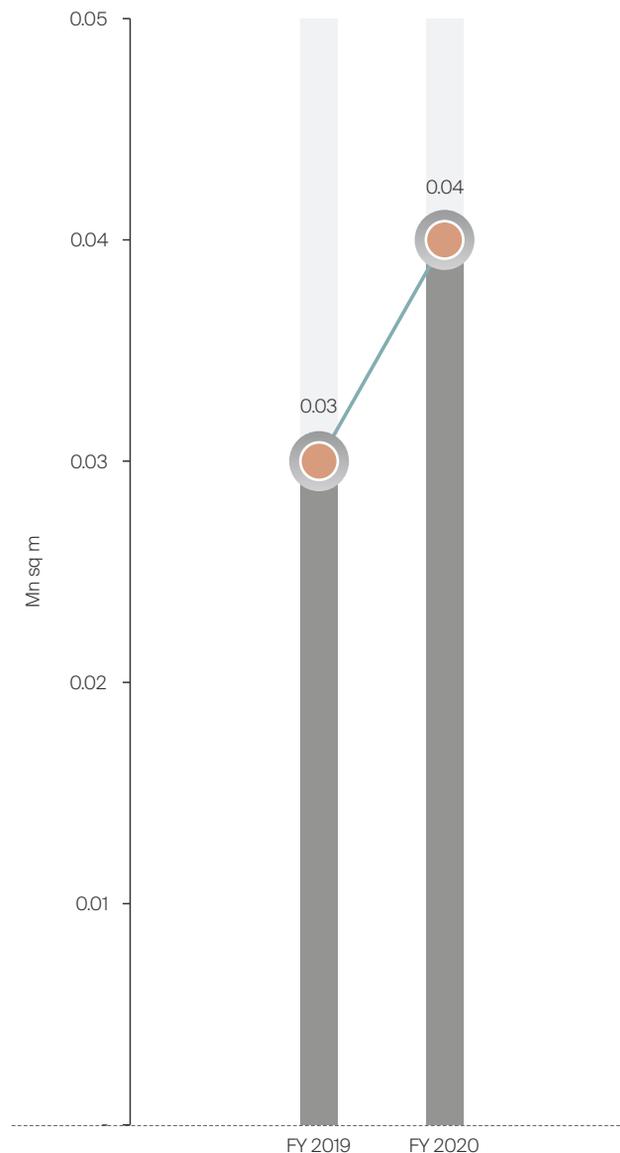
Source: Knight Frank Research

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Future Supply Chain	3PL	Bijnor- Nadarganj Cluster
Flipkart	E-commerce	Lucknow-Kanpur Highway
United Spirits	FMCG	Bijnor- Nadarganj Cluster
Amazon	E-commerce	Lucknow-Kanpur Highway
Delhivery	3PL	Bijnor- Nadarganj Cluster

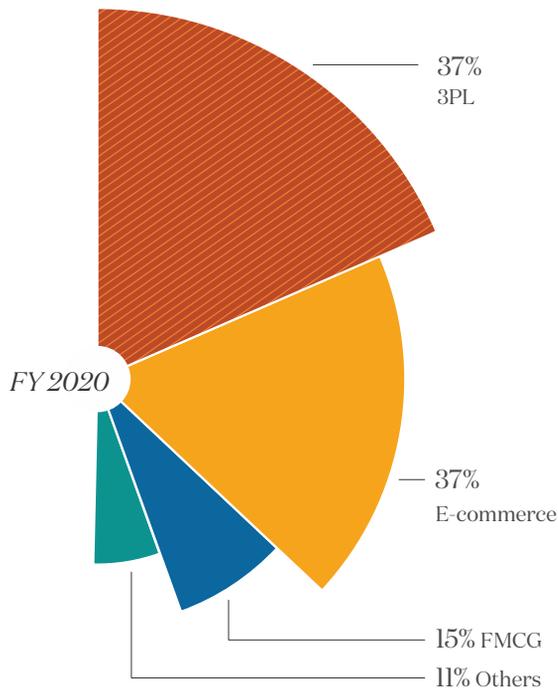
Source: Knight Frank Research

Warehousing market transaction volume



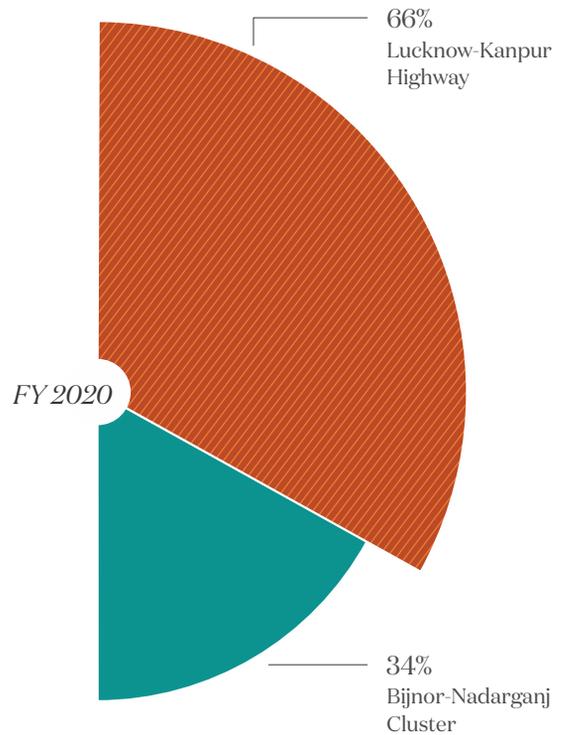
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Bijnor- Nadarganj Cluster	Bijnor	No availability	No availability	194 – 237 (18 – 22)
	Nadarganj	No availability	No availability	172 – 215 (16 – 20)
	Mohanlalganj Road	No availability	No availability	172 – 215 (16 – 20)
	Transport Nagar	No availability	No availability	183 – 215 (17 – 20)
Lucknow-Kanpur Highway	Asha-Kheda	11 – 14	194 – 226 (18 – 21)	172 – 194 (16 – 18)
	Kuseri	11 – 14	194 – 226 (18 – 21)	172 – 194 (16 – 18)
	Sohramao	11 – 14	194 – 226 (18 – 21)	172 – 194 (16 – 18)
	Mahnora	11 – 14	194 – 226 (18 – 21)	172 – 194 (16 – 18)
	Mohan Road	15 – 22	205 – 237 (19 – 22)	172 – 194 (16 – 18)

Source: Knight Frank Research

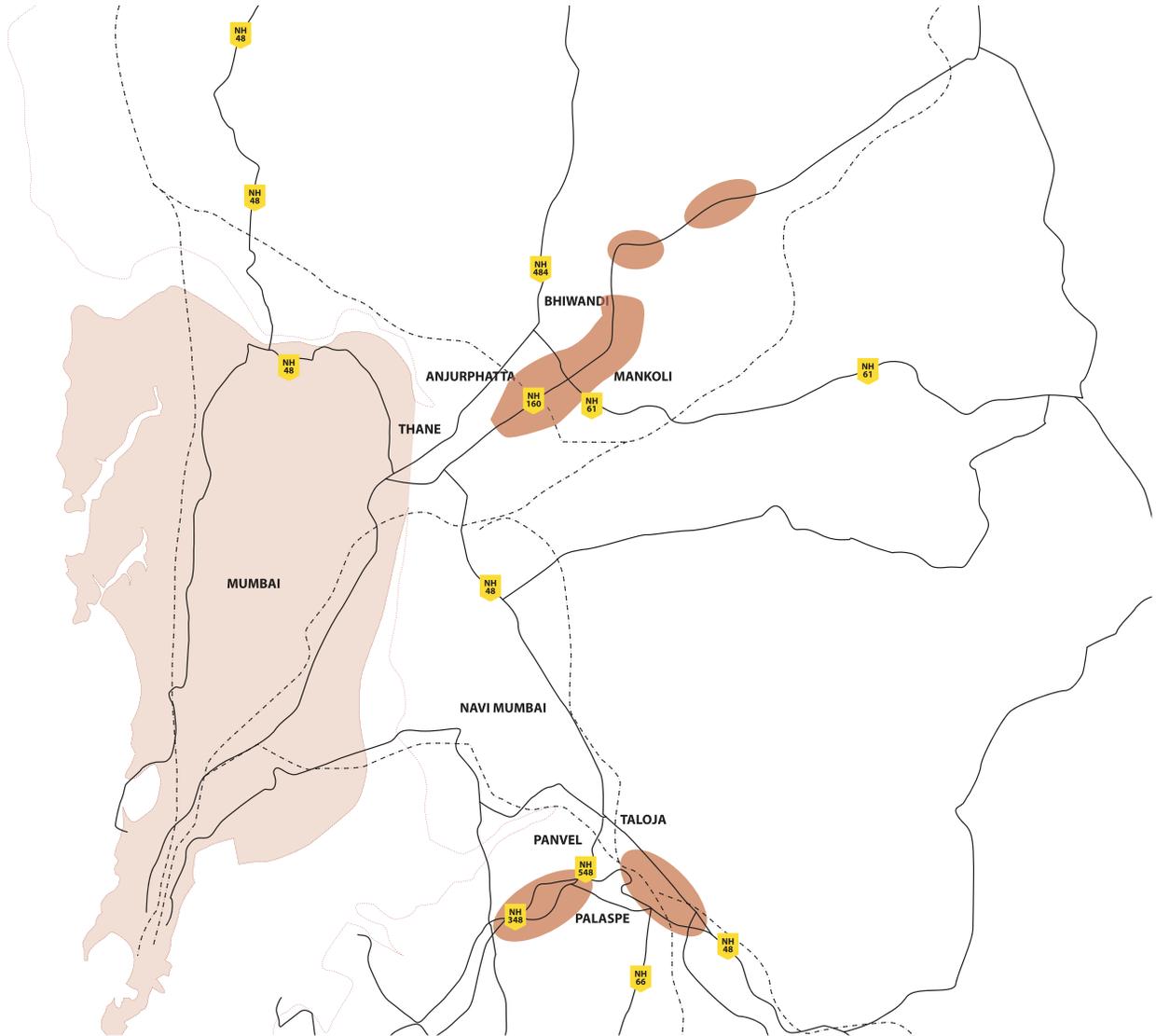
MUMBAI

WAREHOUSING MARKET

- Mumbai Metropolitan Region (MMR) is the financial capital of India and one of the largest cities in terms of population. The city is the most important and biggest consumption market for India.
- There are 3 drivers of the warehousing demand in MMR – consumption (which includes demand from e-commerce and retail), export-import (EXIM) and manufacturing. While the share of manufacturing demand has dwindled over the years, it is the consumption demand led by e-commerce and 3PL which have been driving the warehousing industry in MMR.
- The Bhiwandi warehousing cluster is located strategically at the junction of Mumbai, Navi Mumbai and Thane and this makes it an ideal location to serve consumption demand. However, a majority of warehouses in Bhiwandi are old and lack modern offerings. Further, the roads are narrow and congested, often clogged with traffic. Moreover, Bhiwandi is slowly transforming into an affordable housing destination and the upcoming metro line 5, Thane-Bhiwandi-Kalyan would further accentuate the transformation of Bhiwandi. This transformation will make it unviable to carry out warehousing activities.
- The warehouses moving out of Bhiwandi are shifting along the Mumbai-Nashik highway NH-3 which has a good quality 2x2 lane road with divider. This road runs parallel to the Thane-Bhiwandi Road and provides quicker access to MMR. This highway is being widened to cater to the increased traffic requirements. Better quality warehouses can be seen coming up along NH-3 and on the Kalyan-Sape Road which connects NH-3 with Kalyan. The other emerging locations are Lonad, Usroli, Vashere, Vadape, Amane, Sawad and locations before the Padgha toll booth. A few warehouse developers are also scouting for land after the Padgha toll booth as land prices are low in this region.
- The Panvel warehousing cluster, due to its proximity to the largest port of India JNPT, caters predominantly to the EXIM demand. Despite having better quality infrastructure than Bhiwandi, the Panvel warehousing cluster could not take away consumption demand from Bhiwandi. This is because Bhiwandi offers an established ecosystem required for carrying out warehousing activities in terms of ancillary services which is not very prevalent in the Panvel cluster. Further, many markets within the Panvel warehousing cluster have bonded warehouses and operate on the pallet system which is more suitable for occupiers serving EXIM demand. There are local issues in Panvel warehousing cluster which have to be sorted out by the occupiers themselves, whereas in Bhiwandi, the landlords generally manage the local issues and add the cost to occupancy cost.
- In FY20, Mumbai's warehousing market witnessed 7.52 mn sq ft (0.69 mn sq m) leasing, an 8% year-on-year (Y-o-Y) growth over FY19. The growth was driven by 3PL and FMCD segments.
- Rents have largely remained stable and we do not expect any rental growth due to the current shifts in existing warehouse space usage and future demand trends. In fact, as an aftermath of the lockdown, there would be downward pressure on rentals as occupiers are likely to try to push for better contractual terms citing lower demand

