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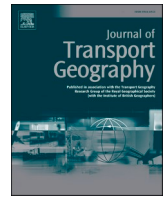
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# TOD in regional urban growth boundaries (UGBs): A case of transit adjacent development or a strategic housing solution?

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## ABSTRACT

The Green Belt in England is probably the most longstanding and internationally recognised Urban Growth Boundary (UGB). However, developers, think tanks and academics often accuse UGB's of being the leading cause of the housing affordability problems around the world and articulate an alternative vision of Transit-Oriented Development (TOD). This paper, based upon a regional case study of the West Midlands and 74 interviews with planners and planning stakeholders, argues that the debate around TOD in the Green Belt needs to be more cognisant of regional geographical variation in public transport provision. Moreover, drawing upon the views of planners who play a key role in allocating land for development, the paper underlines that decisions regarding TOD need to be made strategically as reflecting the policy's purpose as a regional growth management policy. Reflecting on the broader academic literature, it highlights the need for greater strategic integration of transport and land-use planning alongside reviving strategic planning to evaluate various spatial blueprints for urban growth management. The paper has broader relevance to international debates about the feasibility and potential of TOD, especially in addressing housing affordability problems around the world.

## 1. Introduction

With deepening housing affordability problems in many countries, there is growing academic and practitioner interest in Transit-Oriented Development (TOD) as a way to potentially address housing shortages in a sustainable and well-designed way (Cervero and Sullivan, 2011; AECOM, 2015; Cheshire and Buyuklieva, 2019). As land-use planning manages and allocates land for future development through local plans, there are clear linkages between land-use and transport planning in terms of delivering sustainable development through aligning the location of urban growth with transport infrastructure (Curtis, 1996, 2012; Knowles, 2021). TOD essentially involves the spatial clustering of housing development and supporting facilities around a public transport node with a regular and reliable frequency (Boarnet and Compin, 1999; Curtis, 2012). Much of the literature originates from North America and Australia where new urbanism and smart growth have been articulated as concepts in response to urban decentralisation characterised by low density development along key highway routes (Calthorpe, 1993; Curtis et al., 2009). However, historically European and Asian cities espoused

TOD as exemplified in Copenhagen's 'Finger Plan', which coordinated housing and transport growth, and Hong Kong's Mass Transit Railway although clearly the density of most Asian cities is significantly greater than European and American ones (Knowles, 2012, 2021; Hall, 2014).

There is a broad literature on the relationship between urban form, transport and urban planning with a range of perspectives on compact cities and the ability of planning to sustainably manage peripheral urban growth (e.g. Cervero, 1999; Headicap, 2000; Banister et al., 1997). Like other growth management policies internationally, the Green Belt in England aims to prevent urban sprawl and, as a strategic growth management policy, is probably the most well-known and important part of the English planning system (Mace, 2018). The power for local authorities to designate land as Green Belt was introduced in the 1947 Planning Act and codified in 1955 (Bradley, 2019).<sup>1</sup> Green Belts are in place around most large conurbations in England including Greater Manchester, Merseyside, Tyne and Wear, South Yorkshire, West Yorkshire, Bristol and the West/East Midlands (Amati, 2008). The policy was introduced alongside strategic mechanisms to manage housing growth including (supposedly) self-sufficient new towns, urban redevelopment

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<sup>1</sup> Green Belts also exist in Scotland, Wales, and Northern Ireland but, as they operate differently due to political devolution, the Green Belt in England is the focus of this paper.

at high densities and regional policy to relieve development pressure in the ‘congested’ regions of the South East and West Midlands (Hall, 2014; Mace, 2018). Nonetheless, notwithstanding the sustainability benefits of urban densification, scholars and practitioners have accused the policy of causing the ‘leapfrogging’ of housebuilding beyond the Green Belt resulting in unsustainable commuting travel patterns back into conurbations with strong concentrations of employment (Gallent and Shaw, 2007, p. 619). Furthermore, with deepening housing affordability problems due to the winding down of these strategic mechanisms to meet housing need since 1979, especially new towns, social housing and statutory strategic planning, commentators have increasingly turned to TOD in the Green Belt as a potentially sustainable solution to the housing crisis (Cheshire and Buyuklieva, 2019). TOD is envisaged as less controversial with the public than traditional, car-dependent new development as being high density, well-designed and premised upon most residents walking/cycling to a public transport hub and then commuting into large conurbations for work (Chance, 2019). Critically evaluating TOD in the Green Belt is therefore vitally important not only conceptually with the policy aiming to prevent urban sprawl but, with the localism agenda, deepening housing crisis and pressure from national Government to meet housing targets, local authorities are increasingly adopting a review and release approach whereby land is being released from the Green Belt for housing.

This paper argues that the wider, popular TOD debate has not taken sufficient account of the crucial political dimension in planning, especially the potential for TOD to valorise popular and political support for the Green Belt as being perceived as undermining its strategic purpose and spatial integrity (Mace, 2018; Bradley, 2019). Moreover, utilising a case study of the West Midlands and a mixed-methods approach exploring the views of planners and campaigners, including 74 interviews, it critically discusses how the debate has underestimated the challenges of regional public transport provision in new housing developments outside the Metropolitan Green Belt (MGB) (Chance, 2019). This issue has relevance to the wider challenges of delivering TOD outside densely populated conurbations with the literature highlighting the importance of density in effecting voluntary modal shift (e.g. Knowles et al., 2020; Liu et al., 2022; Ewing and Cervero, 2010). In highlighting the need for spatial nuance in the debate on TOD and critically evaluating current debate, the paper underlines the necessity for a more strategic, integrated approach towards transport and land-use planning to explore TOD within the strategic context of the various spatial blueprints for strategic urban growth management (Curtis, 1996, 2012, p. 84; Boarnet and Compin, 1999).

### 1.1. Literature review

Interest in TOD has generated multiple evaluations and recommendations in many countries. Depending on the type of development and walkability, there is general agreement on TOD being within a 800 m radius of transport nodes and the need for integrated planning with the 6 ‘D’s’ of TOD – density, diversity, design, destination, distance, and demand management (e.g. Cervero and Kockelman, 1997, p. 199; Cervero, 2004; Ewing and Cervero, 2010; Curtis, 2012, p. 83; Liu et al., 2022). Whilst some of the literature has explored the potentiality of TOD centred on buses, especially Bus Rapid Transit (BRT) (for example: Ferbrache, 2019; Cervero and Dai, 2014), there is consensus on the importance of the reliability and frequency of services from the transport node so light and heavy rail transit (LRT and HRT) is often more successful than BRT, especially with widespread social stigma towards bus based mobility (Currie, 2006; Stokenberga, 2014; Paget-Seekins, 2015; Knowles et al., 2020; Liu et al., 2022). However, limiting or charging for parking and discouraging car ownership in new development is also highlighted as important such as in Freiburg (Knowles and Ferbrache, 2019; Deatrick, 2021).

