### WHITEPAPER

# Safe as warehouses?

Building resilient logistics portfolios in uncertain times

By Chris Urwin

February 2019





For today's investor



### Chris Urwin Director of Research, Real Assets

### Main responsibilities

Chris leads the research team, overseeing analysis to identify value and understand risk in real assets. His team play a key role in identifying opportunities, building strategies and creating research models to guide investment decision making.

#### **Experience and qualifications**

Prior to joining Aviva Investors, Chris worked for CBRE where he was a senior analyst responsible for market trends in commercial property market. Before that, he worked as a economist at the institute of Public Policy Research where he was responsible for economic input for the centre's research into city centre residential markets, commercial property in deprived area, city governance and urban competitiveness. He has also worked as an assistant economist with HM Customs and Excise, focusing on the impact of changes to the indirect tax regime.

Chris holds and MA in Economic History and a BA (Econ) in Economics from the University of Manchester, and is a member of the Society of Property Researchers.

### Contents

- **3** Introduction
- 4 The logistics sector in a state of flux
- 6 Strategy to help cut through uncertainty
- 7 Demand heavily dependent on largest urban areas
- *9* Constraints on new supply vital to ensure long-term growth
- **10** The strongest local markets
- **12** Strategic implications
- **13** Appendix: potentially disruptive technologies

### Introduction:

The logistics sector is in a state of flux. The growth of e-commerce and the rollout of a range of new technologies is driving major investment in logistics facilities. Demand for space is strong and landlords are enjoying a prolonged period of robust rental growth.

This paper seeks to outline a strategy for building robust portfolios in the sector at a time of major change and uncertainty. Our analysis suggests this is best done by investigating demand and supply fundamentals in local markets. This allows investors to identify locations with robust demand and restricted potential for new supply. By concentrating on a limited number of such markets, portfolios are exposed to the most robust occupier markets.

Focusing on access to consumers and availability of labour as a way to identify markets with the most robust occupier demand is appropriate. Since these factors are of greatest importance to our customers when arranging their distribution facilities.

Local markets vary considerably in terms of their potential for new supply, however. Considering land

availability and the attitude of local planners towards development in the sector is therefore appropriate. Considering this ensures a focus on markets with high barriers to entry, and thus a restricted potential for new supply.

## Our analysis has identified various resilient locations:

- West Midlands
- Greater London
- Greater Manchester
- M1 Corridor from Luton to Rugby
- M27 Corridor from Southampton to Portsmouth



## **1** The logistics sector in a state of flux:

### Technology is transforming supply chains and consumer expectations

In line with trends throughout the economy, the rollout of new technologies and business models is transforming the logistics sector. Rapidly-developing technologies such as digitisation<sup>1</sup>, the cloud and the Internet of Things are affecting the market. In the appendix, we discuss a number of these trends in detail. Meanwhile, rising expectations on the part of employees, business partners and particularly consumers are forcing companies to develop more reliable and responsive supply chains.

# Consumers and tech drives e-commerce evolution

The growth of online retailing is a highly visible example of the influence of technology. The Office for National Statistics estimates<sup>2</sup> that online now accounts for almost 20 per cent of all retail sales in the UK, up from less than 5 per cent, in 2008. Clearly, the maturing of a wide range of technologies throughout the supply chain from retailer to consumer (retailer websites, mobile apps, card payment technology and radiofrequency identification to track items, etc.) has facilitated this growth. Consumers now take for granted features such as customer reviews, price matching, instant customer support, fast returns, order tracking and multiple shipping options. Consumers also now demand expediency and accuracy of the fulfilment of goods. With the logistics sector charged with the delivery of online orders and returns, the implications for the sector are obviously wide-ranging.

# Growth of online retailing still in its early stages

Nonetheless, our view is that we are still at an early stage of the growth of e-commerce. Online sales, for example, continue to grow at a double-digit pace. In addition, many of the products that are still purchased in physical stores appear vulnerable to further e-commerce penetration. This is especially the case for **low-engagement products**, typically routine purchases where speed, efficiency and price are the chief concerns. These products lend themselves to commoditized management, with "auto-replenishment" set to become the norm<sup>3</sup>. Retailers and supply chains thus need to be well positioned to meet consumer demand for speed and accuracy of fulfilment.