Major warehousing locations in Mumbai

 Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Bhiwandi	Mankoli, Kalher, Kashele, Dapode, Padgha, Vashere, Vadpe, Sape, Lonad, Bhavale, Sawad Naka, Dohole, Sonale, Anjurphatta
Panvel	Palaspe, Uran Road, Taloja, Patalganga

Source: Knight Frank Research



Major infrastructure in Mumbai

Name	Type
Delhi Mumbai Industrial Corridor (DMIC)	Industrial corridor
Navi Mumbai Airport Influence Area (NAINA)	Airport and allied activities
Mumbai Trans Harbour Link	Sea link
Virar-Alibaug Multi-modal Corridor	Road
Mumbai (JNPT)-Vadodra Highway	National Highway
Mumbai-Nagpur Expressway	Express highway

Source: Knight Frank Research | Note: NH stands for National Highway

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
DHL	3PL	Bhiwandi warehousing cluster
Citi Solutions	3PL	Bhiwandi warehousing cluster
Flipkart	E-commerce	Bhiwandi warehousing cluster
Tulsi Global	3PL	Panvel warehousing cluster
Reliance retail	Retail	Bhiwandi warehousing cluster
Amazon	E-commerce	Bhiwandi warehousing cluster
Spoton	3PL	Bhiwandi warehousing cluster

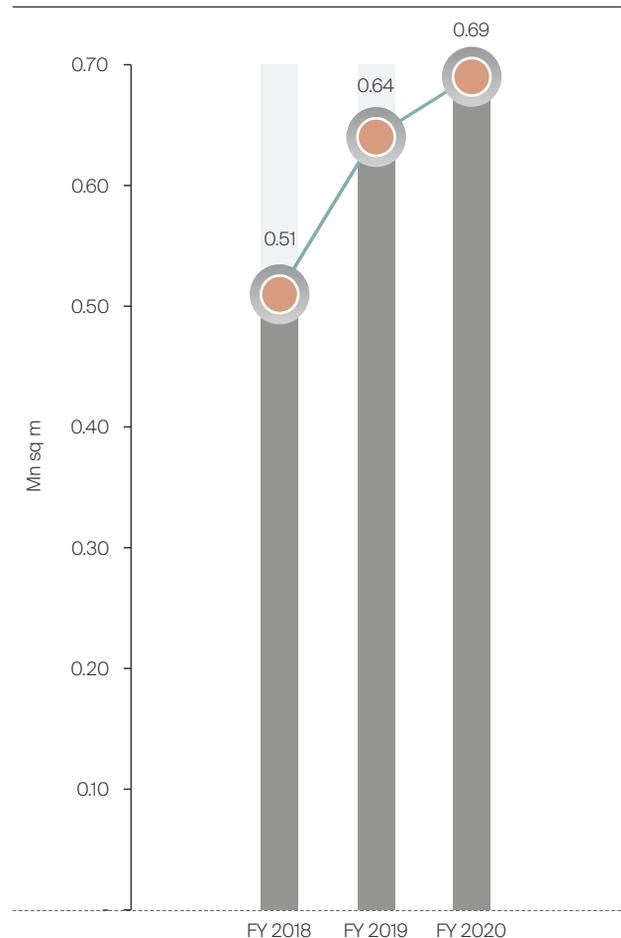
Source: Knight Frank Research

Select warehouse projects

Warehouse project	Warehouse cluster
KSquare	Bhiwandi
BGR	Bhiwandi
Renaissance	Bhiwandi
ESR	Bhiwandi
NDR	JNPT
New Era warehousing	Panvel, Patalganga

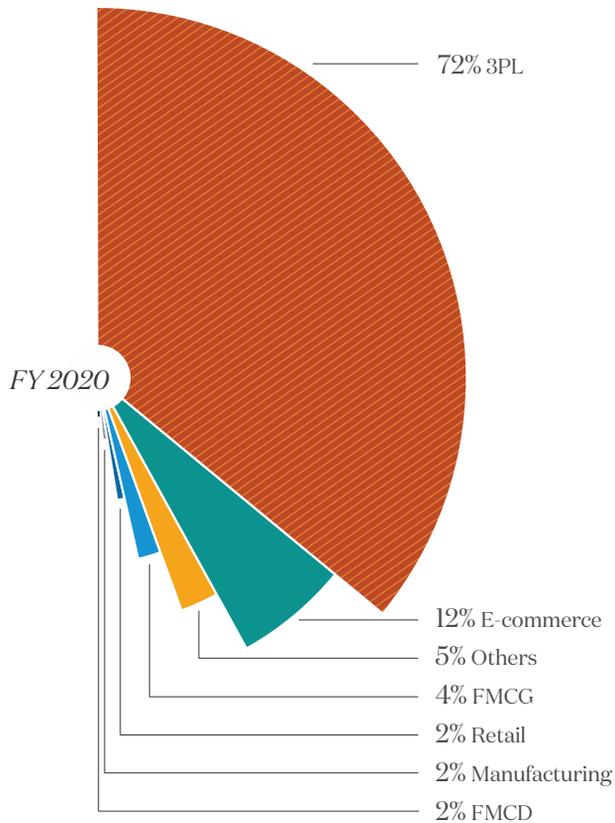
Source: Knight Frank Research

Warehousing market transaction volume



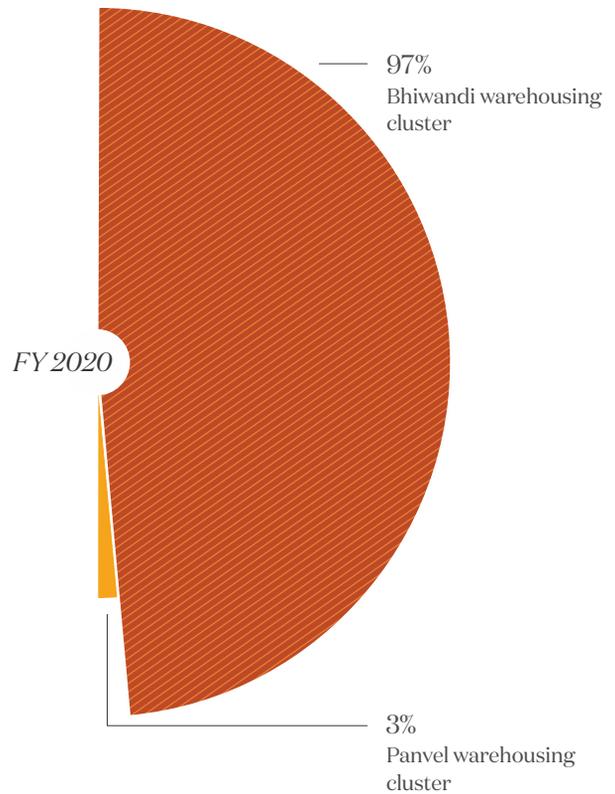
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Bhiwandi warehousing belt	Mankoli	Large land parcels not available	226 – 258 (21 – 24)	161 – 194 (15 – 18)
	Vadpe	23 – 28	236 – 269 (22 – 24)	194 – 215 (18 – 20)
	Padgha	18 – 25	226 – 269 (21 – 24)	183 – 194 (17 – 18)
	Vashare/Sape	20 – 25	226 – 248 (21 – 23)	172 – 194 (16 – 18)
	Lonad	17 – 20	No grade A supply	172 – 205 (16 – 19)
	Sonale	25 – 30	226 – 269 (23 – 25)	No Grade B supply
	Yewai	25 – 30	236 – 269 (22 – 24)	No Grade B supply
	Borivali Tarf Sonale	15 – 18	205 – 226 (19-21)	172 – 194 (16 – 18)
	Dhole	15 – 17	194 – 215 (18 – 20)	172 – 194 (16 – 18)
Kosambi	15 – 18	215 – 227 (20 – 22)	172 – 194 (16 – 18)	
Panvel warehousing belt	Palaspe - Goa Road	25 – 30	269 – 323 (25 – 30)	194 – 215 (18 – 20)
	JNPT	16 – 25	258 – 291 (24 – 27)	183 – 205 (17 – 19)
	Taloja	20 – 40	280 – 323 (26 – 30)	215 – 269 (20 – 25)
	Patalganga	16 – 25	205 – 237 (19 – 22)	151 – 194 (14 – 18)

