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Warehouse development and town planning policies in the UK

Abstract

Purpose: This paper offers a review of national and local planning policies towards warehouse development within the UK

Methodology/Approach: The first sections of the paper provide a description of the simple method of enquiry and sources of information used in the paper, outlines of the main factors driving the demand for warehousing space in the UK, and of the nature, scale and operation of modern warehouses, and a short review into the limited literature published to date, on town planning and on how it has influenced warehouse development. This is followed by an examination of some of the planning issues associated with warehouse development, two mini case studies of how these issues are perceived and played out, a discussion of some of the issues raised in this examination and the mini-case studies.

Findings: Town planning policies were traditionally seen as a restraint on the development of warehousing but while current national and local planning policies make little explicit reference to warehousing, they have often been cited in support of new warehouse development because such policies emphasise the importance of supporting economic growth and fostering the conditions in which businesses can invest and expand.

Limitations: The paper has a number of limitations, not least that its source material is drawn from the Internet, and in that no primary data was collected from warehouse developers, warehouse operators, local planning officers or local authority councillors, and that the geographical coverage was limited.

Originality: The paper offers an accessible review of the current town planning issues associated with warehouse development in the UK

Keywords: Warehouses, Warehousing, Town Planning, e-commerce, UK

Introduction

Warehousing, involving receiving, storing, order picking, and preparation for delivery, has long been recognised as a vital component within supply chains (Boysen et al. 2019), but in recent years warehouses have become an increasingly important element in property and real estate markets in Europe and North America. Turner and Townsend (2020, webpage), for example, argued *'the warehouse market in the UK has been transformed over the last 20 years. A tide of capital has flowed into logistics, largely due to the transformative impact of eCommerce on the sector.'* Knight Frank (2021), estimated that some 3.4 million square metres of warehouse space was allocated for construction in 2021, up from 2.13 million square metres in 2020, and from 1.95 million square metres in 2019. The first online retail sales have been traced back to the mid 1990's (McFerrin 2020), and in the 25 years or so since then, major changes have occurred in the patterns of retail consumption, not least in the wake of the COVID-19 pandemic. Statista (2021a, webpage) reported that *'the UK has the most advanced e-commerce market in Europe'*, and that *'the country's e-commerce revenue in 2019 amounted to 693 billion GBP'*, while in June 2021 internet sales accounted for some 26% of total retail sales (Office for National Statistics 2021, webpage).

The UK Warehousing Association (2021) claimed *'the growth of the UK warehousing sector over the last six years should be seen as a nationwide success story as the sector has been pivotal in supporting the growth of online retailers, manufacturers and logistics companies, and has supported the delivery of thousands of new jobs'*, and that *'it is essential that the Government recognises this and shapes planning policy accordingly.'* While some of the major players in the warehousing industry in the UK, and the leading trade association in the logistics sector, have emphasised the need for the town planning system to address warehousing, the relationship between planning policies and warehouse development has attracted limited attention in the academic literature.

While the development of modern warehouses is complex both financially and technically, this exploratory paper has a more specific focus, in that its aims are twofold, namely to review the national planning policies towards warehouse development, in England, and to use two simple mini-case studies to explore how warehouse development proposals are perceived, and played out, in the town and country planning arena. As such, the paper looks to explore and illustrate the town planning policies and issues associated with new warehouse development, rather than to offer a definitive analysis of these policies and issues. The authors do not follow a traditional academic approach per se, in that the paper is not based on empirically collected primary data, there is no conceptual focus, and it does not have a conventional methodological underpinning. The first sections of the paper are taken up with a description of the simple method of enquiry and sources of information used in the paper, outlines of the main factors driving the demand for warehousing space in the UK, and of the nature, scale and operation of modern warehouses, and a short review into the limited literature published to date, on town planning and on how it has influenced warehouse development. This is followed by an examination of some of the planning issues associated with warehouse development, two mini case studies of how

these issues are perceived and played out, a discussion of some of the issues raised in this examination and the mini-case studies, and a conclusion which summarises the findings of the paper and suggests some future research agendas. While the principal focus of the paper is on how planning policies affect warehouse development in England, the early sections of the paper set the wider scene of warehousing scene in the UK.

Method of Enquiry and Sources of Information.