# Online revolution propels investment in supply chains

The growth of e-commerce has brought heavy investment in supply chains, particularly from internet retailers and third-party logistics firms (3PLS). This demand has driven a very busy logistics lettings market in recent years. According to Gerald Eve<sup>4</sup>, a strong upward trend



- 1 **Digitisation** is the process by which data is converted into a digital format that can be processed by a computer thereby lowering the costs of storing, sharing, and analysing data. In a business sense, PWC suggests that digitisation "is about companies orienting themselves to the customer through e-commerce, digital marketing, social media, and the customer experience" (source: "Industry 4.0: How digitization makes the supply chain more efficient, agile and customer-focused", PWC 2016).
- 2 "Comparing bricks and mortar store sales with online retail sales", Office for National Statistics, Aug 2018.
- 3 Reference to the Future of Retail piece.4 Prime Logistics Bulletin Quarterly, Gerald Eve.

began during 2012 and demand continues to be well ahead of long-run averages. Internet giant Amazon, in particular, has been enormously acquisitive during this period. Most notable is its development of huge multi-story fulfilment centres such as its 2.2m square feet facility in Avonmouth. Across Europe, it has been forecast that 77,000 square meters of new facility space is needed for every €1 billion in new e-commerce sales<sup>5</sup>

### **Delivery remains costly**

Nonetheless, retailers and logistics firms face big challenges in meeting consumers' ever-rising expectations. Probably the biggest is the so-called "last mile problem". This refers to the final step in a product's journey from warehouse to customer. This is currently the most expensive part of the delivery journey, accounting for an estimated 53 per cent of the total cost of fulfilment. Retailers are developing a range of approaches to deal with this issue with the growth of omnichannel strategies such as "click and collect" among the more advanced. A more recent example from the US is the launch of Amazon Key whereby delivery drivers can access your house, or car, in order to make deliveries. While in Germany, Audi have created a system that delivers packages to the luggage compartment of a car. The system is called Audi Connect Easy Delivery, and it's been operated in partnership with DHL.

### **Further investment to come**

With delivery volumes set to continue to grow, considerable challenges remain throughout the supply chain. Given the potential of technology to provide solutions, further heavy investment in logistics space and technology appears likely. For instance, according to a study by PWC, one third of respondents say that their companies have begun to digitise their supply chains and almost three quarters expect to do so over the coming years.

### Delivery volumes to increase, technology may radically alter how:

Further significant growth in delivery volumes appears very likely. However, the potential for a broad range of nascent technologies to disrupt how these goods are delivered is not difficult to imagine. It is even possible that technology might allow logistics space to be used more efficiently and a reduction in the amount of floor-space dedicated to this function might be observed.

At the end of the report, on page 13, we discuss some potentially disruptive technologies.

5 European E-Commerce, E-Fulfilment and Job Creation, Prologis.

- 6 "The Future of Retail 2018: Delivery and Fulfillment", Business Insider Intelligence.
- 7 "Industry 4.0: How digitization makes the supply chain more efficient, agile and customer-focused", PWC 2016.



## Strategy to help cut through uncertainty:

These developments make for a very uncertain outlook for the major players in the logistics sector, including occupiers, landlords, developers and planners. As a landlord, a two-pronged approach appears prudent. To cut through this uncertainty, our research has found a strategy which focuses on identifying markets with sustained demand and restricted supply is appropriate.

Our **demand side** analysis seeks to identify the markets with the most robust occupier demand fundamentals. Identifying the factors determining where occupier customers choose to site their facilities is key. Of vital importance in these decisions are:

- the ability to access consumers
- the availability of labour

The relative importance of these factors will vary for different occupier customer groups in the logistics sector. To account for these differences, the analysis for the single-let logistics, multi-let logistics and manufacturing sub-sectors, should vary according to specific indicators and the weights applied to them appropriately. By subsequently combining the scores for the different sub-sectors, a view on the resilience of demand for logistics space in different local markets can be obtained. These locations have the largest catchments and benefit from good infrastructure. Consequently, the UK's biggest urban areas tend to become the focus for further investigation.