Source: Knight Frank Research

NCR

WAREHOUSING MARKET

- The National Capital Region (NCR) is a prominent industrial belt in the country and a favorite for occupiers to grow their warehousing footprint in North India. The warehousing clusters in NCR are spread along major industrial hubs on peripheral road networks with easy access to Punjab, Haryana, Uttar Pradesh and Rajasthan apart from Delhi. Due to the presence of large-scale manufacturing units, industrial warehousing dominates the landscape. Many e-commerce players are also creating a warehousing ecosystem in the multiple clusters, through which they have maintained a seamless last-mile delivery mechanism to serve the multiple consumption markets.
- Industrial growth in NCR is largely attributed to its strong transportation network and is very dynamic and diverse because of multiple state borders and smaller regions. From electronics manufacturing, auto and auto ancillary, food processing and heavy engineering, occupiers from all sectors have established manufacturing plants in this zone which has led warehousing demand to flourish. With the systemic changes in warehousing operations post demonetisation and GST, many organized players such as IndoSpace and Embassy Industrial Parks have ventured into setting up large industrial and warehousing parks and have acquired large land parcels in peripheral belts.
- The 135 kms stretch of NH-48/ Kundli Manesar Palwal Expressway (KMP), or the Western Peripheral Expressway was inaugurated in late 2018 and has become a cynosure for investors and developers due to the excellent road connectivity to Panipat (NH-1), Kundli (with NH-10, Rohtak Road near Bahadurgarh) and Agra (NH-2). Along with the Kundli-Ghaziabad-Palwal (KGP) Expressway, these two highways encircle the national capital in a loop and a large portion of the warehousing leasing in NCR is currently concentrated in the former. Locations along the KMP, such as the Farrukhnagar, Bilaspur-Tauru-Sohna Road and Pataudi – Luhari Road have assumed strategic importance due to greenfield developments. In FY 2019, the KMP accounted for 78% of total warehouses leased in NCR.
- The demand for warehousing in NCR was on an upward swing in FY 2019. However, in FY 2020, a 32% decline over FY 2019 was noted due to lack of quality supply for expansion though good pre-commitments were noted and a surge in enquiries from e-commerce and logistics players before the coronavirus pandemic wreaked havoc with market dynamics. In FY 2020, 28% of the warehousing space was leased by e-commerce followed by manufacturing sector (24%). Major occupiers such as Flipkart and Amazon took up warehouses at the exit points of the KMP.
- While bygone industrial areas and warehousing hubs in NCR made way for organized warehousing due to rapid urbanisation and creation of new road infrastructure, this is set to change in a post Covid-19 scenario. Because of disruptions in movement of trucks across state borders, warehousing demand from occupiers will undergo a change as occupiers reassess their logistics strategy. To mitigate the uncertainty in terms of local sourcing, transit time and availability of transport to far-off consumption centres, many occupiers, especially from the e-commerce sectors will start evaluating in-city warehousing opportunities, especially in the NCT of Delhi which will give a fillip to enquiries in locations such as Mohan Co-operative, Mahipalpur, Mathura Road, Samalka, Okhla as well as in Noida (Uttar Pradesh).
- Demand from the e-commerce segment is expected to rise, albeit for mid-sized facilities along the entire NH-48 belt to capitalize on essential services demand from Delhi, Gurgaon, Noida, Greater Noida and other peripheral consumption centers. Also, given the uncertainty around near term need for warehouse space, labor and transportation consideration, we expect increased preference for 3PL services.
- Going forward, the KMP cluster in Haryana will continue to see increased interest from occupiers and developers alike, owing to its ideal location to service consumption demand in Gurgaon and nearby Tier II towns in case of another Covid-19 like scenario. Also, with many Japanese, European, US based and Korean companies looking to shift manufacturing plants outside of China, this warehouse cluster will attract a lot of interest due to availability of large land tracts. However, land rates are expected to soften in the wake of current demand slowdown.

Major infrastructure in NCR

Name	Type
Delhi-Mumbai Industrial Corridor (DMIC)	Industrial Corridor
Eastern Peripheral Expressway or Kundli-Ghaziabad-Palwal (KGP) Expressway or National Expressway II	Road - NH
Western Peripheral Expressway or Kundli-Manesar-Palwal (KMP) Expressway	Road - NH
Dedicated Freight Corridors (DFC)	Rail

Source: Knight Frank Research | Note: NH stands for National Highway

Select warehouse projects

Warehouse project	Warehouse cluster
IndoSpace	NH - 48/ KMP (Luhari & Badli)
All Cargo	NH - 48/ KMP
Embassy Industrial Park	NH - 48/ KMP
Gokuldas	NH - 48/ KMP
Apeejay Global Logistics Park	Faridabad
CCI Logistics/JKF Infra	NH - 48/ KMP

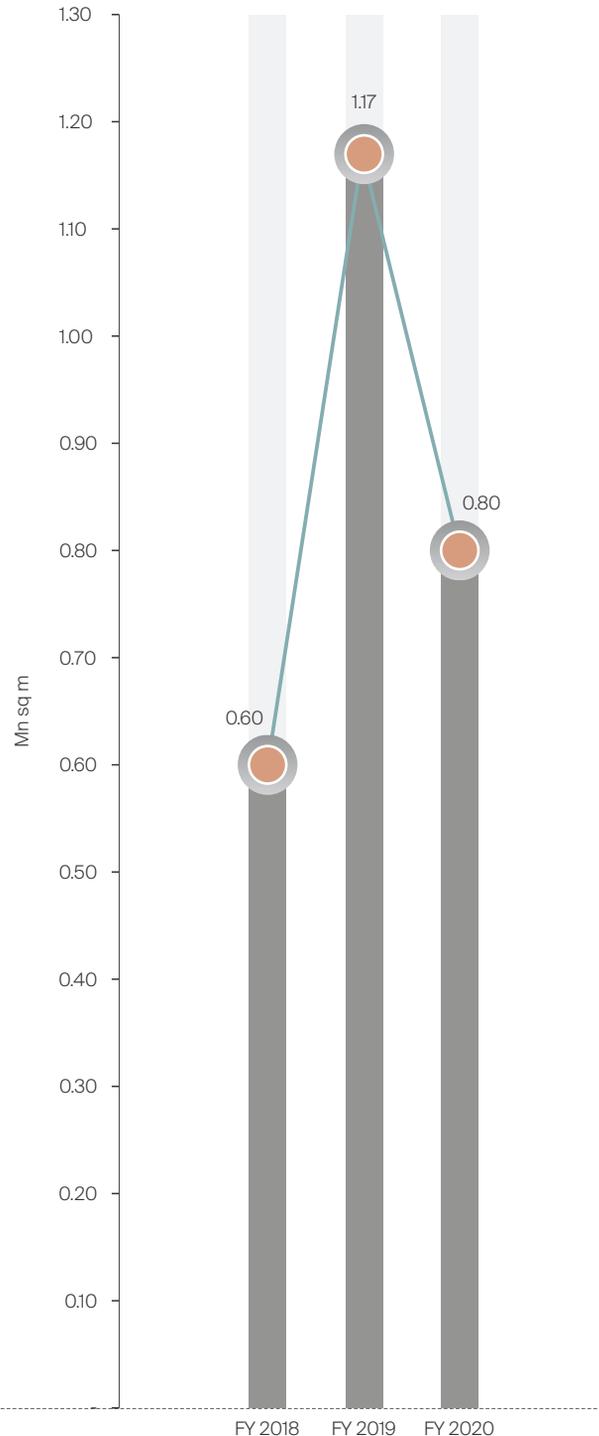
Source: Knight Frank Research

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Stellar Value Chain	Logistics	NH - 48/ KMP
Rivigo	Logistics	NH - 48/ KMP
LG	FMCD	NH - 48/ KMP
Flipkart	E-commerce	NH - 48/ KMP
Amazon	E-commerce	NH - 48/ KMP
Myntra	E-commerce	NH - 48/ KMP

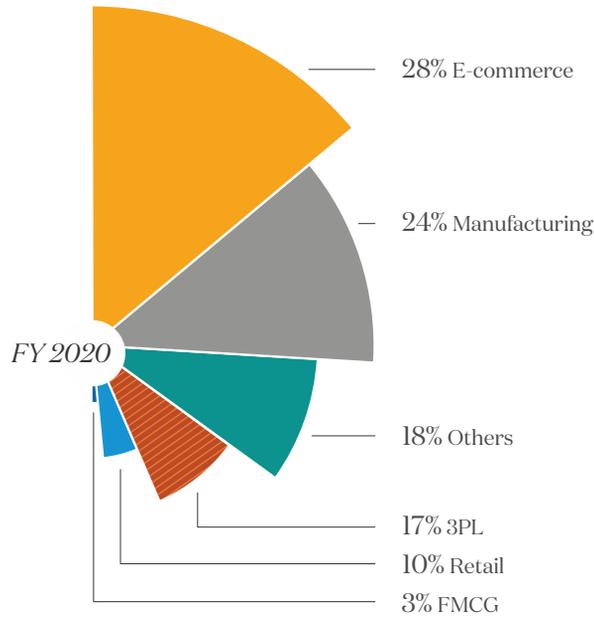
Source: Knight Frank Research

Warehousing market transaction volume



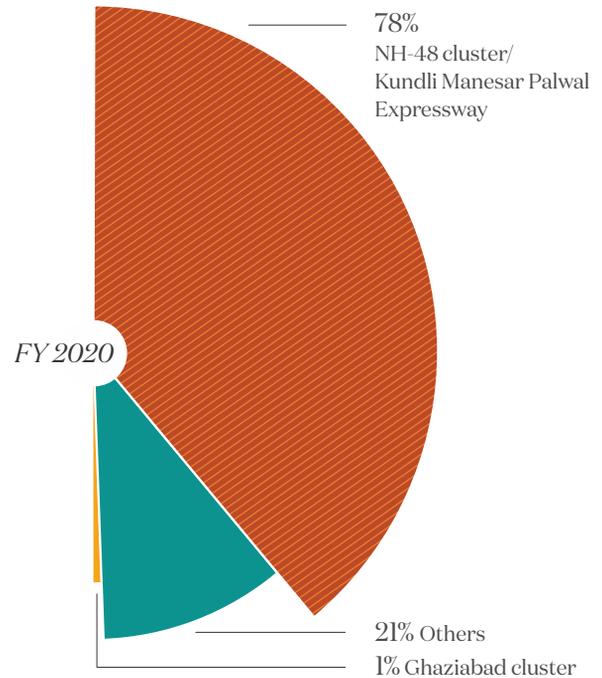
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
NH-48 cluster/ KMP cluster	NH 48 (Gurugram – Binola)	20 – 25	237 – 280 (22 – 26)	172 – 194 (16 – 18)
	Pataudi Road/Luhari	10 – 25	172 – 215 (16 – 20)	161 – 172 (15 – 16)
	Jamalpur-Panchgaon Road	17 – 25	194 – 215 (18 – 20)	172 – 194 (16 – 18)
	Bilaspur-Tauru –Sohna Road	11 – 25	194 – 226 (18 – 21)	183 – 205 (17 – 19)
	Dharuhera	15 – 25	215 – 258 (20 – 24)	194 – 215 (18 – 20)
	NH 71 – Kulana	10 – 15	172 – 194 (16 – 18)	161 – 172 (15 – 16)
	Badli	13 – 15	215 – 226 (20 – 21)	161 – 183 (15 – 17)
	Farrukhnagar	13 – 20	194 – 215 (18 – 20)	161 – 194 (15 – 18)
Ghaziabad cluster	NH 91 (Dadri) & NH 24 (Hapur) (Dasna-Pilikhua, Meerut)	18 – 25	183 – 215 (17 – 20)	172 – 194 (16 – 18)
Other clusters	Greater Noida	20 – 30	237 – 323 (22-30)	215 – 258 (20– 24)
	Faridabad	18 – 28	194 – 215 (18-20)	161 – 194 (15 – 18)
	Mundka	No large lands available	194 – 237 (18-22)	172 – 194 (16 – 18)
	Sonipat	17 – 25	194 – 215 (18-20)	172 – 194 (16 – 18)