The potentiality of TOD was initially highlighted by North American and Australian academics, like Calthorpe (1993) and Curtis (1996), as in

the US, Canada and Australia, urban growth has often led to a car-dominated, low-density and unsustainable urban form (Harris, 2018). In order to address this, cities like Portland, San Diego and Bethesda (US), Calgary, Vancouver and Edmonton (Canada) and Melbourne and Adelaide (Australia) have been moving towards high(er) density new development centred around transport nodes on metro or rail networks since the 1980s (Cervero, 1995; Dittmar and Ohland, 2004). Nevertheless, TOD has been a longstanding feature in many European cities where expansion of public transportation systems was sometimes underpinned by rising land values accruing from development such as ‘Metro-Land’ on the Metropolitan Railway from north-west London to Buckinghamshire (Hickman and Hall, 2008, p. 325). Indeed, TOD has been particularly successful in Asian cities, such as Hong Kong, where the state owns all of the land and cities tend to be much higher in density (Papa and Bertolini, 2015, p. 70). Land ownership has therefore been highlighted as an important issue in the TOD literature as this enhances planning control to maximise density and coordination between land-use and transport planning is easier (Knowles, 2012). Dense, walkable and well-designed neighbourhoods which facilitate social interaction have therefore been underlined as key to the success of TOD (Katz, 1994; Menotti, 2005; Curtis, 2012).

There is also a significant body of literature exploring the relationship between urban form and transport with some studies, such as Banister et al. (1997), Cervero (1999) and Headicap (2000) finding that careful planning can reduce car dependency in urban growth whilst other scholars, such as Breheny (1997), question the effectiveness of planning in ensuring modal shift. Like TOD, the Green Belt and other urban containment policies have experienced international influence as concepts having been adopted around the world in cities like Medellin and Durban with there being growing interest in the challenges of climate and environmental change and urban sprawl (Chu et al., 2017). The Green Belt concept originated in the conservation and Garden Cities movement as associated with Ebenezer Howard, but its primary purpose evolved to accommodating the recreational needs of London through thinkers like Raymond Unwin (Amati, 2008). The interwar Green Belt land purchase Acts allowed local authorities, like Birmingham and London, to purchase land in the countryside for recreation (Bradley, 2019). Following World War II, the policy’s purpose evolved further into a regional growth management policy of preventing urban sprawl and separating rural and urban (Mace, 2018). As it is a policy designation, most of the land in the Green Belt is privately owned (Amati, 2008).

Reflecting aforementioned debates in the broader literature regarding urban form and planning, the policy is sometimes characterised as outdated having been conceived before the widespread use of the automobile and the profound economic and social changes that shaped the post-war era (Mace, 2018). Scholars have identified two main critiques of the Green Belt and other urban containment policies. Firstly, it is argued that housing growth often occurs beyond the Green Belt or UGB in the countryside where the lack of employment or public transport resulting in traffic and congestion stemming from the ‘tidal flow’ of commuters in and out of cities where employment remains concentrated (Herington, 1990). The A40 between Witney and Oxford and A14 between Huntingdon and Cambridge are often cited as examples whereby housing development was decentralised after World War II to Witney and Huntingdon with poor public transport links but employment remained concentrated in Oxford and Cambridge (Gallent and Shaw, 2007, p. 619). Secondly, academic economists, especially those associated with the work of Paul Cheshire, often make the economic supply argument which is essentially that, by restricting the land supply when and where housing demand is highest on the edge of cities, the Green Belt and other planning restrictions raise land and house prices (e.g. Cheshire, 2014).

TOD in the Green Belt therefore appears an attractive, sustainable solution to stakeholders and commentators as a way to solve the housing shortage while reducing car-dependency with widespread currency yet remains under-researched in the literature (e.g. Cheshire, 2014;

AECOM, 2015; Papworth, 2015; Table 1). Indeed, Haywood (2005, p. 89) argued that TOD is harder to achieve in England due to Green Belt restrictions around many stations with fast and frequent rail connections into large conurbations, like Warwick Parkway, although Bristol Parkway is an exception because land has been allocated around the station for housing in successive local plans since it opened in 1972. Indeed, the RTPI, 2016, p. 6) found that, between 2012 and 2015, an average of only 13% of new houses built were within a 10 min walk of a railway station. The TOD debate has overwhelmingly focused on the Metropolitan Green Belt around London where the presence of the Underground and a dense suburban rail network affords a range of public transport options and it is commonly assumed that most prospective residents commute into London for work (see Table 1 which summaries recent Reports on TOD in the MGB and shows the importance of the TOD debate) (Hickman and Hall, 2008; Chance, 2019). It is also argued that TOD is economically feasible as infrastructure can be financed through land value uplift which comes from improved transport connectivity, like Crossrail - a recently opened HRT network across London (Carlton, 2007, p. 1; Cheshire and Buyuklieva, 2019). Finally, TOD is argued to be easier to achieve on greenfield sites than in existing settlements because land ownership can be consolidated and settlements planned around transport nodes with optimal density (Hickman and Hall, 2008).

However, in turn scholars have critiqued these arguments as, firstly, it has been argued that managed 'leapfrogging', especially to new towns with excellent transport links, like Milton Keynes and Stevenage, is more sustainable than urban extensions to conurbations which often are not a suitable distance for rail (HRT) connectivity (Hall, 2014). Moreover, whilst beyond this paper's scope, the significant increase in home-working and e-commerce associated with Covid-19 has arguably reduced the issue of daily commuting into large conurbations for employment and retail (Goode, 2021, p. 4; Budd and Ison, 2020). Secondly, the complexity and spatially variegated nature of the housing affordability problem has been underlined with Bramley's (Bramley, 1993, pp. 1022–1024) empirical study showing that, even if a large programme of private sector housebuilding was initiated through widespread Green Belt release, this only has a 'very marginal' or 1.2% dampening effect on prices. The porosity of local housing markets to international/national demand and investment and the importance of locational characteristics in house prices has been also highlighted by scholars (Mace, 2018). Thirdly, the utility of TOD in ensuring modal shift in newly built communities has been critiqued in the broader literature (e.g. Breheny, 1997; Cervero, 1999), especially the premise that most suburban commuters travel daily via public transport into London for work (RTPI, 2015; Chance, 2019). For example, the RTPI (2015, p. 2) tested Cheshire (2014) proposals (Table 1) and found that it would lead to 4–7.5 million extra car journeys as only 7.4% of commuters in their sample of 5 Green Belt towns commuted by train into London for work (Bracknell, Maidenhead, High Wycombe, Watford and Hemel Hempstead). These findings are similar to broader critiques of TOD, like those of Orenco Station, Portland (US) where a new town was

developed around a transit line into downtown Portland and some have argued that only 22% of daily commuters used this mode of transport (Cervero, 2004; Podobnik, 2011, p. 10). Fourthly, although there has been limited debate about the feasibility of TOD in regional Green Belts in practitioner circles, like the West Midlands (Peter Brett Associates, 2015), the academic literature has not critically explored the regional dimension of TOD in the Green Belt which is the main aim of this paper.