The paper does not adopt a conventional methodological approach and the information on which it is based draws on a variety of Internet based searches using Google and Google Scholar, conducted in August and September 2021. The sections of the paper on the growth and nature of modern warehouses draws heavily on reports published by a number of logistics companies and warehouse operators and developers. The literature review was generated using the key words warehousing and town planning policies on Google Scholar and was updated with reference to the current planning framework for England published by the Ministry of Housing, Communities and Local Government. The section of the paper on planning policies and issues on warehousing draws on national and local government documents on planning policies towards warehouse development. At the local level the illustrative examples cited were guided by the availability of information, though the author believes they generally reflect local authority approaches to warehouse development. Finally, the paper employs two simple mini-case studies to provide an exploratory illustration of how warehouse development proposals are perceived, and played out, in the town and country planning arena. Here a case study approach is seen to be appropriate in that the two mini-cases offer some insights into competing perspectives on warehouse development within a specific development and planning context.

Drivers of the Growth in Warehouse Demand in the UK

A number of factors, including the dramatic rise in e-commerce, the COVID-19 pandemic, changes in the geography of retail provision associated with convenience shopping, and Brexit, have driven the rise in the demand for warehousing space within the UK. Internet sales, for example, have increased tenfold since 2006, when they accounted for just 2.5% of total retail sales (Office of National Statistics 2021). This growth reflects the emergence, rapid growth, and continuing diversification, of e-commerce companies such as Amazon, Otto and E-Bay, and the widespread adoption of personal information and communication technologies, such as smart 'phones and tablets, that have facilitated and simplified the purchase of, and the payment for, a seemingly ever wide range of consumer goods. The e-commerce companies' lean business models enable them to offer very competitive prices, which have not only undercut traditional retailers, but also effectively created cost conscious new markets. Further, the growth and liberalisation of parcel and courier service allowed e-commerce retailers to access quick and efficient delivery to their customers, and fuelled consumer expectations about the speed of deliveries, with next day, and increasingly same day, delivery becoming the norm. At the same time, many traditional retailers have expanded their online offer, and their online sales have been growing steadily.

These developments were well underway prior to the onset of the COVID-19 pandemic early in 2020, but the temporary closure of many non-essential retail outlets, the imposition of social distancing measures, and many peoples' fears of contracting the virus through mixing with others, certainly fuelled an acceleration in the development of e-commerce. For two periods in 2020 and 2020/2021, clothing and electrical goods, for example, could only be purchased online. Nevertheless, Prologis (2021a, p.1), the real estate investment trust, argued that it was important to *'separate the transitory nature of human and company behaviour during the pandemic from the real lasting forces that will continue to drive the supply chains of the future.'* The UK's exit from the European Union has fed the demand for warehouse space by encouraging companies to shorten their supply chains and to hold goods closer to their final destinations. As companies can no longer rely on frictionless trade with European Union suppliers, so new warehouse space is increasingly being seen to be required to guard against shortfalls in supply.

Many of these factors have driven the demand for large warehouses, but consumer expectations about quick deliveries from e-commerce companies, changes in some patterns of retail provision, and changing convenience shopping behaviour, have also increased the demand for smaller warehouse units. In the retail arena, for example, the major food retailers have been opening small stores in both town and city centres and in suburban housing areas. These stores have enabled the leading retailers to achieve higher profit margins, through their premium pricing policies in such stores, while offering everyday convenience to consumers. These developments, and the continuing growth of e-commerce have stimulated the demand for so called last mile warehouses, which facilitate the movement of goods in the supply chain to the consumer, and in being closer to the consumer, they reduce both supply chain costs and delivery times. This has increased the demand from traditional retailers, as well as e-commerce companies and suppliers, for smaller warehouses in towns and cities, even though land prices and rentals are generally high in such locations. Indeed, recent research by Turner and Townsend (2021) suggested that such last mile warehouses are the second most popular type of

warehouse space.

While the continuing rise in demand for warehousing space seems likely to be a feature of the real estate market for some time to come, there are constraints on the availability, and supply, of suitable land. Prologis (2021b), for example, claimed that there were barriers to supply in most densely populated areas, notably that new sources of supply were located ever further from the major urban consumption centres, that rising land and construction costs posed economic challenges to warehouse development, and that it was becoming more difficult to navigate statutory regulatory environments in many countries. These claims were made principally in the context of the US, but Urie (2021) argued that a shortage of speculative new build schemes, and the shortage of suitably located land outside the green belt, are becoming increasingly important constraints on warehouse development within the UK.

Warehousing

Traditionally warehousing and storage occurred in a wide range of, often unsuitable, buildings, and while modern warehouses come in all shapes and sizes, they are usually designed and built to meet specific needs. Typically, general warehouses might be designed to keep products dry and secure, distribution centres designed to facilitate delivery to retail outlets, and climate-controlled warehouses designed for food and beverages, while automated units, harnessing new information and communication technologies, are geared to support rapid delivery. Some examples help to provide an illustration of the variety, scale and operation of modern warehouses.