Source: Knight Frank Research

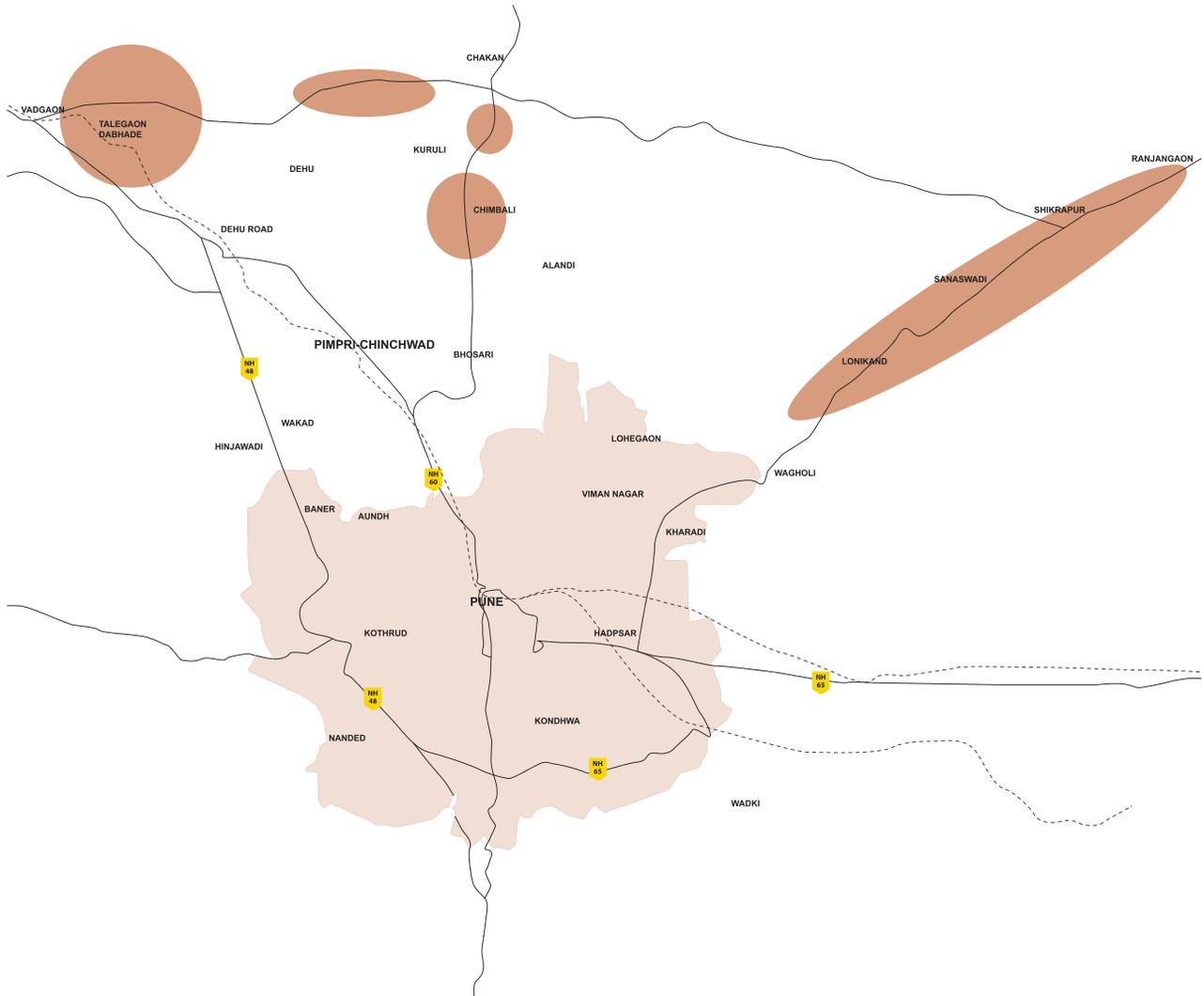
PUNE

WAREHOUSING MARKET

- Pune is the second largest city in Maharashtra after Mumbai in terms of population and economic activity. The two primary drivers of warehousing space demand in Pune are – manufacturing and consumption which includes demand from e-commerce, FMCG/FMCD and retail.
 - There are 3 major manufacturing clusters in Pune which have been developed by the Maharashtra Industrial Development Corporation (MIDC) at - Chakan, Talegaon and Ranjangaon.
 - Chakan MIDC has evolved into a mature manufacturing and industrial hub and is also known as the 'auto hub' of Maharashtra. As Chakan offers a thriving manufacturing environment and an established support ecosystem, new entrants are keen to move into this cluster despite high rentals. The warehousing space currently available in Chakan is predominantly catering to the in-house / captive demand of manufacturers from Chakan MIDC. High land price at Chakan is adding upward pressure on the warehouse rentals and rendering the cluster unviable for traditional warehousing space occupiers who cater primarily to the city's consumption demand.
 - Due to high land prices in Chakan, Talegaon has emerged as an attractive location for warehousing as well as industrial leasing.
- Talegaon is 35 km away from Pune but has good connectivity to the city via NH-48. Talegaon has tremendous potential to develop along the lines of Chakan. The cluster has excellent utility infrastructure along with good quality 2x2 lane roads with dividers and also enjoys excellent connectivity to the port in Mumbai via the Mumbai-Pune expressway. With the expansion of Chakan MIDC, Chakan and Talegaon MIDC are merging into a single cluster. Once these clusters merge, we expect an upwards pressure on rentals in Talegaon.
- Ranjangaon MIDC has several large manufacturing companies. The cluster has the best infrastructure of the 3 MIDCs having 3x3 lane main roads with dividers and internal roads having 2x2 or 1x1 lane roads with dividers. The roads also have provision for widening in future without any need for land acquisition. The problems faced in a typical developing industrial cluster in India such as manpower, labor union, reliable power supply, connectivity, security, etc. are also faced in Ranjangaon. However, these issues are getting resolved. Ranjangaon is located 58 km from Pune city; it takes over 2 hours to reach Pune and 1.5 hours to reach Chakan. The land prices and rentals are lower than Chakan and Talegaon and the cluster caters to industrial and manufacturing demand. The share of consumption demand in this cluster is low.
- The overall demand for warehousing space from the e-commerce segments has grown over the years and also got a fillip due to the lockdown; however, there has been a change in their leasing strategy in recent months with companies now looking to enter into short term leases. Companies are contemplating to realign their supply chains to have multiple small fulfilment centers in different parts of the city instead of serving the entire city with a single warehouse to mitigate any similar lockdown like scenario in the future. The supply chain managers are yet to reach a consensus on this issue.
 - In FY 2020, the Pune warehousing market recorded leasing volumes of 4.91 mn sq ft (0.46 mn sq m), registering 42% growth over FY 2019. This growth was driven by 3PL, e-commerce and manufacturing segments.
 - Given the low vacancy scenario, rentals were largely stable and registered the standard contractual increase. Going forward, there would be downwards pressure on rentals on account of lower demand, due to the Covid-19 induced slowdown in the economy.

Major warehousing locations in Pune

Warehousing cluster



Source: Knight Frank Research | Map is for representation and not to scale

Classification of warehousing locations into major clusters

Warehousing cluster	Major warehousing locations
Chakan-Talegaon belt	Chakan, Talegaon, Kuruli, Chimbali
Wagholi-Ranjangaon belt	Wagholi, Lonikand, Chakan-Shikrapur Road, Sanaswadi, Ranjangaon
Others	Hinjewadi, Nagar Road, Pimri-Chinchwad

Source: Knight Frank Research



Major infrastructure in Pune

Name	Type
Ring Road	Road infrastructure
MIDC Chakan phase 4 and 5	Industrial Park

Source: Knight Frank Research | Note: NH stands for National Highway

Select warehouse projects

Warehouse project	Warehouse cluster
Indospace Park 1,2,3	Chakan-Talegaon
Indospace Park	Ranjangaon
Embassy Park	Chakan-Talegaon
ESR Park	Chakan-Talegaon
KSH Infra	Chakan-Talegaon

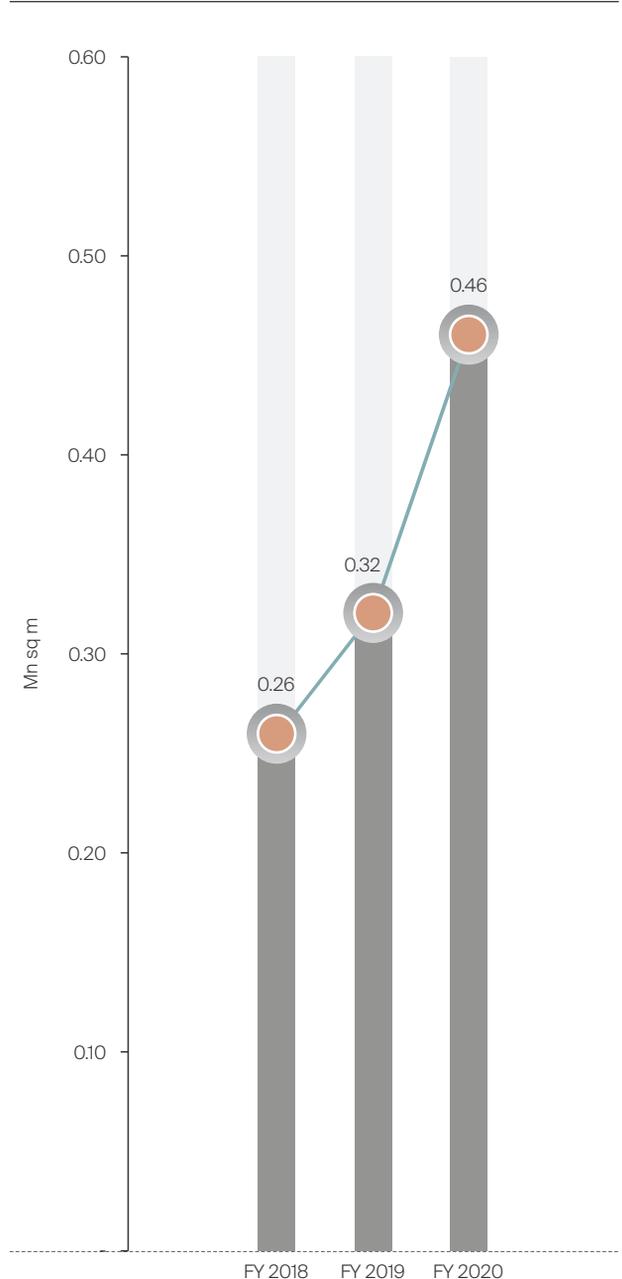
Source: Knight Frank Research

Select large occupiers

Occupier	Occupier industry	Warehouse cluster
Amazon	E-commerce	Chakan-Talegaon warehousing cluster
DHL	3PL	Chakan-Talegaon warehousing cluster
First Cry	E-commerce	Chakan-Talegaon warehousing cluster
Whirlpool	FMCD	Ranjangaon warehousing cluster
KSH Logistics	3PL	Chakan-Talegaon warehousing cluster