Meanwhile, logistics markets also vary significantly in terms of **supply-side** fundamentals. Some have much greater potential for new development than others. Therefore identifying markets with significant barriers to entry for new supply is crucial. The most important two factors to consider are:

- the local planning and policy backdrop
- land availability

Thus winning local markets with robust demand fundamentals and significant barriers to new supply are identified. Concentrating on a limited number of such markets will ensure that portfolios are exposed to the markets with greatest potential for long-term rental growth. By focusing, it also allows expertise and resources to be focused where they can add most value. It also facilitates the building of deep relationships with key stakeholders such as occupiers, partners, developers, planners and policymakers. In-depth knowledge of our assets and customers and the markets where the assets are located should provide better opportunities to identify and exploit mispricing and add value through asset management, thus driving investment outperformance.



## Demand heavily dependent on largest urban areas:

Our demand-side analysis focuses on the drivers of potential occupier location decisions. The occupier base is highly diverse in the logistics sector. But certain factors will feature prominently for very many, notably:

- access to consumers
- infrastructure/connectivity
- access to labour
- site availability<sup>8</sup>

The most important for long-term performance are likely to be access to consumers and the availability of labour.

### Proximity to largest catchments is of increasing importance when siting distribution facilities:

The ability to access consumers, via appropriate infrastructure, is a key factor when choosing where to site distribution facilities. It is also likely to grow in importance. Firstly, the volume of deliveries, driven by but not restricted to e-commerce, to the final consumer looks set for further major growth. In turn, this suggests that a bigger share of logistics real estate space will be used for distribution purposes. This could include ordering gifts for friends and family but also items for a new kitchen. This space will be used in increasingly innovative ways as occupiers look for cost-effective ways to satisfy consumers' rising expectations for rapid, convenient and accurate delivery.

## Largest urban areas to continue to outperform economically

Recent decades, meanwhile, have seen growing divergence in economic performance within the UK. Larger urban areas, the metropoles, are strongly out-performing smaller centres<sup>8</sup>. Investment by companies in their businesses and the government in infrastructure is most prominent here. This growing spatial inequality is expected to remain a feature and spending power to become increasingly concentrated in larger urban areas. In order to gauge the potential of different locations to provide access to consumers, analysing drive times, or the proportion of the population by number or by spending power that falls within the catchment of different local markets within a drive time of, for example, one or four hours. By both population and spending power, the same regions provide the greatest access to consumers.

On a four-hour drive time, markets in the Midlands score best in accessing the greatest share of consumers by number and spending power.

### Figure 1: Access to consumers in Great Britain by 4 hour driving time

Four hours truck drive time, catchment population index scores



Source: CBRE January 2018.

Four hours truck drive time, catchment demand index scores

- 8 Additional factors, such as the availability of government support, the existence of a sector cluster, the regulatory/business climate and the availability of power will be of specific importance for some occupiers and industries.
- 9 https://insights.avivainvestors. com/en-uk/professional/insights/ real-estate/real-estate-the-rise-of-themetropoles.html

### Figure 2: Access to consumers in Great Britain by 1 hour driving time

One hour truck drive time, catchment population index scores

One hour truck drive time, catchment demand index scores



Source: CBRE January 2018.

On a one-hour drive time, London, the Midlands and Manchester score best. The results are shown graphically in the maps above.

# Access to labour is also important

Access to labour is another key factor in our customers' choice of where to position their facilities. Over the longer term it is entirely possible that new technologies such as robotics may make the sector less labour-intensive. But currently, and for the foreseeable future, labour availability remains vital. This is especially the case given current very tight labour market conditions, with unemployment at its lowest level since the mid-1970s. And the potential for Brexit to disrupt the recruitment of foreign workers also points to the importance of this factor.