Amazon, ranked by Statista (2021b) as the UK's fifth largest retailer has a variety of warehousing operations. Cross docks, also known as redistribution centres, receive goods and products from importers and manufacturers. These goods and products are either transferred directly from their containers, into trucks for delivery to one of the company's national network of distribution centres, described as fulfilment centres, or stored in the cross dock, usually for less than 24 hours, prior to delivery. Amazon's cross docks facility at Coventry, for example, processes a huge volume of goods, which are transported to fulfilment centres throughout the UK, and in mainland Europe.

Amazon operates 17 large fulfilment centres, spread across the UK, including units in Rugeley, Daventry, Doncaster, Warrington, Peterborough, Tilbury, Dunfermline, Gourock and Swansea, as well as a number of smaller sortation centres and delivery centres. The fulfilment centre at Rugeley in Staffordshire, opened in 2011, for example, covers 65,000 square metres, employs some 900 people and ships out 600, 000 parcels every day. The fulfilment centre at Dunfermline, the largest in the UK, covers some 93,000 square metres and employs over 1,000 people. Sortation centres sort, and then consolidate, customers' orders onto lorries by final destination location, while in delivery centres, goods are packed for the last mile delivery to customers.

Amazon report that most of their fulfilment centres have five major functions namely, unpacking and checking incoming goods; recording their location in the system; storage; putting shipments together; and despatching these shipments. The company's operations are all linked in that once a customer places an order with Amazon, information about the product is passed to the appropriate fulfilment centre, and employees receive a message about it, remove the item from the shelves, pack it, and despatch it. Amazon's tracking system means that the customer is kept up to date on the steps in this processing chain, and on their delivery schedule. The company offers live virtual tours to illustrate operations and the work environment in its fulfilment centres, and prior to COVID-19, organised visits could be made members of the public to 7 centres including Doncaster, Peterborough and Dunfermline.

DPD operate from over 100 depots throughout the UK and Ireland and offer a fully integrated warehouse and distribution system. In 2018 the company opened a 6, 500 square metre distribution centre, near Junction 7 of the M. 8, 11 miles east of Glasgow. This was designed to process up to 45,000 parcels per day, and the accent was on optimising delivery routes in and around Glasgow and West Central Scotland. The company's Superhub, in Birmingham, opened in 2016, and billed as Europe's biggest parcel sortation centre, can process up to 72,00 parcels per hour. UK Mail, part of DHL, opened its Super Hub at Ryton-on-Dunsmore, Coventry in 2015. The site, build in conjunction with the relocation of the company's head office from Birmingham, offers 17,000 square metres of warehousing space, 150 shutter doors, and parking space for 130 trailers and tractor units, and can process up to 24,000 parcels per hour.

On the development side, St Modwen, the UK property investment and development company, list a number of speculative warehouse schemes across the UK. At the time of writing, St. Modwen Park in Burton-on-Trent for example, was a major warehouse development, with planning consent for up to 100,000 square metres. The site is within 3 miles of the town and has direct access to the A.38, connecting it the M.1, M6, and M. 42. The St. Modwen Park in Chippenham is located on a 32-hectare development site at Junction 17 of the M.4 between Swindon and Bristol, and offers warehousing and external and office space. Here, a new 8, 500 square metre warehouse is to be built by Glencar Construction for Furniture Box, the specialist online business company, and completion is scheduled for mid-2022.

In some ways, slightly different pictures emerge in looking to describe the geography of warehousing within the UK. In addressing the number of warehouses by city in 2019, for example, Statista (2021c), reported that Glasgow had the largest warehouse space in the UK, followed by Belfast, Cardiff and Liverpool. That said, Statista (2021c) suggested that London was not listed in these rankings because of the multiple municipal divisions within Greater London, though

large warehouses are relatively rare within the capital city even when information from these municipalities is aggregated. Turley (2021) suggested that the West Midlands, East Midlands (often collectively referred to as the Golden Triangle) and the North West had the most of the 40,000 warehouse properties, and most of the 800 warehouses over 25,000 square metres, in England in 2018. The dominance of these areas was attributed to their central locations, and access to good motorway connectivity.