## 2. Methodology

### 2.1. The views of planners and campaigners

Planners are the key actor in the housing development process as formulating planning policy regarding the location of housing development alongside conceiving, shaping, and implementing planning applications (Adams and Tiesdell, 2013). Crucially, planners have a significant influence in coordinating the transport infrastructure accompanying development through the local plan process, County Councils strategic transport priorities and the planning 'gain' agreements regarding transport improvements which are agreed with planning applications (Curtis, 1996, 2012).<sup>2</sup> Likewise, campaigners play a critical role in the planning system as involved in both the local plan and planning application stage which can have an important impact on the transport improvements agreed alongside development (Carpenter, 2016). More broadly, planners alongside campaigners, help to shape housing and transport policy through the influence of professional bodies and campaign groups, such as the Transport Planning Society, RTPI, Campaign to Protect Rural England (CPRE) and Campaign for Better Transport. However, the views of planners are often underrepresented in the broader, popular TOD in the Green Belt debate as well as in the largely quantitative literature on TOD (Mace, 2018, p. 2; Knowles et al., 2020). This paper therefore moves this debate forwards in a more evidence-based manner by focusing on the views of planners and campaigners and a regional case study. Of course, planners can have biased views and vested interests as potentially working for a land promoter or housebuilder with development interest in the Green Belt but their views as experts are still very important to explore as shaping housing and transport policy whilst planners often have a detailed knowledge of a local area or region (Chu et al., 2017). Likewise, campaigners can have vested interests of desiring to discredit development alongside protecting their local area but they also often have a detailed lay knowledge of local transport systems with transport often being a focal point of objection to new housebuilding (Bradley, 2019). Indeed, in contrast to the often 'place neutral' and 'spatially blind' nature of central Government policy-making regarding housing and planning and the aspatial economic literature on TOD in the Green Belt, this paper offers a spatially grounded analysis of regional TOD in the Green Belt (McGuinness et al., 2018, p. 330).

The research participants were selected from the 'triangle' of main interests in the development process – political (national and local Government), developer and conservationist - regionally and nationally alongside broader 'interested parties' and influential groups who have published on TOD, such as the RTPI and think tanks (like the Centre for Cities) (Adams and Tiesdell, 2013, p. 77). Overall, 74 planning stakeholders were interviewed through a purposive sample of participants from developer, local/national government, campaigner and political backgrounds. The research strategy revolved around the spatial scales of the national level and a regional case study. To generalise the study and as the Green Belt is a national policy designation, 29 semi-structured,

**Table 1**  
Proposals for development on the metropolitan green belt (MGB).

Study	Proposal
Cheshire (2014, p. 2)	Build 1 million homes on less environmentally valuable land or 1% of the MGB within a 0.8 km radius (or 10-min walk) of railway stations.
Papworth (2015, p. 3)	3 million homes within a 2.5 km of stations taking up 0.5% of total MGB land.
Clarke et al. (2014, p. 3)	2.5 million homes within a 2 km radius of stations taking up 5% of MGB land.
Cheshire and Buyuklieva (2019, p. 1)	Build within 800 m of stations with a 45-min journey into London. Introduce a Land Development Charge at 20% and Green Development Corporations through granting development rights to the rail industry.
AECOM (2015, p. 8)	2.5 million homes within a 1.6 km radius of stations taking up 12% of the MGB.

<sup>2</sup> Transport bodies, like County Council Highways Departments, Network Rail and National Highways are also statutory consultees for planning applications.

national interviews with planners and planning stakeholders were conducted.<sup>3</sup> The interview questions focused on the impacts of Green Belt policy, especially leapfrogging, the strategic locations for new housing development and public transport provision within these developments, conceptualisations of 'green' TOD and improvements to the policy (Cervero and Sullivan, 2011). The questions had a strategic focus as the Green Belt is a strategic growth management policy and there are political/commercial sensitivities surrounding site release, especially for those working in local government, which makes Green Belt research challenging (see Appendix for interview question themes). Secondary data of popular attitudes to TOD in the Green Belt was analysed and cross-tabulated with the themes arising from the thematic codes generated from the qualitative data.

The West Midlands Green Belt (WMGB) was used as a primary case study of Green Belts in regional England with academic and practitioner studies on TOD largely focusing on the Metropolitan Green Belt with its well-documented housing issues and effective public transport system whereas the West Midlands has extensive brownfield land and limited public transport network in the rural-urban fringe, especially HRT (Mace, 2018). The feasibility of TOD in the Green Belt was explored through analysing secondary datasets and 33 interviews with planners (including those working for planning consultancies, developers and local government) and planning stakeholders/politicians regionally supplemented by 12 interviews with planners in other regions. Thirdly, three regional, active campaign groups were engaged with (Project Fields, South Solihull Community Group and Save Stourbridge Green Belt) with this paper focusing on Project Fields (see below). Interview questions at this level focused on the regional impacts of the policy, public transport provision in strategic development sites and the potential for TOD in the West Midlands Green Belt (see Appendix for the interview question themes). All the interviews were transcribed, and the transcripts deductively coded in a thematic way through several rounds. This was accompanied by reading and thematic coding of 'grey' material on TOD in the Green Belt, including commentary by planning stakeholders, especially regional ones, and the planning press, such as *The Planner* and *Planning Resource*.

## 2.2. Case study approach taken and case selection

The region is an appropriate geographical scale for researching TOD in the Green Belt compared to focusing on a single council area because the Green Belt is a regional growth management policy whilst transport policy and the concept of TOD is inherently strategic (Ewing and Cervero, 2010; Curtis, 2012, p. 84). Indeed, there are important similarities between both Green Belts and public transport systems in other post-industrial regions and therefore broader key findings and lesson learning regarding TOD can be drawn. Furthermore, the lack of strategic planning in the West Midlands has resulted in several local authorities releasing land from the Green Belt for housing so it is an exemplifying case of the challenges of delivering TOD under the localism agenda. More broadly, it typifies the governance challenge facing many post-industrial regions struggling to meet housing need as constrained by political geography and planning restrictions (Mace, 2018, p. 3).