Looking at a range of measures of demand and supply for labour. Labour demand measures focus on the number of workers in the logistics and manufacturing sectors in local markets. In analysing labour supply, analysing at the local unemployment rate as well as the availability of unskilled labour and labour with different skill levels is key. Increasing technological sophistication in the sector means that the labour requirements of industrial and logistics operators is likely to change in the period ahead. Therefore, it is important to identify locations with deep and diverse pools of labour.

# 4 Constraints on new supply vital to ensure long-term growth:

In addition to identifying markets with robust demand-side fundamentals, if the prospect for long-term rental growth is to be maximised it is vital to identify local markets where there are important barriers to new supply. While the barriers to entry are generally low in the logistics sector, they do vary significantly across the country. In order to identify supply-constrained markets, it is important to consider two factors: the local planning and policy backdrop, and land availability.

**Local planning and policymaker attitudes** can vary greatly by local authority. Some see the sector as a desirable source of employment, while others do not view it as a priority for development. Rating local authorities to reflect these attitudes, ranging from those with very loose planning restrictions to those where planning permission is very difficult to secure is appropriate.

Land availability for logistics and industrial development also varies greatly across the country. This reflects competition from alternative uses in particular. Therefore it is important to compare markets; ranging from those featuring widespread availability of land to those where the land supply is tightly controlled.



### The strongest local markets:

The results point to a number of particularly strong centres that a strategic investor may wish to focus on:



### West Midlands:

The Midlands region scores highly in terms of demand-side fundamentals, with Birmingham particularly strong. Markets here score the highest in terms of their ability to access consumers, reflecting the region's central geographic location and a highly-developed motorway network. Around 90 per cent of the population of Great Britain can be reached within four hour's drive. Only markets in the South-East and the North-West provide access to more consumers and spending power in terms of a one-hour's drive time.

On the supply side, the region is characterised by local authorities that are generally prodevelopment. Birmingham City Council, Coventry City Council and the Black Country Authorities all recognise the importance of employment land in local development plans. In practice, however, constraints on land availability and competing development priorities mean that logistics development land is very limited. Across the region, housing is a key development priority while in Birmingham, there is a heavy policy focus on the regeneration of the city centre. Most undeveloped land falls within the various green belts so that opportunities for logistics development are largely restricted to existing brownfield sites. These often come with significant remediation costs.

Within the West Midlands region, conditions look especially favourable in Birmingham, Solihull, Tamworth and Coventry with most other local markets weaker.



### **Greater London:**

Greater London presents a somewhat mixed picture in terms of demand-side indicators. Positively, it is particularly attractive in terms of access to consumers. While the South-East cannot compete with the West Midlands in providing access to consumers on a country-wide basis, the scale and economic strength of the region mean that, within shorter drive times, it has the best infrastructure provision and provides access to by far the greatest concentration of spending power. This ensures strong occupier demand.

But this robust demand tends to face a constrained supply side. High land values and demand for residential conversion mean logistics sites are scarce and existing logistics sites are at risk of change of use. The redevelopment of Nine Elms into an increasingly commercial and residential district is a high-profile example.

A few areas in the region do contain significant amounts of potential development land, however. As a result, we are more cautious on their long-term rental prospects. Inner Essex, in and around Romford, and the area north of Oxted and the South Eastern section of the M25 are prominent in this regard.

### **Greater Manchester:**

Due to the scale of its local catchment, Greater Manchester scores highly on the demand-side analysis. It offers major attractions for both single and multi-let logistics uses.

Manchester City Council is generally supportive of economic development where the case is strong. Yet its dense urban character means that opportunities for development are highly limited within its local authority area. Consequently, neighbouring Greater Manchester authorities are the focus of development opportunities, though these too vary considerably in terms of land availability. Potential supply is particularly constrained to the west of Manchester along the M62 to Warrington. By contrast, in the area to the south of Wigan and Bolton, potential development land is much more plentiful.