The 'Golden Triangle', centred on an area between the M1, M6 and M42 motorways and stretching to Birmingham in the west and to Nottingham in the north, was traditionally seen to have the highest density of warehouses, but more recently growing numbers of warehouses have been developed in and around Bristol and Leeds, and around the M40 and M62 corridors. In terms of development criteria, the larger distribution centres typically require locations which *'are in the centre or along the spine of the country'*, *'have direct access to the transport network'*, *'are in close proximity to labour, within a certain travel time'*, and *'have a large power supply'* (Turley 2020, p. 39). The development criteria for last mile warehouses typically include major and growing population centres, locations where online spend is increasing, and good access to labour.

Given the perceived shortage of supply of warehouse space, developers and operators are looking for creative solutions to generate greater capacity, and more efficient operating systems. On the one hand there is growing interest, for example, in multi-storey warehousing, particularly for last mile warehouse in urban areas. Although there are many examples of very high single storey warehouses with mezzanine floors in the UK, Carter Jonas (2021) argued the case for multi-storey warehousing, already well established in Asian cities such as Tokyo, Hong Kong and Singapore, in London. Here, the argument is that the consumer demand generated by the increasing popularity of city centre living, increases in prime rental values, the constrained nature of London, and the need to do more with less space, all point to building higher, or underground, warehouse space. On the other hand, new technologies are increasingly being employed to drive efficiencies within warehousing operations. Here, automation, which typically involves mechanised material handling and pallet stacking and the use of collaborative robots, is already very much to the fore, and Amazon are looking to develop packaging that is optimised for robotics. This in turn, means that developers will increasingly have to build end use considerations into the warehouse design and development process.

General Planning and Literature Review

Before outlining some of the literature on the specific relationships between national and local planning policies and warehouse development in the UK, some wider contextual material on the nature and objectives of planning policies seems appropriate. Here the main focus will be on England, not least in that it provides the context for the current paper, but where appropriate work in other countries is cited. Although the development of cities according to formal plans can be traced back over 2,000 years to societies in South West Asia, modern day town planning in the UK was first formally established in the 1947 Town and Country Planning Act. In essence this legislation sought to regulate the built environment, and where owners wished to develop their land for a new use they had to apply to the local authority for planning permission. While the details of the planning system in England have changed over time, the desire to secure a balance between the competing demands on land, remains an underlying though increasingly contested goal. In theory, the planning system plays a critical role in identifying what development is needed and where, what areas need to be protected or enhanced, in assessing whether proposed development is suitable, and that such development benefits communities, the economy and the environment.

Many researchers have examined specific aspects of the relationship between planning and development, studies designed to explore the impact of the planning system as a whole are much less common, but two, merit attention here. In a major work, spanning two volumes and including over 1,100 pages, Hall et al. (1973) looked to assess the impact of the 1947 legislation and at that time, authors' general findings were that the urban areas have been contained, though the effect of containment have varied within England, losses of rural land to urban land have been restricted in quantity and compact in form. The main impacts of the planning system were seen to be physical containment, separation of residence from work, and rising land and property values. Healey et al. (1988) offered an analysis of planning in practice, of the political processes through which planning policies come to be defined and implemented, and related these policies to the interests in land and environmental management generated by economic growth. While both of these studies are now dated, they are generally seen as seminal works in that they provide valuable insights into the overall working and impact of the planning system.

The principles behind the original 1947 legislation have remained substantially the same over time and, and many of the tensions and competing interests outlined by both Hall et al. (1973) and Healey et al. (1988) can still be identified, but the details of the planning system have changed over time. The most recent National Planning Policy Framework (Ministry of Housing, Communities and Local Government 2021), introduced in 2012, and updated in 2021, is to *'to contribute to the achievement of sustainable development'*, and this means that *'that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways'*, namely an

economic objective, a social objective and an environmental objective. The economic objective looks to build a strong and competitive economy, by ensuring that sufficient land is available in the right places at the right time to support growth, innovation and increased productivity. The social objective is to support strong communities and health and social well-being, while the environmental objective is to protect and enhance the natural and built environment by making effective use of land, improving biodiversity, using natural resources prudently, and minimising waste and pollution.

Turning more specifically, to the relationship between planning and warehousing, in a recent review of *'freight efficient land uses'*, Holguin-Veras et al. (2021) suggested that *'the literature on freight-related land use policy and planning is very sparse.'* That said, this short review of the literature provides an insight into some of the work published on the relationship between town planning and warehouse development in the UK and elsewhere, in order to reference, and provide some context for, the issues raised in the main body of the paper. Over 50 years ago, Bourne et al. (1967) reported on the planning problems arising from the siting of warehouse in Newcastle upon Tyne. In reviewing *'The Development of Warehousing in England'*, McKinnon (1983, p. 389) suggested that the previous decade had witnessed a growing recognition by the business community, central government and local planners of the economic importance of warehousing within England. He reviewed these changes in business and planning attitudes to warehousing, accounted for the growth of warehouse floorspace in England at that time, and examined the spatial distribution of this growth.