## 2.3. Current issues: WMGB and the Langley sustainable urban extension (LSUE)

The WMGB covers almost 225,000 ha and forms a continuous 'ring', between 8 and 13 km in width, around the conurbation which has a population of nearly 2.9 million people (Fig. 1; CPRE and Natural England, 2010, p. 29). Birmingham, which sits at the heart of the

conurbation, has a fast-growing and diverse population with population growth of 150–200,000 by 2031 predicted in the Birmingham Development Plan (BDP) from 2016 and a 'need' for 89,000 new homes (Birmingham City Council, 2017, p. 6). As the Labour City Council calculates to have 'room' on brownfield land for only 39,000 homes, it allocated some of the very limited Green Belt land within its administrative boundary for 6000 homes at Langley (LSUE) (Fig. 1; Carpenter, 2016). Langley is near one of the wealthiest parts of the WMGB and the release was fiercely opposed by the campaign group, Project Fields, allied with the local Conservative Party. The Conservative MP, Andrew Mitchell, persuaded the then Communities Secretary, Greg Clark, to put a Holding Direction on the BDP (Johnston, 2017).<sup>4</sup> The proposal was particularly controversial because, whilst LSUE is due to be served by a Sprint Bus Route (BRT) which runs from Birmingham city centre via the local centre of Sutton Coldfield and Sutton Coldfield Railway Station (Fig. 2), fears about the potential for increased local automobile traffic and congestion village were at the centre of the campaign (Carpenter, 2016).<sup>5</sup> Although the Holding Direction was subsequently lifted with national Government acknowledging Birmingham's shortfall, it shows how politically controversial development in the Green Belt can be, even when justified by TOD. Birmingham City Council subsequently adopted a Supplementary Planning Document (SPD) for LSUE in 2019 with a planning application by the Langley Consortium submitted in December 2021 and approved in December 2022 (Birmingham City Council, 2018). Project Fields has remained actively involved in the consultation so there is a longitudinal aspect to the case study from conception to the planning application stages with this paper filling an important research gap in the literature on TOD specifically in the Green Belt.<sup>6</sup>

Indeed, the development pressure on the WMGB is particularly acute with regional governance issues being compounded and persisting as Birmingham City Council still calculates a shortfall of 38,000 homes which can only be met by surrounding authorities, most of which are constrained by the WMGB, like Solihull and the Black Country (Carpenter, 2016). Although the West Midlands Combined Authority (WMCA) has some control over transport policy for the region's rail network through Transport for the West Midlands, the Mayor of WMCA, Andy Street, consistently rejects growing calls for the WMCA to have planning powers showing a wider disconnect between land-use and transport planning (Knowles and Ferbrache, 2019; Knowles, 2021). The paper is therefore spatially grounded in a case study of the governance challenges of successfully delivering TOD in regional Green Belts under the contemporary localism agenda thereby meeting a key research gap in the literature.

## 2.4. The strategic dimension of TOD in the green belt and challenges of integrating land-use and transport planning

### 2.4.1. National level

A ComRes (2018, pp. 14–15) questionnaire on the public's view of the statement that 'Green Belt restrictions should be relaxed around train stations' showed only a 10% gap overall between agree (31%) and disagree (41%). This suggests that, while people support the Green Belt in principle, a significant number of people are willing to see parts of the Green Belt released, especially where there is supporting infrastructure, thereby resonating with the international literature which contends that urban growth can be effectively managed through planning for sustainable transport (e.g. Headicap, 2000; Banister et al., 1997).

<sup>4</sup> A 'Holding Direction' prevents a council from adopting a Plan giving national Government time to scrutinise it

<sup>5</sup> Sutton Coldfield is located on the Cross City Line with a frequent HRT service to Birmingham City Centre.

<sup>6</sup> South Solihull Community Group and Save Stourbridge Green Belt are campaigning against the prospect of land being released from the Green Belt whereas Project Fields is focused on the BDP which was adopted in 2017.

<sup>3</sup> The 'national level' is defined in this research as planners/planning stakeholders working for a national organisation, i.e. the RTPI, CPRE or Centre for Cities.

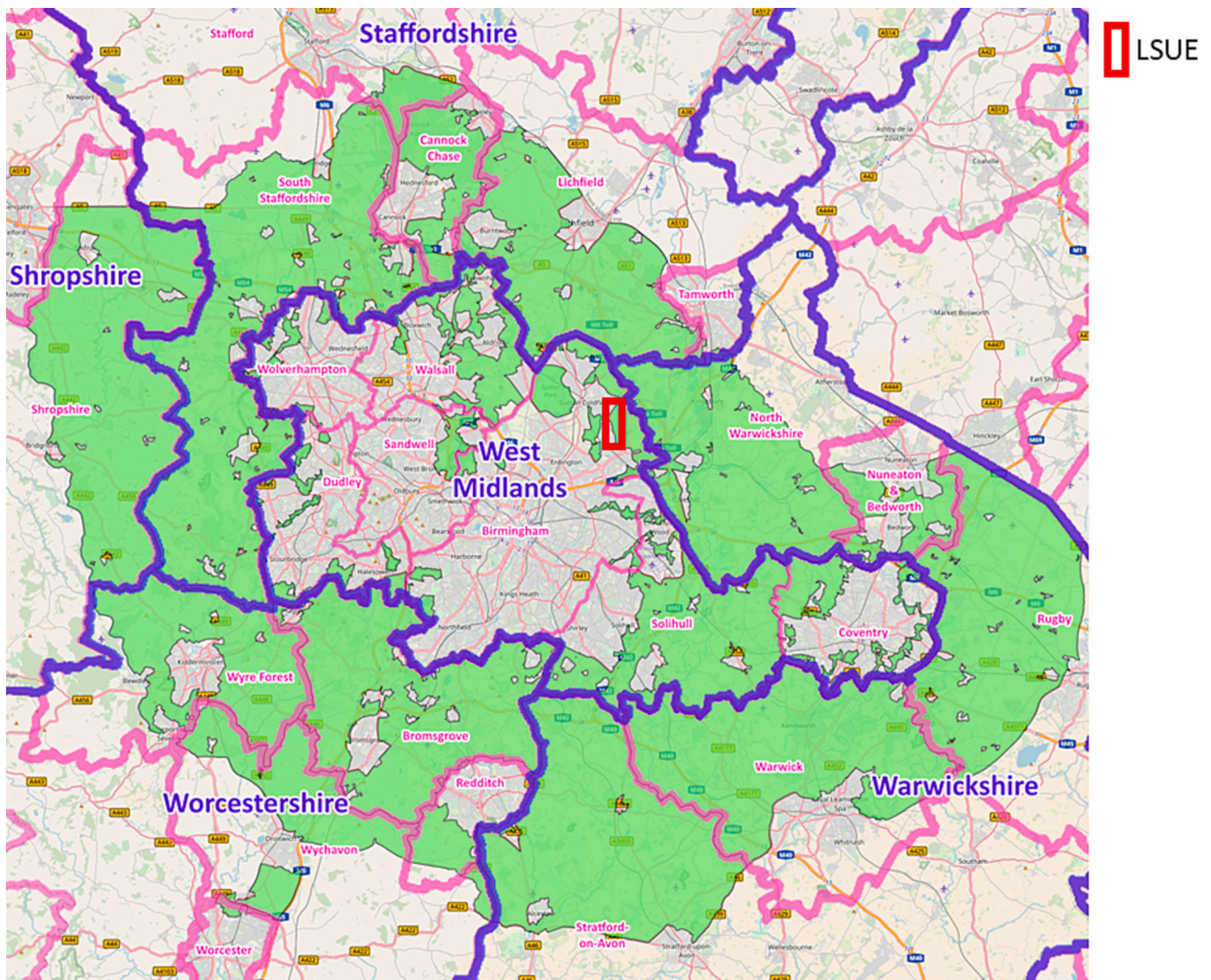


Fig. 1. The West Midlands Green Belt showing the LSUE and lack of Green Belt within Birmingham City Council's boundary (adapted from <https://bit.ly/3u7fjMt>). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Furthermore, the idea of TOD and land in the Green Belt being more flexibly used for housing was justified by some planners and planning stakeholders:

*'Sustainable patterns of development in sustainable locations might not now be compatible with a blanket of Green Belt around places'*  
(Planner, Home Builders Federation (HBF))

*'Some of these Green Belt railway stations have no development around them. If you want to decrease the housing costs, [allow] our cities to continue to grow and decrease carbon emissions, then you have to increase housing supply around transport... We have seen a lot of interest in California... there should be what we call button development, like high density TOD around train stations... it is a really compelling environmental reason as to why we should reform Green Belt and where we should build houses'*

(Researcher, Centre for Cities)

In one sense, this illustrates the international influence and currency of TOD as a concept which is juxtaposed to the Green Belt as a supposedly outdated concept (Knowles et al., 2020). However, reflecting the broader TOD literature on the importance of investment into public transport, including HRT/LRT/BRT to make it an attractive proposition

for modal shift (Knowles, 2021; Cervero, 1999), at the national and regional level planners questioned how far TOD could be delivered without strategic planning or the integration of land-use and transport planning with the HBF planner referring to planning history:

*'Oxfordshire had a policy that said: 'We are going to have a Green Belt around Oxford... therefore we will have a country town strategy that develops Bicester, Banbury, Didcot and Witney and we will make those growth areas because they are beyond the Green Belt but they have got good transport links back into the city'. So, it is that positivity that we have kind of forgotten.'*

Although Oxfordshire's county towns policy has been critiqued for creating leapfrogging (Haywood, 2005), in many ways this quote shows how there was historically a strategic governance structure in terms of managing urban growth and coordinating transport investment juxtaposed to the current localism agenda (Hall, 2014). Another private sector planning director referred to the practical difficulties of delivering TOD around HRT outside of London:

*'If one is to encourage more sustainable development then, actually, you want development with really good access to public transport... if you are*

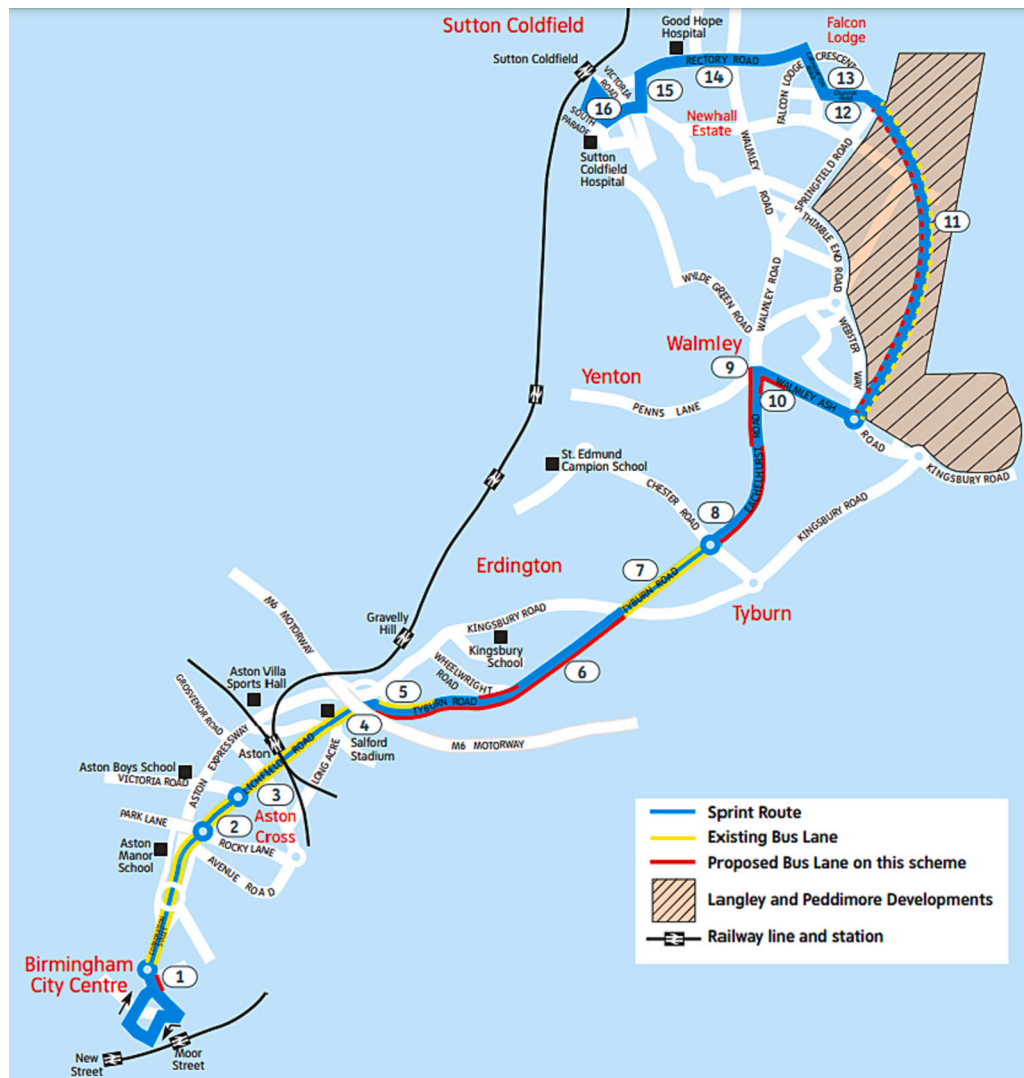


Fig. 2. LSUE and the proposed Sprint Route ([https://www.birminghambeheard.org.uk/economy/sprint/supporting\\_documents/SBL%20sketch%20plan.pdf](https://www.birminghambeheard.org.uk/economy/sprint/supporting_documents/SBL%20sketch%20plan.pdf)).