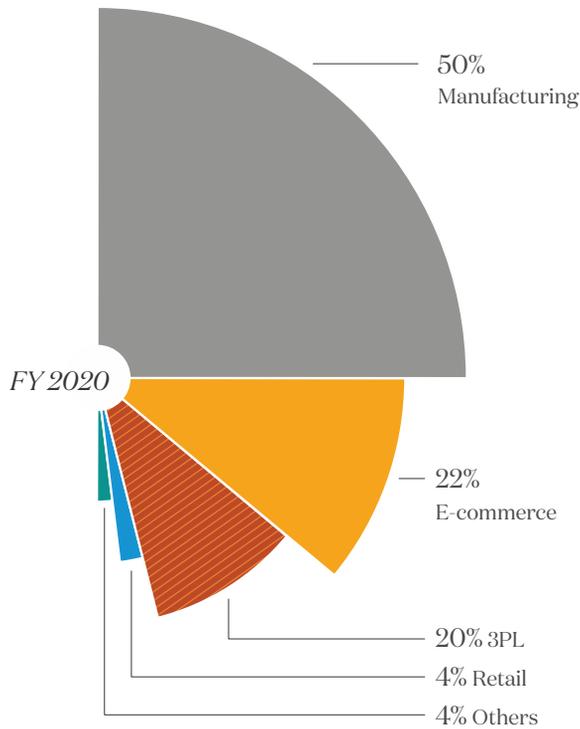
Source: Knight Frank Research

Warehousing market transaction volume



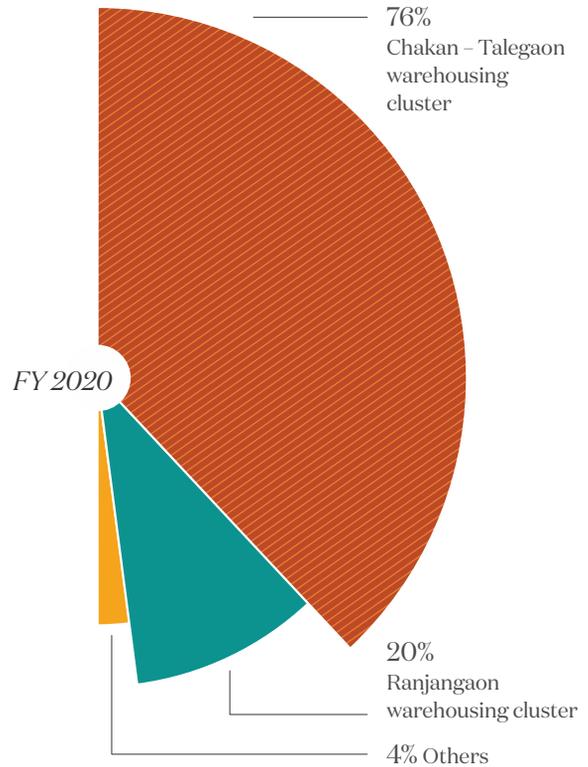
Source: Knight Frank Research

Industry-split of transaction volume



Source: Knight Frank Research

Cluster-split of transaction volume



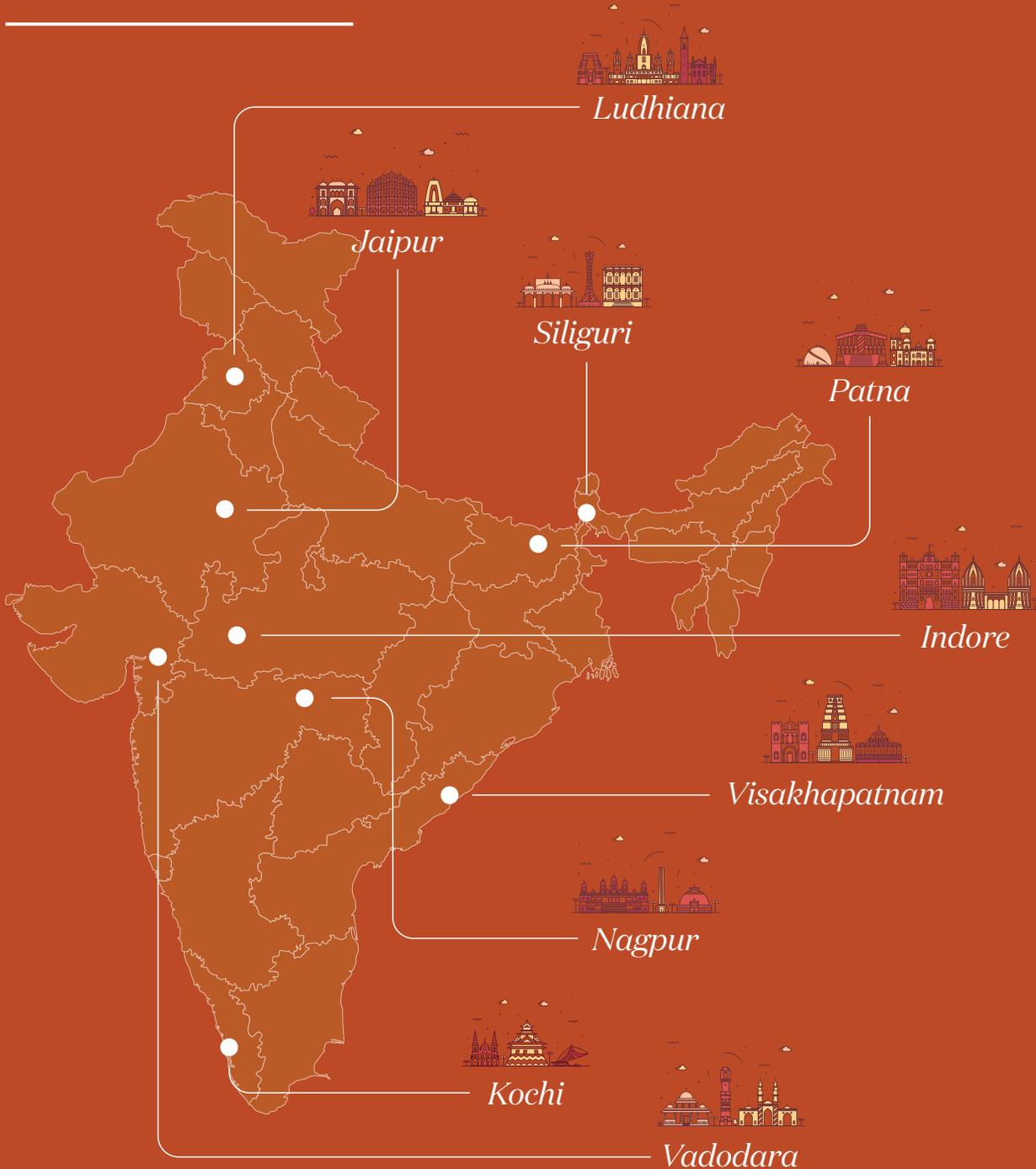
Source: Knight Frank Research

Land rate and rents

Warehouse cluster	Location	Land rate (INR mn/acre)	Grade A Rent in INR/sq m/month (INR/sq ft/month)	Grade B Rent in INR/sq m/month (INR/sq ft/month)
Chakan - Talegaon belt	Chakan	18 - 23	269 - 301 (25 - 28)	194 - 226 (18 - 21)
	Talegaon	18 - 24	215 - 258 (20 - 24)	172-194 (16 - 18)
	Kuruli	Large land parcels not available	No Grade A supply	151 - 172 (14 - 16)
	Chimbali	Large land parcels not available	No Grade A supply	151 - 172 (14 - 16)
Wagholi - Ranjangaon belt	Wagholi	Large land parcels not available	215 - 301 (20 - 25)	140 - 161 (13 - 15)
	Lonikand	15 - 20	172 - 183 (16 - 17)	140 - 161 (13 - 15)
	Chakan - Shikrapur Road	12 - 16	194 - 215 (18 - 20)	151-172 (14 - 16)
	Sanaswadi	12 - 15	No Grade A supply	140 - 161 (13 - 15)
	Ranjangaon MIDC	18 - 20	194 - 215 (18 - 20)	151 - 183 (14 - 17)
Others	Shirwal	10 - 14	172-194 (16 - 18)	151-161 (14 - 15)

Source: Knight Frank Research

OTHER WAREHOUSING MARKETS



Indore

- Indore is the largest city in the state of Madhya Pradesh in terms of population and is predominantly an industry driven city. While Bhopal is the political capital of Madhya Pradesh, Indore is the commercial capital. The city is located on NH-3 Mumbai-Agra highway.
- A major industrial cluster is located 35 km south of Indore at Pithampur. The Pithampur manufacturing cluster caters to companies in the automobile, pharmaceutical and textile sectors. Majority of the warehousing demand of Pithampur is fulfilled by in-house facilities of these companies. There are a few freehold warehouses in Pithampur but they largely cater to the demand from within Pithampur.
- Nearly 75% or more of the warehousing supply of Indore is concentrated towards the north of the city along NH-3 between Indore and Dewas. This warehousing cluster caters to the consumption demand of the city and is located around 20 km from the city centre. The cluster has good quality 3x3 lane roads with divider separation. Dewas Naka was the first warehousing cluster of the city. The warehouse structures here are over 15-20 year old and cater to FMCG/FMCD demand. However, as land in this region is getting expensive due to expansion of city limits, the warehouses are now moving towards Dakachya.
- E-commerce companies have taken up space in the cluster around Dakachya. Some of the e-commerce companies also operate through their 3PL partners in this cluster.
- Another warehousing cluster is located along the Nemawar Road which is the Indore-Nagpur highway. This cluster majorly caters to the agriculture related demand. A small amount of warehousing supply is also available near the Indore airport which caters to air cargo as well as to in-city distribution needs.
- There are not many major industrial and warehousing park developers currently in Indore. Majority of the warehousing supply is created by local developers.
- The city witnessed leasing volumes of over 305,000 sq ft (28,335 sq m) over 5 deals in FY 2020. In FY 2019, the city witnessed leasing of over 500,000 sq ft (46,451 sq m) over 2 deals. The rents hover in the range of INR 11-15 per square feet per month (INR 118-161 per square meter per month) in the Indore warehousing market.

Jaipur

- Jaipur is Rajasthan state's capital and features in the top ten most populous cities of India. It is also Rajasthan's largest city, situated within 300 kms from the national capital Delhi via excellent road connectivity through National Highway 48 (NH 48 or NH 8 as per old numbering). This highway also connects Jaipur with other cities such as Kishangarh, Ajmer, Jodhpur and Ahmedabad. Jaipur-Kishangarh Expressway on this highway was the first Indian road built under the public-private partnership model and provides seamless connectivity between these two cities.
- Jaipur is also well-connected to Kota, Bikaner and Agra through other national highways passing through the city. Due to a robust road network connected to northern, north-western and western cities, Jaipur's emergence as an upcoming warehousing hub is not a surprise. Being a major tourist destination, a lot of godown requirement in the erstwhile years was from textile manufacturers and FMCG companies apart from other industries. A lot of factories and establishments are concentrated across Vishwakarma Industrial Area (VKI), Sitapura, Bais Godam, Sudarshanpura, Mansarovar, Jaitpura and Bagru, and organized warehousing development with Grade A structures and build-to-suit (BTS) facilities have started coming up across the city.
- In FY 2020, a total of 0.3 mn sq ft (30,000 sq m) warehousing space was leased in Jaipur. Of the total space leased, 77% was in VKI and 17% in Bagru followed by other locations. E-commerce accounted for 29% of the total industry-split, followed by 3PL (23%), FMCD (20%), manufacturing(16%) and others (12%). However, this was in a pre-Covid 19 scenario and market dynamics have changed since then. In a post Covid-19 scenario, we expect Jaipur's upcoming warehousing market to go through many changes as occupier demand will be governed by

strategies which in turn will be governed by the challenges thrown up by this pandemic.

- E-commerce is likely to experience a boom in demand which will also have a cascading effect on warehouse requirements. The only difference is that instead of a mother hub dependency for delivery operations, companies may want to continue with fragmented warehouses in multiple locations for ease of last mile delivery in future.