More specifically, McKinnon (1987) outlined some of the areas in which planning authorities had often tried to limit the development of warehousing. He argued that in some areas, South Hertfordshire and Surrey for example, such restrictive policies were a response to heavy pressure for warehouse development, while elsewhere, for example, in North Yorkshire, environmental considerations were paramount. More generally, he argued that *'planners have traditionally taken a fairly negative view of warehousing, believing that it creates too little employment and too much lorry traffic, relative to the amount of land it occupies'* (McKinnon 1987, p. 9). McKinnon (1987) also suggested that restrictive planning policies had generally been relaxed, and that in some parts of England, positive efforts had been made to attract distribution facilities. More recently, McKinnon (2009, p. S295) identified that *'an increasing proportion of new warehouse development is clustering in dedicated distribution parks'*, and while he suggested that land use planning can exert a considerable influence in shaping the patterns of warehouse developments, he offered no illustration of how this was working in practice. However, in the decade or so since then, the scale and nature of warehousing has changed considerably and a new national planning policy framework was introduced in 2012.

More generally, outside the UK, Aljohani and Thompson (2016, p. 257) claimed that *'land use control and the exclusion of freight in urban planning have been influential in leading to the relocation of logistics facilities from inner urban areas to suburban areas as affordable industrial land was no longer available for logistics companies.'* Further, Aljohani and Thompson (2016, p.261) argued *'urban planners need to develop a more proactive and dynamic freight land use planning, to not only focus on the locational requirement of logistics facilities, but also the spatial relationships between the major freight hubs and transport network to and from distribution centres.'*

Yuan (2019) explored how variations in planning practices contribute to the different trajectories of warehousing development in and around Los Angeles in the US. More specifically, he looked to identify how local planning policies affected the location of warehouse facilities and his work revealed that planning permission, building design, and landscaping, were amongst a number of factors influencing the location of warehousing facilities. That said, while it is over 60 years since Lynch's (1960) work on the visual quality of US cities, little work has been published on the consideration of visual aspects of new developments in urban planning. Yuan (2019) also argued that developing warehouses in greenfield suburban locations would cause growing environmental concerns, that a more regional approach to planning would help to mitigate environmental impacts, and that growing development pressures for new warehousing, particularly outside established industrial areas, required new land use strategies. In a study undertaken in Atlanta in the US, Dabanc and Ross (2012) suggested there was a lack of regional co-ordination of planning activities for logistics activities in Atlanta.

Holguin-Veras et al. (2021) argued the existing literature rarely mentions the need of households and businesses for the supplies they need for consumption or further processing, and drew attention to growing concerns about the impacts of logistics sprawl on the sustainability of supply chains. Here, Holguin-Veras et al. (2021) reviewed the evidence for logistics sprawl on the outskirts of some European cities and metropolitan areas in North America, and suggested that this process produced a series of externalities, including pollution and noise, which affected many stakeholders. More generally, Combes (2019) discussed how land use planning, particularly in relation to warehousing, can help to reduce some of the externalities of urban logistics. In addressing freight efficient land uses, Holguin-Veras et al. (2021) emphasised the necessity of integrating freight considerations into land-use policy and planning. Here, Holguin-Veras et al. (2021) concluded that land use planning had a key role to play in fostering freight sustainability, and that planning authorities should review their role in supporting freight activity through comprehensive land use planning. Bjorgen et al. (2021) looked to provide local authorities in Norway with some insights into the growth of online food shopping with a view to enabling them to reflect on how changing patterns of grocery consumption could be incorporated into city planning. In outlining the implications of the growth in e-grocery shopping,

Bjorgen et al. (2021) suggested that because of the complexity in urban freight and city logistics, facilitating sustainability in last mile distribution is a challenging task. More specifically Bjorgen et al. (2021) argued that in order to devise potential strategies in city planning, local authorities needed knowledge about urban logistics and freight transport, about the stakeholders in the supply chain, and about the connection between the local, regional and national dimension.