*looking at railways, there isn't much scope frankly...one option, I suppose, would be to focus development on those bus routes in the Green Belt'*

However, the TOD literature has shown the challenges of relying on BRT as a form of mass public transit and way to persuade residents to use public transport rather than LRT and HRT, particularly with widespread social stigma in the UK to bus-based mobility (Currie, 2006; Stokenberga, 2014; Paget-Seekins, 2015; Certero and Dai, 2014). This exemplifies the challenge of successfully delivering TOD outside of metropolitan areas with the lack of HRT and limited BRT (Ferbrache, 2019). Furthermore, the geographical intensity of opposition to specific TOD proposals and the potential effect of 'ped-shed' development to valorise popular opposition as being seen as incrementally undermining the Green Belt's strategic purpose was, referred to by a planning academic<sup>7</sup>:

*'Releasing individual sites, you have a hundred battles instead of one...a strategic review has the benefit that you can secure people's reasonable fears that once you start you are not going to stop'*

<sup>7</sup> I.e. altering the 'exceptional circumstances' for releasing land from the Green Belt for housing in the National Planning Policy Framework (NPPF) as was campaigned for by the MP, Siobhain McDonagh, in 2018 (Mace, 2018, p. 16; DLUHC, 2021, p. 40).

Alongside the crucial issue of successful mechanisms for effective land value capture, associated with TOD in Hong Kong (Knowles, 2012), this highlights the critical need for greater (re)integration between land-use and transport planning, especially for TOD to be evaluated strategically (Curtis, 1996). Indeed, Certero's study (Certero, 1999), drawing on the examples of Stockholm, Tokyo and Singapore, has shown that careful planning is vital to avoid car dependent peripheral housing growth.

#### 2.4.2. Regional level: issues with the coverage of HRT/BRT

These national findings resonated with the regional case study although, at one level, a clear hypothetical case exists for TOD in the Green Belt. The study evaluated Solihull Metropolitan Borough to examine whether sufficient land in the WMGB is available around railway stations to meet Birmingham's housing need. Birmingham only has one railway station in the WMGB in its boundary as very constrained whereas Solihull Metropolitan Borough is a semi-rural authority with several stations (see Fig. 1). Indeed, it has 1347 ha of WMGB land within a 1.2 km radius of train stations excluding environmentally sensitive land with designations such as SSSIs (Peter Brett Associates, 2015, p. 36). Assuming 40 dwellings per hectare, this land could accommodate 53,880 houses which would cover Birmingham's housing shortfall (38,000) alongside Solihull's housing requirement of 15,000 up to 2031 (Solihull Metropolitan Borough Council, 2014, p. iii). Overall, this land

accounts for only 11% of the WMGB in Solihull Metropolitan Borough (11,945 ha) and 0.6% of the entire WMGB (Solihull Metropolitan Borough Council, 2012, p. 8). This shows that, even if all Birmingham's extra housing needs and Solihull's entire housing requirements were hypothetically concentrated in just Solihull Metropolitan Borough, only a very small amount of land in the WMGB would be needed to solve the housing shortage. Moreover, if land within a 1.2 km radius of just four stations in the WMGB was used for housing (Blake Street, Shenstone, Blakedown and Whitlocks End - all on railway lines with regular frequency (the Cross City Line – 4 trains per hour (on average off peak); Snow Hill Lines – 4 trains per hour)), this would also be enough land to accommodate Birmingham's housing shortfall (Peter Brett Associates, 2015, pp. 40–41).

However, this evaluation does not account for whether the land is high-quality farmland (Grade 3a or 3b) or of more subjective landscape value with the NPPF stressing that the Green Belt's key characteristic is its 'openness' (Department for Levelling Up, Housing and Communities DLUHC, 2021, p. 41). Additionally, it assumes development taking place in small villages/settlements that often lack existing shops, facilities, and infrastructure which are important in making TOD successful with the 'D's' of design and diversity, especially with the increase in home-working and ideals of the 20-min neighbourhood (Cervero and Kockelman, 1997, p. 199; Goode, 2021). There were also issues with the lack of frequency and overcrowding on some rail routes although greater investment could flow from the more demand from TOD (Peter Brett Associates, 2015, pp. 41). Moreover, Solihull Metropolitan Borough has traditionally had a strong policy commitment to urban containment and preserving the distinctive character of settlements as this former Conservative West Midlands MP argued:

*'You continue to need Green Belt protection...the roads in Green Belt locations - rural locations - are often not fit for purpose for the volume of traffic associated with putting a new settlement into the countryside because, inevitably, the family will require a car, especially if the public transport service is inadequate for meeting their needs to get to school and work. Quite often a couple will have two cars so you suddenly find there are a lot more cars on what is really a single-track road. Dickens Heath<sup>8</sup> is a case in point...the roads around it are the same width as were originally intended for a settlement of a third that size...that shows how very quickly you get unsustainable development.'*

This quote, reflecting the RTPI's study (RTPI, 2015) and academic research on the effects of homeworking on travel patterns (Budnitz et al., 2020), demonstrates the complexity of travel patterns by households compared to the daily commute into conurbations often assumed by proponents of TOD in the Green Belt (Chance, 2019). It underlines the challenges of bringing about modal shift from automobile use in locations on the rural-urban fringe, especially following increased car dependency during Covid as Das et al. (2021) found in India. Moreover, there are the challenges of delivering safe and feasible walking and cycling routes in semi-rural areas alongside widespread social stigma to bus-based mobility (Nikitas et al., 2021; Cervero and Dai, 2014). Additionally, it shows that, moving from principle to place, there is often opposition in practice to specific developments in the Green Belt, even when close to transport nodes (Bradley, 2019; Mace, 2018). Reflecting on these points more broadly, there was concern among planners about the feasibility of TOD, especially in the West Midlands, as this private sector planner (West Midlands) argued:

*'[If we] opened up development of the Green Belt around sustainable locations, would we in fact secure sustainable travel? Would the people who moved there work in that location or would they use the train to get to*

*[work]? What impact would that have on air quality, pollution etc.?... We just don't have it - there's no bus I can get to go anywhere. I am absolutely stuffed if I don't have a car where I live.'*