Use of modern warehouse technology, omnichannel distribution channels and maintaining a lean supply chain will emerge as key themes. Jaipur, being a key Tier II capital city will benefit from the changes in occupier demand patterns. With a new occupier perspective towards warehouses, an organized warehousing market with Grade A supply will provide a makeover to Jaipur's warehousing clusters and invite more investor and developer participation in the long term

Kochi

- Located in the state of Kerala, Kochi is popularly referred to as Cochin (it's former name) or as Ernakulum (after the popular district by the same name of which Kochi is a part). It is a major port city on the west coast of India and among the safest harbours in the Indian Ocean. Key maritime facilities are based out of Kochi and they include: the Cochin/Kochi Port - one of the largest ports in India; Cochin Shipyard - the largest shipbuilding and maintenance facility in India; Kochi Refineries - an offshore crude carrier mooring facility; and Kochi Marina.
- Further, the International Container Transshipment Terminal (ICTT) which is a part of the Kochi port, is the largest container transshipment facility in India.
- The city's strategic geography resulted in its evolution as a key spice trading centre on the west coast of India in the 14th century and earned it the epithet of 'Queen of the Arabian Sea'. Over time, Kochi developed to become the financial, commercial and industrial capital of Kerala.
- Kochi is an important node on the North-South Corridor being developed under the National Highways Development Plan (NHDP). The Kochi-Bangalore Industrial Corridor and the Kochi-Coimbatore Industrial Corridor are other projects being planned for the city. Further, the Chennai-Bangalore Industrial Corridor is slated to be extended till Kochi. The city is already being serviced by a dense national highway web comprising NH 66, NH 544 and NH 966A and 966B. The Infopark Expressway, the Container Terminal Road and the Seaport-Airport Road form the key road network within the city. Kochi is also among the hundred Indian cities being developed under the Indian government's Smart Cities Mission.
- Major industries flourishing in Kochi include construction, manufacturing, shipbuilding and shipping, chemicals, electronics hardware, seafood and spices. In recent times, with changing consumption behaviour, Kochi too has been seeing a spurt in e-commerce players and Third Party Logistics (3PL) players along with Fast Moving Consumer Goods (FMCG) / Fast Moving Consumer Durables (FMCD) companies. These industries and the upcoming e-commerce and retail establishments have been the major drivers for logistics and warehousing in Kochi.
- The prime warehousing locations in Kochi can be broadly grouped into two major clusters, the Kakkanad cluster and the Aluwa-Kalamassery cluster. The Vallarpadom and Vyttila micro-markets and the stretch of the Container Terminal Road and the Seaport-Airport Road service the requirements of the Cochin Port and the ICTT. The warehousing needs of these areas are in turn serviced by the city-centre based Kakkanad cluster. On the north-west of the city lies the Aluwa-Kalamassery warehousing cluster. Its proximity to the NH 544 has made it a sought after choice for e-commerce players, FMCG/FMCD companies and 3PLs.
- A multi-modal logistics hub has also been proposed at Kalamassery as the location has developed into a major freight hub connecting the in-city freight corridors with the NH 544.
- In FY 2020, transactions in the Kochi warehousing market stood at 0.04 mn sq m (0.5 mn sq ft). FMCG/FMCD companies accounted for the bulk of this transaction activity. The Kalamassery warehousing cluster saw maximum activity during this period.

- The city offers a mix of independent and organised warehouses, both belonging to Grade B category, and the rentals average between INR 18-21 per sq ft/month for

standalone warehouses and go up to INR 23-31 per sq ft/month for the organised warehousing facilities.

Ludhiana

- Ludhiana is the largest city in Punjab and has been ranked in past periods as one of the easiest cities to do business in India as per the World Bank. It is a prime industrial centre in northern India and lies on the strategic Dedicated Freight Corridor (DFC). Once completed, the DFC will be instrumental in driving the establishment of industrial corridors and logistic parks along its alignment as this corridor will have upgraded transportation technology which will help reduce unit transportation cost and attract occupiers across sectors. The freight corridor will cover first 447 km of the Ludhiana–Dhari–Khurja section with a single electrified track and will pass through the important districts of Sahnewal, Doraha, Ludhiana, Sirhind, Rajpura, Ambala, Yamunanagar, Saharanpur, Muzaffarnagar, Meerut, Hapur, etc. all of which will reap the benefits of this alignment.
- Ludhiana has always been the hub of small-scale industrial units and production of industrial goods, machine parts, auto components, household appliances, hosiery, bicycle manufacturing, hand tools and industrial equipment has made the city a key sourcing partner for companies in the FMCD, auto and manufacturing sector. Ludhiana is well connected to other cities in Punjab as well as neighbouring states via the National Highway 5 (NH 5), NH44 and State Highway SH11. Most of the warehousing stock in Ludhiana is currently unorganized and located in the Ludhiana–Doraha belt catering to the Fast-Moving Consumer Goods (FMCG) consumption market. At present, the major occupiers who have taken up space in the range of 4,645–92,903 sq m (50,000–100,000 sq ft) include Amazon, Flipkart, Samsung, LG, Sony, Mitsubishi, Rivigo, Nestle and Cadbury.
- Ludhiana is slated to be a major warehousing hub as the impending completion of the DFC has spurred organized logistics parks are coming up near Kila Raipur village. These multimodal parks are by Punjab Logistics Infrastructure Limited, Adani Group, and State Warehousing Corporation. These large-scale multimodal parks will enhance Ludhiana's attractiveness as a warehousing and logistics hub in the long term. The 77-acre logistics park by the Adani

group lies on the DFC and has already started operations, capturing cargo from Punjab and nearby states and helps to consolidate additional volumes for Mundra Port.

- In FY 2020, 0.3 mn sq ft (0.03 mn sq m) of warehousing space was leased in Ludhiana. Of the total space leased, 65% was concentrated in the Ludhiana Bypass Road where few Grade A logistics parks attracted occupiers from the ecommerce and logistics sector. Though the warehousing market in and around Ludhiana is at a very nascent stage, land rates range between INR 8–INR 10 million per acre with the rents already reaching between INR 151–INR 161/sq m/month (INR 14–INR 15/sq ft/month) for Grade B quality warehouses, which is comparable to the upcoming warehousing hub of the Rajpura–Zirakpur–Tepla belt in Punjab. In a post Covid-19 scenario, Ludhiana's warehousing market will benefit from expansion by occupiers from sectors such as FMCD, FMCG and Ecommerce who will expand footprint to cater to the consumption-led demand by its large population.
- However, due to the slowdown in the automotive sector and fall in engineering exports, many small and medium enterprises catering to these sectors do not contribute much to the warehousing demand in Ludhiana. The demand for leasing warehousing spaces in the city is largely dependent on e-commerce, 3PL and FMCD.

Nagpur

- Nagpur, popularly known as the 'Orange City' is the third largest city in Maharashtra in terms of population. The city is located centrally in India and is almost equidistant from major consumption markets of India such as Mumbai, Delhi, Chennai and Kolkata.
- Infrastructure development within and around the city has been taking place at a rapid pace in the recent years. The city will soon be connected to Mumbai directly through the Mumbai-Nagpur Expressway, also known as the Samruddhi Highway. This Expressway is expected to bring down the travel time between Mumbai and Nagpur to 8 hours from over 15 hours now. The State Government has recently said that 100% land acquisition for this project has been completed.
- A majority of the warehousing demand in Nagpur is driven predominantly by the industrial and manufacturing sectors. The Maharashtra Industrial Development Corporation (MIDC) has developed 2 industrial clusters at Butibori and Hingna. Both these clusters account for a majority of the industrial activity. Many logistics and warehousing parks have come up around the clusters at Gumgaon, Waddhamana, Hingna Road, Hingna MIDC area and Kotewada.
- The consumption led demand for warehousing is smaller compared to industrial led demand, however, it has been growing. The warehouses catering to the consumption demand have come up along the Nagpur-Amravati Road and Amravati-Kamleshwar Road. E-commerce companies have started to scout for warehousing space in these clusters.
- There are a few large Grade A warehousing parks in Nagpur which are owned by local developers and some by large national players. The rest of the warehousing supply is small and fragmented.
- The city was touted to be one of the biggest beneficiaries of the Goods and Services Tax (GST) due to its central location. However, this transformation is yet to happen. Despite having the third largest population base in Maharashtra, the overall consumption demand of the city is low; besides, the city lacks proximity to any other major consumption cluster.
- Most of the warehousing stock in Nagpur is build-to-suit (BTS) and there is very little speculative stock apart from that available in the two large Grade A warehousing parks. The annual leasing volumes in FY 2020 was 235,000 sq ft (21,832 sq m).
- The Multi-modal International Cargo Hub and Airport at Nagpur (MIHAN) project, due to its sheer size of economic development, is expected to attract a lot of investments. Land allotment to various business conglomerates for both the Special Economic Zone (SEZ) and the non SEZ area is currently underway. This project is set to transform Nagpur into a major cargo hub. The SEZ area in MIHAN will be one of its kind with the largest multi-product SEZ in India spread across 1,472 hectares. Large-scale concentration of industrial activity in this region is bound to give a fillip to quality warehouse developments in the vicinity. However, it will take some more years for MIHAN to develop as envisaged and warehouse developers are willing to wait it out.

Patna

- Patna is the capital and the largest city in the state of Bihar. It forms an important link in north-east India's supply chain in addition to warehousing hubs such as Lucknow, Ranchi and Guwahati that constitute the supply chain in this region.
- Situated in the third most populous state in India, Patna also caters to the consumption base in Bihar's other cities such as Darbhanga, Muzaffarpur, Gaya and Bihar Sharif.
- The Patna warehousing market is largely unorganized but the entry of E-commerce players such as Amazon and Flipkart and global multinationals such as Coca Cola, Amazon, Pepsi and Samsung over the last few years has spurred the development of higher quality pre-engineered warehousing facilities. Bulk of the warehousing development has occurred on the Patna – Gaya road to the south, NH-922 to the west and the NH-31 to the east.
- Warehousing facilities have come up in and around Patna in an approximate 35 km radius toward the East, West and

South of the city. Rental rates for warehousing facilities range between INR. 161 – 226/ sq m (INR 15 – 21/ sq ft) in prominent warehousing locations like Bihta, Gaurichak, Fatuha, Zero Mile, Deedarganj and Khagaul. Higher grade warehousing facilities such as those taken up by Coca Cola, Flipkart, GSK and Pepsi trade at the higher end of the range while the converse is true for Grade B warehouses.

- The E-commerce and FMCG sectors have been focusing on strengthening their supply chain across the underserved north-east region in the country. Heightened interest by

these sectors saw FY 2020 warehousing transactions nearly triple to 0.06 mn sq m (0.6 mn sq ft) YoY. 3PL companies such as Delhivery and Safexpress have also set up regional facilities in Patna over the past two years.

- Enquiries for built-to-suit facilities have sustained even during the COVID-19 induced lockdown. The need to bolster existing supply chains to prevent stock-outs particularly in the FMCG sector and Patna's strategic importance in the north-eastern supply chain should sustain the occupier demand in the medium term.