These nuances of potential supply in Greater Manchester make an interesting contrast to the situation across the Pennines. Many centres in Yorkshire share Manchester's demand-side advantages, with the Bradford-Leeds-Wakefield axis scoring particularly well. Yorkshire offers very few constraints on new supply, however, and this is a drag on long-term rental growth potential.

### M1 Corridor from Luton to Rugby:

In common with the West Midlands, geographic and connectivity advantages mean that markets in this corridor offer particularly good access to consumers at a country-wide level. As a result, they rank especially highly as potential locations for single-let logistics operations. Multi-let logistics demand is also deemed to be robust. However, in contrast to Birmingham, manufacturing demand is likely to be relatively muted.

Logistics uses are a significant source of employment in these markets, and councils are generally not opposed to development. Nonetheless, at a local level, markets in this area exhibit significant supply constraints due to limited land availability or competition from alternative uses. In Rugby, for instance, over 50 per cent of the borough is constrained by the green belt. In Milton Keynes, meanwhile, the council is predominantly focused on retail, commercial and leisure uses, though it has identified sites to address a perceived shortfall of land available for warehousing.

### M27 Corridor from Southampton to Portsmouth:

The attractiveness of this market derives heavily from its supply-side constraints. Geography, the nature of surrounding areas and restrictive planning policies all serve to limit logistics development. Geographically, development is clearly constrained by the region's coastal location. In addition, the presence of the New Forest National Park to the west and the South Downs National Park to the east essentially rule out new developments in these neighbouring areas. Finally, to the north is the Test Valley Borough Council which has been less supportive of logistics development in its area. These constraints mean the potential for new development is very limited, unlike Yorkshire.

On the demand side, geography is a limiting factor but not as much as might be expected. Clearly, this region does not provide best access to consumers on a country-wide basis but it does provide good access to southern England. And it is a significant region in its own right. The urban area, of Southampton and Portsmouth, is the sixth-largest metro area by population in the country. Therefore, the region scores well for catchment and labour supply. It ranks best for potential demand for single-let logistics uses.

Source: Demographia, World Urban Areas, 14th Annual Edition: 201804. http://www.demographia.com/db-worldua.pdf







## 6 Strategic Implications

# Significant change is expected in the sector, focusing on access to consumers is crucial.

The logistics sector is in a state of flux. Digitisation and the growth of e-commerce are driving ongoing change in supply chains. A range of nascent technologies suggest the potential for further upheaval in the years ahead. With this uncertainty, investors must focus on the the most future proofed markets. These are locations with greatest access to labour and particularly consumers.

# Supply risks are underestimated by real estate investors.

It is vital to identify local markets where there are notable barriers to new supply. While the barriers to entry are generally low in the logistics sector, they do vary significantly across the country. In order to identify supply-constrained markets, we analysed the local planning and policy backdrop and land availability. Markets with larger barriers to new supply should be most resilient to upheaval in the sector and offer the greatest potential for long-term rental investment performance.

### Real estate is a local asset class in which access to information gives investors a competitive advantage.

Focusing on concentrated portfolios in a limited number of strategic local markets allows our expertise and resources to be focused where they can add most value. It also facilitates the building of deep relationships with key stakeholders such as occupiers, partners, developers, planners and policymakers. In-depth knowledge of our assets and customers and the markets where the assets are located should provide better opportunities to identify and exploit mispricing and add value through asset management, thus driving investment outperformance.



### Appendix - Potentially disruptive technologies.

A vast array of new technologies hold the potential to disrupt the logistics sector. In its survey of industry trends, for example, DHL<sup>10</sup> considers 14 inter-dependent technologies, including the Internet of Things (IoT), 3D printing, augmented reality, bionic enhancement, cloud logistics, robotics and self-driving vehicles. This section looks at these futuristic technologies and how they might impact logistics operations.