Moreover, the issues associated with successfully delivering TOD in the WMGB are arguably exacerbated by the current lack of strategic planning reflecting the broader literature on TOD and transport and urban form (Curtis, 1996, 2012; Knowles, 2021). Reflecting the experience of many urban authorities, a regional public sector policy planner (1) interviewed highlighted that, due to the very small amount of WMGB land within Birmingham City Council's boundaries, there were extremely limited opportunities for LRT/HRT TOD with the one option around Four Oaks Railway Station dismissed due to the 'rolling', 'pastoral' landscape quality of the land there. However, as Birmingham City Council still has a statutory duty to meet its housing own 'need' (DLUHC, 2021), she explained that serving the LSUE with the BRT (Sprint) connecting to Sutton Coldfield Railway Station was a 'second best' option although the aspiration remained for restoration of Castle Vale Station and the Sutton Park Line to passenger traffic.<sup>9</sup> Indeed, the well-documented challenges of persuading Network Rail, who manage the railways in the UK, and Train Operating Companies to open new railway stations underline the difficulties with successfully delivering TOD as often involving a range of actors and partners (Boarnet and Compin, 1999; Curtis, 2012, p. 84). This highlights the need for strategic consideration of the most appropriate locations for development around existing railway stations (Hickman and Hall, 2008). However, whilst the LSUE was acceptable in the current planning system with its overwhelming focus on housing numbers (Bradley, 2019), it was still hugely controversial with the local campaigner and politician constantly arguing that 'there will be chaos on the roads' and 'everyone drives around Langley...[the LSUE will have a] very negative impact on Sutton'. The local politician conceded that 'public transport is a very important matter' and that he would continue to argue passionately for transport improvements. The question about whether there will be modal shift among the prospective residents of the LSUE using the BRT rather than private automobile is a complicated one (Currie, 2006), especially with increasingly complex travel patterns following Covid-19, although local data shows that nearly 80% of commuter journeys in Sutton are made by car (Sutton Coldfield Rural, 2013). The literature highlights the widespread social stigma to bus-based mobility which is particularly prevalent in affluent areas like Sutton (Nikitas et al., 2021; Cervero and Dai, 2014). Elucidating these points, this planner from CPRE West Midlands highlighted the challenges created by the lack of integration between transport and land-use planning:

*'A strategic plan, regionally, is what it should be...if you just keep expanding the boundaries of the urban areas...you are putting so much extra pressure on all the roads, services - they are not coping. It is a knock-on effect; it is not just about the Green Belt. You have to look about all the integration of...the economic, social and physical. Sites need more joined up thinking, as it used to be, but it has disintegrated since we got rid of the Regional Spatial Strategy...you can't keep chipping away [at the Green Belt]. It is not working because the infrastructure isn't there. You often have got rural services.'*

Reflecting the crux of this paper's argument and the importance of strategic planning in successfully delivering TOD in the literature (Cervero, 1999, 2004), she went on to argue for the broader need for a revival in strategic planning:

*'You do really need to create a total new town with all the facilities, employment and infrastructure to do it rather than just putting extra*

<sup>8</sup> Whitlocks End is the nearest railway station over a mile away via a busy country road which is hard to walk or cycle along (as the researcher found when visiting Dickens Heath several times, even during summer).

<sup>9</sup> The Sutton Park Line would provide a station 0.8 km from LSUE but a bid made to the Restoring Your Railway fund in March 2020 was unsuccessful (Flash, 2021). Sutton Coldfield Station is on the Cross City Line HRT (3 trains per hour frequency).



pressure on these fragile rural areas. The distances then are very much suited to rail...Leamington and Birmingham very much (Lichfield particularly). If you have got a very good [rail service to] central stations in Birmingham...that is a more sustainable form of commuting because a lot of it takes place by rail...you can play about with buses and so-called bus rapid transit but, in practice, you don't have the same ability to have sustainable transport from the edge of a city.'

This quote reflects the literature on the challenges of relying on BRT for TOD rather than LRT or HRT (Paget-Seekins, 2015). Furthermore, regional public sector policy planner (2), whilst arguing that the BRT would eventually mitigate traffic congestion from the LSUE in Sutton Coldfield, acknowledged that there would initially be challenges:

*'The biggest concern...during the consultation (was) new accesses, sprint bus rapid transport, three new schools and a number of local centres. I think some assurance is that infrastructure will be provided and in a timely way - that is not going to build a problem during the construction phases. Langley is such a big development. It is going to be delivered over the next fifteen years - a very long time - so there will be the inevitable periods where it will be strained before you see the full benefits... loss of Green Belt did feature [in the consultation] but surprisingly not as high as the very kind of tangible, real things that would have to be faced day by day. People talk about the clogging up of roads - 'How can we take another 15,000 cars?' So, transport, education, the lack of schools and health facilities'.*

These arguments reflect the critical literature on TOD, especially with car travel being the dominant transport mode, especially in rural locations (Podobnik, 2011), illustrating the challenges of successfully delivering TOD. Indeed, in many ways Langley can be conceived as more 'transit-adjacent development' (TAD) rather than 'TOD' in the true sense of the concept (Renne, 2009, p. 1). Furthermore, as White and Whelan (2019) and Cervero and Dai (2014) highlighted, whilst BRT is challenging to deliver across the Global North, it is particularly challenging in Britain due to high levels of car dependency and social stigma towards bus-based mobility. However, this underlines the importance of strategic planning again and the need to deliver dense, walkable and well-designed new developments to reduce car dependency (Curtis et al., 2009; Knowles and Ferbrache, 2019). Indeed, facilitating the option for people to use public travel modes remains vitally important in policy (Cervero, 2004; Cheshire, 2014). The quote also shows how concern about increased congestion consequent on new housebuilding is often a very important component in wider community opposition to housebuilding.

### 3. Discussion and conclusion: transit adjacent development or a strategic housing solution?

In contrast to the more reliable, frequent and affordable public transport systems in many countries alongside the greater density in most other European or Asian cities (e.g. Hall, 2014), this paper has underlined the significant limitations to TOD as a sustainable form of development, especially in regional Green Belts like the West Midlands, as opposed to the panacea that its proponents sometimes promote it to be (Chance, 2019). It has critically analysed an emerging example of a new settlement and questioned whether it really represents a case of TAD (Renne, 2009, p. 1). To some extent, the feasibility of TOD is constrained and shaped by path dependencies regarding historic development patterns (as Liu et al. (2022) found in Tokyo) alongside the societal preference in England to live in semi-rural locations in houses with gardens, particularly since the Covid-19 pandemic (Goode, 2021). However, in terms of lessons for practice internationally, the paper demonstrates that successful TOD relies on strategic planning, the integration of land-use and transport planning and high-quality HRT/LRT through significant public investment (Curtis, 1996; Knowles et al., 2020).

Of course, to some extent this paper reveals the central juxtaposition at the heart of planning for TOD in England. As documented in several reports as well as Liu et al. (2022) study of Tokyo, many greenfield housing developments are heavily car dependent with limited efforts to retrofit public transport options at which point unsustainable travel patterns are already established (e.g. Harris, 2018; Knowles and Ferbrache, 2019). So, for example, the LSUE is located next to an arterial dual carriageway (A38). Nonetheless, there is the frustration of planners trying to create sustainable, mixed and dense neighbourhoods with local centres and a range of facilities such as the vision outlined in LSUE's SPD (Birmingham City Council, 2018). However, despite trying to follow the recommendations of the TOD literature, planners are arguably constrained by nationally advised housing targets, a challenging range of actors in order to facilitate TOD, especially HRT with the disconnect between the national rail network and local planning, and broader governance and administrative restrictions within an era of localism (Knowles, 2012; Knowles and Ferbrache, 2019; Mace, 2018). Whilst these challenges are present in many countries, arguably the governance void between national and local planning left by the demise of statutory regional planning since, 2010 has created particular challenges in England (Harris, 2018). The paper therefore elucidates and extends the field of TOD research by exploring the structural challenges to successfully delivering TOD, especially the political dimension. Indeed, it has highlighted the broader disconnect that there sometimes is between the aspirations of planning policy and practical outcomes of development underlining the critical importance of another 'D' - 'delivery' in TOD - as well as frequency see Table 2 (Ewing and Cervero, 2010; Curtis, 2012, p. 83; Knowles et al., 2020):