Planning Policies and Issues

In looking to review the planning issues associated with warehouse development in England, a simple thematic approach was used to identify specific, national and local themes. Subject to a number of limits and conditions, the erection of a warehouse per se, has traditionally been considered to be permitted development, and not requiring planning permission. Permitted development rights are an automatic granting of planning permission which allow certain building works, and changes of use, to be carried out without having to make a planning application. The limits and conditions on new warehouses relate to the height and floorspace of the building. Thus, no new warehouse can be built, under permitted development, if it is higher than 5 metres if the proposed development is within 10 metres of the curtilage of the site, and in other cases no new warehouse can be higher than any other building within the curtilage, or 15 metres high, whichever is the lower. No new warehouse can be built under permitted development with a gross floor space exceeding 100 square metres, if within designated land and sites of special scientific interest, and in other cases not if exceeding 200 square metres. Furthermore, where there is doubt about whether a proposed warehouse would be classed as permitted development, developers are advised to seek advice from the local planning authority.

At the national level, while warehouses have long been significant elements in the built environment, and though the development pressures for new warehouse developments have increased markedly in recent years, neither the revised and updated National Planning Policy Framework (Ministry of Housing, Communities and Local Government 2021), nor Planning for the Future (Gov. UK. 2020), makes any explicit reference to warehouses. That said, in addressing *'building a strong and competitive economy'*, the National Planning Policy Framework recommends that *'planning policies and decisions should help create the conditions in which businesses can invest, expand and adapt'*, and that *'significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development.'* (Ministry of Housing, Communities and Local Government 2021, p.23). The Planning for the Future consultation document was almost entirely devoted to new housing development, but made no mention of the need for *'additional warehouse floorspace'* [that will be] *'required each year to match the Government's annual target of 300, 000 new homes'* (Turley 2020, p.4). Within Scotland and Wales, national planning policies make only limited reference to warehousing but the focus is on looking to ensure that local plans take account of the need for warehouses, and that economic development is not constrained by a shortage of land for warehousing.

At the more local level, policies towards warehouse development often come under the umbrella of planning for employment land, and while such policies usually reflect the National Planning Policy Framework, here again economic priorities are very much to the fore. Brighton and Hove City Council (2016, p. 143), for example, recommended that *'sufficient employment sites and premises will be safeguarded in order to meet the needs of the city to 2030 to support job creation, the needs of modern business, and the attractiveness of the city as a business location.'* Here the local authority listed 13 locations within the borough for protection for a range of industrial and business uses including warehousing. St Helens Council's (2012, p. 74) Local Plan identified the need to accommodate, and plan for the expansion requirements of, warehouse facilities as part of its core strategy, which seeks to secure the regeneration of the borough, and argued that *'the ability to respond and react to the competition from other comparable sites in the region is also an important factor'*, in looking to respond positively to the development of the freight market.

On a larger scale, *'Places for Everyone'* (Greater Manchester 2021) the Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan, sets out the plan for sustainable growth up to 2037. The Plan Document (Greater Manchester 2021, p.115) recognised that *'industrial and warehousing accommodation is essential to a wide range of businesses across many economic sectors'*, and that *'it is particularly important to the key sectors of advanced manufacturing and logistics, but is also crucial to supporting other parts of the economy and its continued provision will help to reduce inequalities.'* More specifically, the Development Plan Document identifies the amount and the location of new warehousing development that will come forward during that time period, including the *'M6 logistics hub in Wigan, extending into Warrington, St Helens and West Lancashire, providing a major cluster of warehousing and distribution activity along the M6 corridor with easy access to the Port of Liverpool via the M58'* (Greater Manchester 2021, p. 110). *

Economic objectives aside, local planning authorities also have to take account of a range of environmental and social issues, including loss of visual amenity, landscape characteristics, wildlife habitats, noise pollution, and development proposals on green belt land, when determining planning applications for warehouses. Assessments of the impact of new

warehouse development on visual amenity, for example, usually focus on both the construction and the operational phases of the development. The appearance of buildings under construction, the appearance of cranes, and the increased vehicle movements associated with construction activity, can have an incongruous effect on the visual amenity of the surrounding area. During the operational phase, assessment of the visual effects of the proposed development that would be experienced from a number of viewpoints is a key element in determining the impact of the development on visual amenity. The effects of the proposed development on visual amenity from up to as many as 20 viewpoints may be used and are often graded as being of minor, moderate, or major negative, or in a minority of cases, positive significance. Tree and shrub planting to provide screening of the lower levels of new buildings, are the most common forms of mitigation, but well-designed architecture and non-reflective roofing and cladding materials are also seen to reduce visual impacts.

New warehouse development proposals can lead to the damage and/or destruction of a range of wildlife habitats. Here, where ecological assessments indicate that development will impact on protected or otherwise important species or habitats, mitigation may include extensive tree replacement and the enhancement of hedgerow habitats and grassland. The development of new warehousing can generate noise, including noise during the night time, and planning authorities may have to consider transport noise from deliveries and the dispatch of goods. While green belt designation has, in principle, been seen to be sacrosanct in protecting land from development, a number of planning applications for new warehouse development within green belt areas, have been successful. Here, the argument has ultimately been that the economic benefits of warehouse development outweigh the harm to the Green Belt.