### **Internet of Things:**

- What is it? The networked connection of
  physical objects whose primary purpose is not
  computing thereby allowing the capture of data
  that was previously inaccessible. Potentially,
  almost any object can be networked. DHL<sup>11</sup> gives
  examples as diverse as a shoe that records the
  number of steps taken and the force with which
  the foot hits the ground or a forklift that
  alerts management to safety risks or
  maintenance issues.
- **Current state of play?** IoT is at a relatively early stage in its development though the potential for rapid growth appears huge. DHL<sup>12</sup> says estimates suggest the number of physical objects that might benefit from an Internet Protocol address could be in the trillions and that computers might soon form just a small percentage of all internet connections.
- Potential logistics applications? The potential for IoT to revolutionise the quantity and type of information available throughout the logistics network appears obvious.
   Examples that suggest themselves include:
  - In warehousing, real-time inventory management, smart energy management and a reduction in accidents due to connected vehicles and workforce;
  - In *freight transport*, location and condition monitoring, fleet management and predictive fleet maintenance;
  - In *last-mile delivery*, IoT may help solve problems such as automatic replenishment, flexible delivery addresses and anticipatory shipping. Amazon have started trialling the later. Paired with predictive analytics tools and a massive trove of Amazon customer data, the anticipatory shipping process will ensure fulfilment time is reduced.

- What is it? A manufacturing process more akin to conventional inkjet printing than traditional manufacturing methods of moulding, cutting or bending materials. While an inkjet printer applies ink to paper, a 3D printer injects materials in successive layers to build a three-dimensional solid object.
- **Current state of play?** Many 3D printing technologies are already well-developed and in use in a broad range of industries. Examples include the printing of customised medicines and of automotive spare parts.
- Potential logistics applications? While 3D printing appears most likely to revolutionise manufacturing operations, knock-on effects to logistics, and indeed the blurring of lines between manufacturing and warehousing, are very possible. For example, 3D printing may:
  - Drastically reduce the need for inventories of spare parts by allowing these to be printed on demand;
  - Encourage the development of nearshoring manufacturing and distribution strategies in place of the off-shoring strategies of recent decades;
  - Allow hyper-customisation of products.

### **Robotics:**

- What is it? A robot is a machine capable of carrying out a complex series of tasks autonomously or semi-autonomously.
- **Current state of play?** Robotics technology is actually relatively old. However, due to technological limitations, it has mostly been confined to simple and repetitive tasks in manufacturing. Until recently, robots have been largely stationary, blind and unintelligent, but all of these things are changing as technology matures.
- **Potential logistics applications?** These advances open up the possibility that robots will develop the flexibility and intelligence to tackle the complex and collaborative tasks needed in the logistics sector.
  - Warehousing in particular appears ripe for increased deployment of robots for tasks such as picking, packing, sorting, loading and cleaning. Ocado have over 1,000 robots packing 65,000 grocery orders every week in their warehouse in Tilbury.

10 "Logistics Trend Radar" Version 2018/19, DHL Trend Research.
11"Internet of Things in Logistics", DHL and Cisco, 2015.
12 Ibid

### **3D Printing:**

- Delivery operations too might benefit from the introduction of robots, perhaps as assistance robots to deal with heavy items or to pre-sort items inside delivery vehicles;
- Or they may even operate autonomously in last-mile delivery as self-navigating delivery robots.

### **Physical Internet:**

- What is it? A concept that imagines utilising technology of the digital internet to the physical world.
- **Current state of play?** Initiated by Benoit Montreuil of Georgia Tech University over the last decade, the Physical internet is a field of research and practice that aims to optimise logistical processes to produce more efficient, successful and sustainable supply chains.
- Potential logistics applications? A global logistics system that transfers goods in standard-sized, modular cases as economically and effortlessly as the internet moves digital information across devices globally.

- In *freight transport*, 20 per cent of all US trucks are moving without transporting anything: dead-heading. Reducing the amount of dead-heading is one of the keys to reducing inefficiency in trucking.
- In *freight transport*, the optimal way to transport goods is to standardise containers. This would remove disjointed shipments and exclusive networks from the supply chain. In theory, a single fulfilment could start moving by road and switch to another if it is more efficient.
- To increase efficiency, the physical internet may allow the sharing of information about available capacity in different logistics networks in real time. Persuading different companies to share information and cooperate on transport would save money and the container would have a higher utilisation, increasing efficiency.