Although beyond this paper's scope, land ownership and the amount of investment available for supporting TOD resulting from land value uplift is also very important (Knowles, 2012; Stokenberga, 2014; Cheshire and Buyuklieva, 2019). Birmingham City Council (2018, p. 44) argued that the scale of LSUE alongside the presence of Langley Consortium, representing 90% of the landowners, resulted in more significant planning gain and transport improvements compared to releasing multiple sites. Nevertheless, in a planning system dominated by viability considerations, 'calculative' practices and a 'competitive return' to the landowner (McAllister, 2017, p. 122), delivering the quality and scale of transport improvements necessary to support TOD is very challenging as Knowles et al. (2020) has argued more broadly. There are therefore important lessons in land value capture to finance public transport improvements from other cities like Copenhagen and Hong Kong (e.g. Knowles, 2012) whilst Cervero, and Sullivan (2011, p. 210) have highlighted the importance of 'green' TOD. Nevertheless, given the current currency of TOD in the Green Belt as a concept in England (Chance, 2019), it is vitally important that it is subject to empirical scrutiny, especially its feasibility outside of the MGB in the regions, as this paper has done.

Of course, as Budd and Ison (2020) highlighted, to some extent the debate around TOD has become more complex and superseded by the

**Table 2**  
The disconnect between land-use and transport planning.

Spatial scale	Responsible land-use planning	Transport body
National	DULHC, NPPF	Network Rail, Department for Transport, National Highways, TOCs
Regional/ Sub-regional	Some Combined Authorities (uneven geography)	Transport for London, Transport for the West Midlands, Community Rail Partnerships etc. (uneven geography)
County	Unitary Authorities have planning powers.	Highways
Local	In two-tier authorities, Local Planning Authorities; Local Plans	

significant increase in homeworking in many countries around the world, uncertainty about the degree to which commuters will return to the office post-pandemic and the future automation of the motor industry including electric and driverless cars (Budnitz et al., 2020; Ferbrache, 2019). Nevertheless, the concept of TOD in the Green Belt remains a very poignant and pressing one with growing development pressure around the world in semi-rural areas as city dwellers aspire for more domestic and outdoor space following the pandemic (Goode, 2021). Moreover, trying to reverse the increased dominance of the automobile as a mode of transport through the pandemic, underlines the continuing importance of integrating public and active travel modes into new housing development (Budd and Ison, 2020). Moreover, whilst the complexity of the housing affordability problem is acknowledged alongside the desirability of town/city regeneration in sustainability terms, in practice greenfield housing development will remain an important aspect of post-Covid recovery, especially in England with the Government's 'target' of 300,000 new homes per annum (although this 'target' is now under review) (Mace, 2018, p. 17). However, the paper has underlined the significant limitations to TOD as a sustainable form of development, especially in regional Green Belts like the West Midlands (Chance, 2019). This highlights the need for more geographically based case studies of the challenges of delivering TOD alongside the pressing need for greater coordination in transport and housing policy at all spatial scales (Curtis, 2012).

In one sense, the strategic logic of the need to plan transport at the regional or sub-regional scale contrasts with England's political geography and the current localism agenda whereby both the Green Belt and housing numbers are largely managed at the local level (Mace, 2018). This underlines the greater need for transport research to be more cognisant of the 'political', especially with the popular support which planning policies like the Green Belt can command (Bradley, 2019). In line with recent calls from influential bodies for the strategic planning of housing and transport, like the County Councils Network (Riddell, 2020), this paper has argued that TOD in the Green Belt needs to be considered within a strategic framework that considers the Green Belt's spatial integrity, transport infrastructure and various spatial blueprints for growth (i.e. new towns or urban extensions). Moreover, in contrast to the aspatial NPPF, more fiscal and transport devolution is arguably required to ensure that housing and transport policy is more cognisant and aligned to the social and transport geographies of the regions rather than being dominated by the spatial imaginary of London and the South East (McGuinness et al., 2018, p. 329).

To conclude, this paper has not critiqued the validity or utility of TOD as a concept per se but questioned how far it is relevant and feasible in the Green Belt within the context of limited public transport provision in regional England. Transport policy has an inherently strategic dimension and it is time for housing policy and the broader debate on the Green Belt to return to this spatial scale (Curtis, 2012; Knowles, 2021).

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## Data availability

The data that has been used is confidential.

## Appendix A. Interview questions

### Interview question themes: National

#### Section A: Evaluating the Green Belt as a policy

1. Policy analysis of the Green Belt as preventing urban sprawl.

2. Evaluation of the effects of the policy 1) upon leapfrogging and 2) strategic housing locations.

#### Section B: Exploring the links between the Green Belt and the housing crisis

3. The effectiveness of strategic planning in ensuring public transport provision in new development.
4. The potential of urban densification/brownfield development in meeting housing shortages in a sustainable manner.
5. The challenges of strategic planning in coordinating in public transport provision in new development, especially with the lack of strategic planning since, 2010.
6. Green Belt reform and the potential of TOD to solve the housing shortage sustainably with a focus on post-industrial regions.

#### Section C: Addressing community concerns about development

7. Popular opposition to new housebuilding, especially the importance of transport as an objection.
8. Improving the integration of transport and land-use planning in new developments.
9. Exploring the sustainability of urban extensions versus new settlements in addressing the housing shortage.

### Interview question themes: West Midlands

#### Section A: Evaluating the Green Belt as a policy

1. Policy analysis of the Green Belt as preventing urban sprawl regionally.
2. Evaluation of the effects of the policy 1) upon leapfrogging and 2) strategic development patterns in the West Midlands.

#### Section B: Exploring the links between the Green Belt and the housing crisis

3. The effectiveness of strategic planning in ensuring public transport provision in new development in the West Midlands.
4. The potential of urban densification/brownfield development in meeting housing shortages in a sustainable manner particularly with the amount of brownfield land in the West Midlands.
5. The challenges of strategic planning in coordinating in public transport provision in new development, especially with the West Midlands Combined Authority not having planning powers.
6. Green Belt reform and the potential of TOD to solve the regional housing shortage sustainably. A focus on specific locations for TOD in the West Midlands.

#### Section C: Addressing community concerns about development

7. Popular opposition to new housebuilding, especially the importance of transport as an objection with the lack of public transport provision in the West Midlands.
8. Improving the integration of transport and land-use planning in new developments regionally.
9. Exploring the sustainability of urban extensions versus new settlements in addressing the housing shortage in the West Midlands, especially given new towns historically like Redditch and Telford.

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