Mini Case Studies: Perceiving and Playing Out The Planning Issues.

The vast majority of large modern warehouse developments, are by definition, outside the permitted development limits and conditions, and require planning approval. Two simple mini-case studies, the first a planning statement prepared by a private developer and the second a local planning authority's review and determination of a planning application, provide a summary illustration of how warehouse development proposals are perceived, and played out, in the town and country planning arena. The first is the developers' planning statement to support a warehouse development for a proposed square metre warehouse in Grantham in Lincolnshire (iSec 2018), and the second is North West Leicestershire's District Council Planning Committee's (2020) review of an application for the construction of a Distribution Campus along with ancillary buildings and infrastructure, at Junction 11 of the M42 at Stretton-en-le-Field, Leicestershire.

The planning statement, prepared by iSec (2018), an investor and developer in commercial property within the UK, was in association with the planning application for the demolition of an existing office block, and the erection of 24,000 square metres of a new cold store warehouse, and ancillary facilities, at Burton Lane in Grantham. The statement looked *'to set out the relevant Planning Policy Framework and to demonstrate how the proposal met planning objectives'* (iSec 2018, p. 2). In addressing the National Planning Policy Framework and the local authority (South Kesteven) Development Plan, iSec emphasised the economic benefits of the proposed warehouse development.

At the national policy level while iSec (2018, p.18) accepted that *'there will be a visual impact on the landscape and a less than substantial harm caused to some nearby heritage assets, we consider that these adverse impacts are considerably outweighed by the benefits of the development.'* Here, iSec (2018, p.16) claimed that *'the proposed development will deliver significant benefits at all spatial scales'*, with highway improvements, and securing the use of brownfield land being cited as local benefits, while jobs were cited as the benefits at the district, regional and national levels. More generally, iSec (2018, p.19) emphasised the national planning policy recommendation on the *'building of a strong, competitive economy'*, and that *'planning decisions should encourage the effective use of land by reusing land that has previously been developed.'* At the local planning level, iSec (2018, p. 20) effectively dismissed any potential concerns about the loss of any formal areas of landscape, and about noise and light pollution, and damage to protected species and habitats, and emphasised that the Development Plan provided *'clear support for economic growth.'*

The application to North West Leicestershire District Council, was for 5 warehouse units, offering some 279,000 square metres of floorspace, with the units ranging in size from 20,000 to 97,000 square metres of floorspace, and varying in maximum height from 19.5 to 22.5 metres. The application also involved new vehicular access, a gatehouse, an internal vehicular circulatory system, a range of landscaped areas and sustainable drainage features. The warehousing is to be occupied, with a 20-year lease, by Jaguar Land Rover, as a global parts logistics centre for aftermarket parts, acting as a single point for the receipt of parts from suppliers and their dispatch to retailers, consolidating the company's existing operations in the Midlands of England, and serving customer needs in Europe, North America and parts of Asia.

Objections to the application were received from 16 parish councils and North Warwickshire Borough Council. The majority of the parish councils' objections to the development of warehousing on the site were on either environmental or transport grounds. The Sheepy Parish Council's objections, for example, included concerns about the loss of good quality and versatile agricultural land, of trees and hedgerows, of habitats, adverse landscape impact, the impact on the River Mease Special Conservation Area, lighting impacts, and water pollution. The Parish Council's transport concerns

included increases in the overall volume of traffic, unrealistic and misleading traffic predictions, impacts on highway safety, and poor pedestrian and cycle accessibility.

North West Leicestershire District Council recognised that a number of sections of the National Planning Policy Framework and a number of policies within its own Local Plan were relevant to the determination of the planning application. In recommending approval of the proposed warehousing development, subject to a number of conditions, the District Council concluded that the proposed development would comply with the provisions of the Local Plan as a whole, and would benefit from the presumption in favour of sustainable development. Economic considerations seem to have weighted heavily here, not least the development's contribution to economic growth, and the creation of over 4,500 jobs once the warehousing was operational, as well as the further employment generated in local and regional businesses. At the same time, the local authority argued that while the proposed development would have some adverse landscape and visual impacts, it would not result in any unacceptable impacts on the natural, built or historic environment.