#### Important Information

Except where stated as otherwise, the source of all information is Aviva Investors Global Services Limited (AIGSL). As at 2nd January 2019. Unless stated otherwise any views and opinions are those of Aviva Investors. They should not be viewed as indicating any guarantee of return from an investment managed by Aviva Investors nor as advice of any nature. Information contained herein has been obtained from sources believed to be reliable, but has not been independently verified by Aviva Investors and is not guaranteed to be accurate. Past performance is not a guide to the future. The value of an investment and any income from it may go down as well as up and the investor may not get back the original amount invested. Nothing in this material, including any references to specific securities, assets classes and financial markets is intended to or should be construed as advice or recommendations of any nature. This material is not a recommendation to sell or purchase any investment.

In the UK & Europe this material has been prepared and issued by AIGSL, registered in England No.1151805. Registered Office: St. Helen's, 1 Undershaft, London, EC3P 3DQ. Authorised and regulated in the UK by the Financial Conduct Authority. In France, Aviva Investors France is a portfolio management company approved by the French Authority "Autorité des Marchés Financiers", under n° GP 97-114, a limited liability company with Board of Directors and Supervisory Board, having a share capital of 17 793 700 euros, whose registered office is located at 14 rue Roquépine, 75008 Paris and registered in the Paris Company Register under n° 335 133 229. In Switzerland, this document is issued by Aviva Investors Schweiz GmbH, authorised by FINMA as a distributor of collective investment schemes.

In Singapore, this material is being circulated by way of an arrangement with Aviva Investors Asia Pte. Limited (AIAPL) for distribution to institutional investors only. Please note that AIAPL does not provide any independent research or analysis in the substance or preparation of this material. Recipients of this material are to contact AIAPL in respect of any matters arising from, or in connection with, this material. AIAPL, a company incorporated under the laws of Singapore with registration number 200813519W, holds a valid Capital Markets Services Licence to carry out fund management activities issued under the Securities and Futures Act (Singapore Statute Cap. 289) and Asian Exempt Financial Adviser for the purposes of the Financial Advisers Act (Singapore Statute Cap.110). Registered Office: 1Raffles Quay, #27-13 South Tower, Singapore 048583. In Australia, this material is being circulated by way of an arrangement with Aviva Investors Pacific Pty Ltd (AIPPL) for distribution to wholesale investors only. Please note that AIPPL does not provide any independent research or analysis in the substance or preparation of this material. Recipients of this material are to contact AIPPL in respect of any matters arising from, or in connection with, this material. AIPPL, a company incorporated under the laws of Australia with Australian Business No. 87 153 200 278 and Australian Company No. 153 200 278, holds an Australian Financial Services License (AFSL 411458) issued by the Australian Securities and Investments Commission. Business Address: Level 30, Collins Place, 35 Collins Street, Melbourne, Vic 3000, Australia.

The name "Aviva Investors" as used in this material refers to the global organization of affiliated asset management businesses operating under the Aviva Investors name. Each Aviva investors' affiliate is a subsidiary of Aviva plc, a publicly-traded multi-national financial services company headquartered in the United Kingdom. Aviva Investors Canada, Inc. ("AIC") is located in Toronto and is registered with the Ontario Securities Commission ("OSC") as a Portfolio Manager, an Exempt Market Dealer, and a Commodity Trading Manager. Aviva Investors Americas LLC is a federally registered investment advisor with the U.S. Securities and Exchange Commission. Aviva Investors Americas is also a commodity trading advisor ("CTA") and commodity pool operator ("CPO") registered with the Commodity Futures Trading Commission ("NFA"). AIA's Form ADV Part 2A, which provides background information about the firm and its business practices, is available upon written request to: Compliance Department, 225 West Wacker Drive, Suite 2250, Chicago, IL 60606

#### 5823 - RA19/0171/01022020

### **Contact us at**

Aviva Investors St Helen's, 1 Undershaft London EC3P 3DQ +44 (0)20 7809 6000

www.avivainvestors.com