Siliguri

- Siliguri has been identified as one of the five locations in West Bengal for development of logistics park under the 'Logistics Park Development and Promotion Policy of West Bengal 2018'. Due to good connectivity within the state, easy access to industrial belts and land availability, e-commerce and FMCG companies have forayed into this city to set up a warehousing ecosystem.
- Being West Bengal's second largest urban agglomeration, Siliguri is one of the fastest growing cities in eastern India. In addition to a key consumption centre, it is also a key region for development of the end-to-end logistics parks with multimodal capabilities in the northern part of West Bengal. In FY 2020, nearly 200,500 sq ft (18,630 sq m) of new warehouse space was leased in Siliguri. Ghora More, a tri-junction near New Jalpaiguri and a prime warehousing cluster in Siliguri is where most of the warehouse stock is concentrated.
- Ghora More is connected directly to the 11 kms Eastern Bypass Road which circles Siliguri and provides further access to towns like Kalimpong and Darjeeling. With a lot of godown type structures, modern warehouse supply has also started coming up and developers have started focusing on modern amenities to attract MNC clients. Since the average transaction size in Siliguri is nearly 25,000-30,000 sq ft, the new supply is not in the form of large organized industrial park developments but fragmented and stand-alone structures. In FY 2020, 96% of warehouses were leased in this cluster.
- Prominent companies in Fast Moving Consumer Goods (FMCG) and e-commerce have started establishing footprint in Siliguri. In FY 2020, e-commerce accounted for

27% of transactions while 25% was by FMCG, followed by third-party logistics (3PL) sector with 24%. The remainder was accounted for by manufacturing and other sectors. Siliguri mostly has Grade B warehouses which command INR 13-15 per sq ft/month (INR 140-161 per sq m/month).

- Until early 2020, Siliguri - a city where tea exports were the major source of economic growth - was slowly getting organised as a warehousing hub. Now with the Covid-19 outbreak and the ensuing halt of economic activity, the pace of warehousing growth will be impacted, as new supply addition in the warehousing market will be delayed due to labor shortage and developers may curtail speculative supply as warehouse space occupiers will realign their workspaces to be compliant with social distancing norms and safety of factory workers. It is, therefore, premature to assess its impact on Siliguri's warehousing market due to its nascent evolution

Vadodara

- Vadodara is the 18th largest city in India in terms of population and third largest in Gujarat after Ahmedabad and Surat. As per 2011 census, the city has a population of 2.1 million. Located on the Mumbai-Ahmedabad highway, the city is predominantly driven by industrial activity.
- Companies started setting up their industrial units in Vadodara the early 1900s. In the 1960s, companies such as Gujarat Refinery and Indian Oil Corporation moved into Vadodara. Major companies in close proximity to Gujarat Refinery include Gujarat State Fertilizers & Chemicals (GSFC) and Indian Petrochemicals Corporation (IPCL, now owned by Reliance Industries). Many pharmaceutical, electrical and heavy engineering companies have their manufacturing facilities in Vadodara. In addition, the city has an upcoming automotive hub at Halol.
- There are 3 major warehousing clusters in Vadodara: Padmala-Ranoli belt on the north, Jarod-Halol belt on the east and Jambua-Por belt on the south. Majority of the warehouses in Vadodara are built-to-suit and there is very little stock on build and lease model.
- The Jarod-Halol belt and Jambua-Por belt cater majorly to the industrial demand. Both Jarod-Halol and Jambua-Por belts have good quality 3x3 lane roads with divider. The industrial demand is driven by companies in the pharmaceutical, electrical and heavy engineering sector. The demand from automobile sector is small but growing. There are two major auto manufacturers in Halol - MG motors and Hero Honda. Sun Pharma, Polycab India and subsidiaries of Reliance Industries are the other major companies having manufacturing facilities on the Jarod-Halol belt.
- The Padmala-Ranoli belt is one of the oldest warehousing clusters of the city. Warehouse structures in this cluster are over 25-30 years old and lack modern offerings. This cluster is preferred by occupiers from the e-commerce, retail and FMCG segments as it is closer to the intersection of the national highway and ring road.
- The warehousing demand from the retail segments in Vadodara is smaller compared to Ahmedabad and the requirements is serviced by local warehouse owners. The city witnessed leasing volumes of around 160,000 sq ft (14,809 sq m) across 4 deals in FY 2020. The leasing volumes in FY 2020 was lower compared to the leasing volumes were around 358,000 sq ft (33,259 sq m) across 5 deals FY 2019 and 440,000 sq ft (40,877 sq m) across 2 deals in FY 2018. While demand for warehousing space from e-commerce and FMCG segments is growing, the dearth of ready to lease good quality warehouses is forcing them to occupy fringe facilities through 3PL companies.

Visakhapatnam

- Located in the state of Andhra Pradesh, Visakhapatnam is popularly known by its former name Vizag. This port city has one of the 13 major ports in India which is the only natural harbour on the east coast and the fifth-busiest cargo port in the country. It is also the only major port that can handle cape size vessels (large-sized bulk carriers and tankers).
- Strategic location coupled with strong infrastructure have developed the city into an important trade centre. There is significant presence of heavy industries like steel fabrication, ship building, thermal energy, oil & petroleum and dredging along with pharmaceutical companies in this city. Fishing is a major occupation in Visakhapatnam and sea food forms a major component of exports from the city port. All these industries and the upcoming e-commerce and retail establishments have been the major drivers for logistics and warehousing in Visakhapatnam.
- Vishakhapatnam is an important node on the East Coast Economic Corridor and the work on the Visakhapatnam Chennai Industrial Corridor component is already underway. National Highway (NH) 16, popularly known as the Chennai Kolkata Highway, passes through the city and the city is further connected by a network of arterial roads including Beach Road, Daba Gardens Road, Waltair Main Road and Dwaraka Nagar Road. The city is also slated to be developed as a Smart City under the first phase of Smart Cities Mission.

- Major drivers for warehousing in Vishakhapatnam have conventionally been the sea food and steel fabrication industries. In recent times, the demand from Third Party Logistics (3PL) players, e-commerce and Fast Moving Consumer Goods (FMCG) companies has been gaining momentum.
- Prime warehousing clusters in Visakhapatnam are the Gajuwaka-Auto Nagar cluster and the Madhurwada cluster. These clusters mostly occupy the north west and north east portions of the city i.e. adjacent to the port. Besides them, small warehousing pockets exist in the industrial areas of Vuda Colony-Mindi, Parawada and the Atchutapuram Special Economic Zone (SEZ).
- In FY 2020, transactions for the Visakhapatnam warehousing market stood at 0.01 mn sq m (0.1 mn sq ft). E-commerce and FMCG / Fast Moving Consumer Durables (FMCD) companies accounted for bulk of this transaction activity.
- The city is dominated by standalone warehouses, primarily of Grade B category, and the rentals average between INR 13-16 per sq. ft./month. Built-to-suit warehousing facilities for e-commerce players such as Amazon draw rents between INR 16-20 per sq. ft./month.

ANNEXURE 1

Developer Benefits	Maharashtra	Haryana	Uttar Pradesh	Madhya Pradesh	Chhattisgarh	West Bengal	Gujarat	Jammu and Kashmir
Industry status	1	1	1	1	1	-	1	1
Single window & time bound clearances	1	1	1	1	-	-	-	1
Minimal zone restrictions	1	1	-	-	-	-	-	-
Real estate relaxations	1	0.25	0.25	-	-	-	-	-
Capacity building incentives	1	1	1	-	1	1	-	-
State to provide access to critical utilities at no cost	1	1	-	-	-	-	-	1
Concessions in development charges	1	1	-	1	-	-	-	-
Labour law relaxations	1	1	-	-	-	-	-	-
Power at concession rate	1	1	1	1	1	-	-	1
Allotment of government land	1	-	-	-	-	-	-	-
Interest subsidy	-	1	1	1	1	-	-	1
State to earmark land for warehouses/logistics parks	-	1	1	1	-	-	-	-
Stamp duty & registration fee concessions	0.5	0.5	0.5	1	0.5	-	1	0.5
Capital subsidy	-	1	1	1	1	-	1	1
TOTAL	10.5	11.75	7.75	8	5.5	1	3	6.5

Occupier Benefits	Maharashtra	Haryana	Uttar Pradesh	Madhya Pradesh	Chhattisgarh	West Bengal	Gujarat	Jammu and Kashmir
Industry status	1	1	1	1	1	-	1	1
Single window & time bound clearances	1	1	1	1	-	-	-	1
Capacity building incentives	1	1	1	-	1	1	-	-
Labour law relaxations	1	1	-	-	-	-	-	-
Power at concession rate	1	1	1	1	1	-	-	1
Interest subsidy	-	1	1	1	1	-	-	1
Capital subsidy	-	1	1	1	1	-	1	1
TOTAL	5	7	6	5	5	1	2	5

Note 1: The above analysis has been drawn by studying logistics policy documents of the eight above mentioned states

Note 2: List of documents considered:

- Maharashtra Incentive for Development of Integrated Industrial Area 2018
- Maharashtra's Logistics Parks Policy (2018)
- Haryana Logistics, Warehousing & Retail Policy (2019)
- Uttar Pradesh Warehousing and Logistics Policy 2018
- Madhya Pradesh Warehousing & Logistics Policy 2012
- Madhya Pradesh Logistics and Warehousing Order Dated 22 June 2018
- Chhattisgarh Logistics Park Policy 2018-23
- Logistics Park Development and Promotion Policy of West Bengal 2018
- Scheme for Financial Assistance to Logistic Park, Gujarat Industrial Policy, 2015
- (Draft) Jammu & Kashmir State Logistics Policy- 2019-29

Note 3: The real estate relaxation parameter clubs together base FSI relaxation, additional FSI relaxation, higher ground coverage permissible and no height restrictions. Each of these sub-parameters have been assigned a weight of 0.25. Hence, if a state logistics policy provides for two of the above sub-parameters, its score will be 0.5.

Note 4: Stamp Duty & Registration Fee concession parameter covers any incentive extended by the state logistics policy on these two components. Since the two are mutually exclusive, they have been assigned independent weight of 0.5 each. Hence, if a state logistics policy provides for Stamp Duty concession alone then its score will be 0.5.

Note 5: In case of parameters such as capital subsidy, interest subsidy etc., quantum of the benefit has not been captured for the purpose of this analysis. Only the presence of such a benefit in the state logistics policy has been considered.

ANNEXURE 2

– BENEFITS UNDER STATE LOGISTICS POLICIES

Benefits under Maharashtra's Logistics Parks Policy (2018)

- 1) Logistics sector will be accorded industry status.
- 2) For Integrated Logistics Parks (ILP) and Logistics Parks (LP), 1 or permissible basic FSI, whichever is more will be applicable. Also, up to 200% additional FSI will be admissible over base FSI for development of ILP and LP.
- 3) Higher ground coverage of up to 75% allowed for ILP.
- 4) Logistics facilities permitted in any zone across the state.
- 5) Relaxation on height restrictions to ensure optimum space utilisation.
Further, excess height of floor as per requirement will not be calculated / considered for additional FSI to make logistics activities affordable.
- 6) Power at industrial rates.
Also, production using non-conventional energy sources, its distribution and selling by ILP and LP will be permissible.
- 7) State government would ensure last-mile connectivity access to critical utilities like power and water at no cost.
- 8) Security support will be provided by the state government through its Maharashtra Security Force.
- 9) All window clearances through single window investor facilitation cell – MAITRI.
- 10) ILP and LP will not be covered under the ambit of Labour Law. Permission to work 24*7.
- 11) Government support to skill development.
- 12) Government will facilitate development and upgrading of the existing logistic infrastructure in declared logistics zones.
- 13) An empowered inter-departmental committee will be formed to ensure smooth integration and operation between departments.