Discussion

A number of points arising from the exploratory examination of both the planning policies and issues associated with new warehouse development and the two mini-case studies merit reflection and discussion. At one level some of the specific issues surrounding new warehouse development can be viewed against the literature cited earlier in the paper. Here, the current review updated the work by McKinnon (1983 and 1987), on how planning policies were influencing the location of warehousing at that time, confirmed that new warehouse development was still clustering in dedicated distribution parks as suggested by McKinnon's (2009), and provided a contemporary perspective on the relationship between national and local planning policies and warehouse development. The review also suggested that Yuan's (2019) concerns about the importance of the public's perceptions of the environmental concerns associated with warehouse development in North America, and the logistics sprawl identified by Holguin-Veras et al. (2021) in some cities in North America and mainland Europe, were also found in the UK.

More generally, Holguin-Veras et al.'s (2021) belief about the role of land use planning in fostering sustainability also resonates. More generally, the review of the town planning policies and issues associated with new warehouse developments reflects longstanding and deeper competing interests between economic and environmental agendas. Within current planning policy frameworks these competing interests can be seen to be particularly expressed in terms of the economic and environmental dimensions of sustainable development outlined earlier. However, the review of planning policies and the two mini-case studies call into question the extent to which sustainable development's economic and environmental dimensions are genuinely '*interdependent*' and whether they can be pursued in '*mutually supportive ways*' as suggested in the National Planning Policy Framework (Ministry of Housing, Communities and Local Government 2021, p.5). While the continuing growth in warehouse development certainly addresses sustainable development's economic objectives, and to a lesser extent its social objectives, it will do little or nothing to protect or enhance the concept's environmental objectives.

In many ways, the continuing development of modern warehouses provides a paradox for planning. On the one hand, such development effectively looks to facilitate, and arguably to increase, the current levels of unsustainable consumption, and as such to be the antithesis of sustainable development. On the other hand, as noted earlier, the purpose of the planning system is to contribute to achieving sustainable development. This paradox might also be seen to reflect models of the role of the state in capitalist societies. Within planning, pluralist models look to emphasise the importance of the participation of a range of stakeholders in the decision-making process, and in the mini-case studies, for example, widespread community concerns about losses of amenity and damage to biodiversity and heritage environments. However, there is little evidence that local planning authorities have looked to incorporate stakeholders' environmental concerns when making decisions on planning applications for new warehouse development. Rather, the planning system increasingly looks to facilitate and promote economic development, and as such planning decisions seem to privilege economic growth and the interests of capital.

Conclusions

Recent years have seen significant growth in both the volume of warehousing, and the size of warehouses, within the UK, and this growth has been driven by a number of factors including a dramatic increase in e-commerce, the COVID-19 pandemic, and changes in consumer shopping behaviour, and in patterns of retail provision. Town planning policies were traditionally seen as a restraint on the development of warehousing, though small scale new warehouses could be built under permitted development and did not require formal planning permission. While England's current planning policy framework, emphasises that local planning policies and decisions should help to support economic growth and foster the conditions in which businesses can invest and expand, it makes no explicit reference to warehousing. However,

many voices within the logistics and distribution sector have increasingly argued that the importance of modern warehousing should be formally recognised and incorporated within town planning policies.

The paper has two implications for current planning policies. Firstly, as suggested above, while the UK Warehousing Association, for example, have emphasised the importance of explicitly incorporating the need for warehousing into planning policy, current national and local policies seem to be being interpreted so as to accommodate such growth. Secondly, the continuing development of modern warehouses provides a paradox for planning. On the one hand, while the continuing growth in warehouse development certainly addresses sustainable development's economic objectives, and to a lesser extent its social objectives, it will do little or nothing to protect or enhance the concept's environmental objectives.

The authors recognise that the paper has a number of limitations, not least in that its source material is drawn from the Internet, and in that no primary data was collected from warehouse developers, warehouse operators, local planning officers, or local authority councillors, and that the geographical coverage was limited. That said the authors believe that in reviewing both the recent growth in warehousing within the UK and the relationship between planning policies and warehouse development, the paper makes a small contribution to a gap in the academic literature, and that it may provide a platform for future research into how town planning policies and decisions on planning applications, influence warehouse development and location. Such research might, for example, include detailed empirical studies of how developers frame proposals for new warehouse developments and how local planning authorities review and determine the planning applications associated with such proposals; if, and how effectively, individual local authorities can respond to new warehouse development proposals, which are outside their jurisdictions, but which may have an impact for their economic development strategies; and on how local planning officers look to develop their understanding of the rapid developments in logistics and warehousing so as to be able to reflect the impact of such developments on planning policies and decisions.

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