Benefits under Maharashtra Incentive for Development of Integrated Industrial Area 2018

- 1) Relaxation in the minimum area requirement from 40 hectares (100 acres) to 20 hectares (50 acres)
- 2) Relaxation in minimum width of approach road from 24 metres to 12 metres
- 3) Up to 50% concession in Stamp Duty
- 4) If government land is required for maintaining contiguity of the IIA, then it can be allotted to developer at market rates
- 5) FSI and additional FSI as applicable to special township projects will be allowed for IIA
- 6) Captive power generation will be allowed
- 7) 50% exemption in payment of development charges

Benefits under Haryana Logistics, Warehousing & Retail Policy (2019)

- 1) Industry status to Logistics & Warehousing Industry
- 2) Capital Subsidy:
Warehousing - Financial assistance @ 25% of the fixed capital investment subject to maximum of INR 5 crore.
Logistics Park - Financial assistance @ 25% of the fixed capital investment up to a maximum of INR 15 crore for developing infrastructure in Logistics park.
Integrated / Multi Modal Logistics Parks - Financial assistance @ 25% of the fixed capital investment up to a maximum of INR 25 crore for developing infrastructure in Integrated/ Multi Modal Logistics park.
- 3) Interest Subsidy:
Warehousing: Financial assistance in the form of interest subvention @ 5% on loan taken to meet working capital requirements subject to a maximum of INR 10 lakhs per year for 3 years.
Logistics Park: Financial assistance in the form of interest subvention @ 5% on loan taken to meet working capital requirements subject to a maximum of INR 20 lakhs per year for 3 years.

Integrated/Multi Modal Logistics Park: Financial assistance in the form of interest subvention @ 5% on loan taken to meet working capital requirements subject to a maximum of INR 50 lakhs per year for 3 years.

- 4) Reimbursement of 100% of Stamp Duty.
- 5) 100% of Electricity Duty exemption for a period of 7 years
- 6) 50% reimbursement in External Development Charges (EDC) for select developments
- 7) Capacity building incentives - Re-imburement to logistics and warehousing units on technical training cost of the worker
- 8) Single desk clearance mechanism – Haryana Enterprise Promotion Centre (HEPC)
- 9) 60% ground coverage permissible
- 10) Developing green cover on minimum 15% area
- 11) Self-certification on fire-fighting scheme
- 12) Permission to set up warehousing cum retail facility in agricultural zone
- 13) Government's e-Bhoomi web portal to be used for land acquisition in the state
- 14) Permission to operate 24*7
- 15) 5% area in Industrial Model Townships to be reserved for setting up logistics infrastructure
- 16) State government shall facilitate development of Truckers Parks along National Highways in Haryana
- 17) State government would ensure last-mile connectivity access to critical utilities like power and water at no cost
- 18) State shall earmark land for developing Warehouses, Logistics Parks, Warehousing cum Retail hubs and Integrated / Multi Modal Logistics Park in the master plan of Panchgram Cities
- 19) State will actively participate in human capital development for the sector.

Benefits under Uttar Pradesh Warehousing and Logistics Policy 2018

- 1) Industry status to Logistics & Warehousing Industry
- 2) 60% ground coverage permissible
- 3) Development of Green Channel for Exim Cargo
- 4) State government to create Free Trade and Warehousing Zones (FTWZs)
- 5) Encouraging PPP, innovations and technology in logistics
- 6) Promoting green logistics and solar-powered logistic parks
- 7) Incentives for Private Logistics Parks:
 - Capital interest subsidy - reimbursement to the extent of 5% per annum for 5 years on loan taken for procurement of material handling equipment, loading and unloading plant & machinery, subject to maximum INR 2 lacs per annum per unit, with an overall ceiling limit of INR 10 crores;
 - Infrastructure interest subsidy - reimbursement to the extent of 5% per annum for 5 years on loan taken for development of infrastructural amenities like roads, drainage, erection of power lines, solar panels, etc. subject to maximum INR 2 crores per annum, with an overall ceiling limit of INR 10 crores;
 - 100% reimbursement/exemption of stamp duty paid for developers on purchase of land;
 - 100% electricity duty exemption for 10 years;
 - Incentives on purchase of Transport Vehicles;
 - EPF reimbursement facility to the extent of 50% of employer's contribution to the developer of the Park providing direct employment to 100 or more unskilled workers, and additional 10% of employer's contribution on direct employment to 200 skilled and unskilled workers;
 - 50% concession on land use conversion charges to the developer;
 - Skill development incentives in the form of reimbursements;
 - Interest subsidy to the extent of 5% per annum subsidy in form of reimbursement on loan taken for setting up automated supply chain technology.
- 8) Incentives to Logistics Parks:
 - Capital Interest Subsidy - reimbursement to the extent of 5% per annum for 5 years on loan taken for procurement of material handling equipment, loading and unloading plant & machinery, subject to maximum INR 50 lacs per annum per unit;

Infrastructure Interest Subsidy - reimbursement to the extent of 5% per annum for 5 years on loan taken for development of infrastructural amenities for self-use like roads, drainage, erection of power lines, solar panels, etc. subject to maximum INR 1 crore per annum, with an overall ceiling of INR 5 crores;

100% electricity duty exemption for 10 years to new logistics units set up;

Stamp duty exemption;

EPF reimbursement facility to the extent of 50% of employer's contribution to all new logistics units providing direct employment to 100 or more unskilled workers, and additional 10% of employer's contribution on direct employment to 200 skilled and unskilled workers;

Land use conversion charges – 50% concession on land use conversion charges to defined logistics units;

Quality certification of warehouses – 50% of cost of quality certification up to maximum INR 1.5 lacs will be reimbursed;

Skill development incentives in the form of reimbursements.

- 9) Single window clearance, directly monitored by CMO
- 10) Time bound clearances
- 11) Quality power supply 24*7
- 12) State government to provide industrial security
- 13) Empowered Committee for simplifying sanction and disbursal of incentives

Benefits under Logistics Park Development and Promotion Policy of West Bengal 2018

- 1) Different kinds of fiscal and non-fiscal incentives
- 2) Capacity building measures – promoting skill development, promoting start-ups

Benefits under Chhattisgarh Logistics Park Policy 2018-23

- 1) Fixed capital investment subsidy
- 2) Interest subsidy on term loans
- 3) Electricity Duty exemption
- 4) Stamp Duty exemption
- 5) Exemption / concession in land premium on allotment of land in industrial areas / industrial parks
- 6) Quality certification subsidy of up to INR 1.5 lacs
- 7) Technical patent subsidy of up to INR 6 lacs
- 8) Technology purchase subsidy of up to INR 6 lacs
- 9) Differently abled employment subsidy
- 10) Reimbursement of EPF contribution
- 11) Rebate in vehicle registration fees

Benefits under Scheme for Financial Assistance to Logistics Park, Gujarat Industrial Policy, 2015

- 1) The new logistics park will be provided incentive @ 25% of the eligible fixed Capital Investment in building and infrastructure facilities (except land cost and transport vehicles and other ineligible expenses) maximum INR 15 crores
- 2) The Developer of the logistics park eligible for reimbursement@ 100% of stamp duty paid on purchase of land as required for approved project by SLEC

Benefits under Madhya Pradesh Warehousing & Logistics Policy 2012

- 1) Single window clearance through TRIFAC
- 2) 10% land in proposed green field industrial estates/clusters to be reserved for warehousing
- 3) Warehouse zone to be developed in the state – minimum 50 acres of land to be earmarked for it
- 4) Capital subsidy
- 5) Interest subsidy

- 6) Expansion benefits
 - 7) 50% of the cost of quality certification to be reimbursed
 - 8) 2% reduction in vehicle registration fees applicable for carrier goods fleet
-

Benefits under Madhya Pradesh Logistics and Warehousing Order Dated 22 June 2018

- 1) Incentives for establishment of Silos of 5 lakh metric tonnes
 - 2) Investment assistance
 - 3) Reimbursement of stamp duty and registration fee
 - 4) Power at concessional rate
 - 5) Infrastructure development assistance
 - 6) Higher Floor Area Ratio (FAR) and 60% ground coverage permissible
-

Benefits under Draft Jammu & Kashmir State Logistics Policy 2019-29

- 1) Set up a dedicated Logistics and Warehousing Facilitation Cell. It shall coalesce with the Investment Promotion and Facilitation Cell created under the J&K Single Window (Industrial Investment and Business Facilitation) Act, 2018.
- 2) A special taskforce shall also be constituted for ensuring an overall orderly development of logistics in the state.
- 3) Promote and incentivize the adoption of GRIHA III norms and green norms Incentives (LEEDS ratings).
- 4) Industry status to Logistics and Warehousing.
- 5) The units set up in logistics sector under this policy shall qualify for all the incentives as are provided to the Industrial units under the Jammu & Kashmir Industrial Policy 2016-26.
 - Capital investment subsidy
 - Interest subsidy
 - Freight subsidy
 - Insurance premium subsidy
 - Subsidized power tariff
 - Subsidy on pollution control devices
 - Green and environment protection incentives
 - Subsidy on quality control and testing equipment
 - Stamp Duty and Court Fee exemptions
 - Tax exemptions and incentives
- 6) Government shall provide utilities. Cost of development of land and infrastructure/services within the estate shall be reimbursed on a one time basis to the extent of 25% of expenditure subject to a maximum of INR 50,000/- kanal.

ANNEXURE 3

– SPECIFICATIONS FOR GRADE A AND B WAREHOUSES

General Warehouse building specifications	Grade 'A' Warehouse Structure	Grade 'B' Warehouse Structure
Plot Area Layout	With 50% to 60% max ground coverage with all around setbacks as per norms	70 - 80% ground coverage with limited set backs
Building Height at Eaves (Clear) in Ft	Varies from 9 m to 13.5 m	6m to 9m
Insulation	Wall & Roof -Super Polynum bubble wrap – R Value of 3.7 m2.K/W min/ Polynum sheets or glass wool creating temp. diff of 5 to 7 degrees	No insulation
Translucent Lighting Panels in Roof	4 ~ 5% of area-Polycarbonate sheet with underdeck mesh, Water proofed design	< 4-5%
Rain water /Storm Water Management	Mandatory	May or may not be provided
Fire Fighting	Ceiling Sprinkler system with IS Std/FM Global Stds	Not provided
Fire Alarm and detection system with PAS	IS Std/FM Global Stds	Not provided
Flooring Type	FM 2 laser guided floor with high point load	VDF / trimix
Floor Loading Capacity	6 - 10 Tons / sqm	4- 8 Tons / sqm
Structure	PEB structure	Steel structure or PEB structure
Roof Type	Seamless & screwless with leak proof guarantee	With screws
Roof Slope	10 - 20 degree downward slope	Undefined specs
Equipment	Mechanized loading, dock levellers, conveyors	Loading platform, fork lifts, dock levellers
Docks and Docks Type	Electric Powered with Hydraulic Actuation/ 1.2 m above Ground level, Docking platforms	Less than 1.2 m plinth height
Air Circulation	5 - 6 Air changes with Ridge type Ventilation	Turbo Ventilation or others
Infrastructure	STP, D.G, Drainage Systems, Concrete Roads and setbacks, BMS, Access Control Security, land scaping	Limited infrastructure
Amenities	Common toilets, canteen facilities, Driver Rooms, Parking, Ambulance etc	Limited infrastructure

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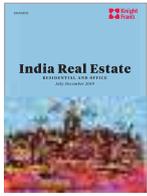
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