

## Chapter 10

# Spatial Synergies and Conflicts: Monitoring Government Policies and Programmes in England

Cecilia Wong, Brian Webb, Andreas Schulze-Baing, Mark Baker, Stephen Hincks

Centre for Urban Policy Studies, School of Environment, Education and Development, the University of Manchester, Oxford Road, Manchester M13 9PL. Email: [Cecilia.wong@manchester.ac.uk](mailto:Cecilia.wong@manchester.ac.uk), Tel: +44 161 2750680.

### Abstract

*This paper demonstrates the analytical and visual impact values of employing GIS mapping overlays to identify the patterns of spatial synergies and conflicts arising from sectoral policies and programmes, thus serving as a robust tool for monitoring spatial policy co-ordination. The analysis takes the National Planning Policy Framework (NPPF) of the UK Coalition Government as a springboard to illustrate the need to 'think spatially, act spatially' when devising government policies and programmes, in order to galvanise capacities and minimise potential conflicting land uses. The key planning challenge of housing delivery in England is used to illustrate the methodology. The paper concludes that government policies and actions – even without a deliberate spatial framework – create spatial outcomes that, cumulatively, create very stark spatial impacts. Making these explicit, through a relatively simple GIS mapping overlay approach, can greatly inform policy debates and encourage enhanced partnership working between government policy-makers and stakeholders. The result is enhanced coordination, management and delivery of complex spatial planning policies across different spatial levels.*

### Introduction

The spatial complexity of area-based urban initiatives in Britain was famously captured by the Audit Commission (1989, p.1) as 'a patchwork quilt of complexity and idiosyncrasy'. The 1990s had witnessed a trend towards more strategic thinking in co-ordinating regeneration activities in Britain; for instance, the Single Regeneration Budget was set up in 1994 to simplify the funding regime by bringing together a variety of programmes and initiatives from several government departments. Unfortunately, a decade later, the Labour Government regeneration minister, Lord Rooker, still described the chaotic policy maze as 'a bowl of spaghetti' (Lords Hansard, 2003). In spite of the promise made by the Labour Government, the haphazard approach to policy planning and coordination continued throughout the 2000s.

The 2004 Planning and Compulsory Purchase Act (HM Government, 2004) introduced a series of reforms to the statutory planning system in England that were heralded as transforming the focus from a narrow, more regulatory, concern with 'land use' to a more holistic and integrated 'spatial' approach that emphasized critical thinking about space and places as the basis for land use intervention to encapsulate a broader meaning of planning concerned with 'place-making'. Better co-ordination and integration of policy, horizontally across different policy sectors and vertically across different spatial scales from the national to the local, was at the heart of this spatial planning vision. However, despite the promise of more joined-up policy, there remained a continuation of the historic disjunction between economic development and strategic planning across different spatial scales (Baker and Wong, 2012). The irony is that a single integrated regional strategy was eventually proposed to co-ordinate economic and land use planning policies (DCLG, 2007) towards the end of the Labour administration, but this was stillborn. The Coalition Government that came to power in 2010 very quickly revoked all regional planning strategies via the 2011 Localism Act which fundamentally shifts spatial policies from the previous top-down, target-driven approach towards an 'open source', local oriented style. While this gravity shift to a more localised approach provides opportunities for developing more contextualised planning, this can arguably only be achieved if there is also a clear and well-articulated national planning framework that, in turn, can provide the parameters within which local planning authorities can develop and deliver their planning policies.

The goals of spatial planning are by their nature broad, varied and complex and their implementation and delivery are heavily reliant upon the action of a plurality of actors and agencies across operationally independent policy sectors (Albrechts, 2001; Wong and Watkins, 2009). In a nutshell, spatial planning deals with what Rittel and Webber (1973) call wicked problems, embedded in a dynamic social context, which makes each problem unique but also difficult or impossible to solve. To Rittel and Webber, only by laying out alternative understandings of problems, competing interests, priorities and constraints, is it then possible to apply more formal analytical tools. The endeavour of monitoring and evaluating spatial planning has been largely focused on the challenge of identifying complex outcomes, but not the process of policy development and coordination in terms of competing interests and practices

across different policy sectors. This is closely associated with the departmental silos across different government departments and agencies and the long-standing 'spaghetti bowl' syndrome. However, the emphasis on vertical and horizontal policy coordination with a spatial perspective has underpinned the rationale of spatial planning and should therefore be included in any formal policy monitoring process.

Since the start of the millennium, the Royal Town Planning Institute (RTPI) has commissioned three studies, conducted by the authors, to ascertain the spatial coordination of planning across different parts of Britain. The first study (Wong, Turner and Ravetz, 2000) used employment and housing as the case study sectors to illustrate the fragmentation of policy frameworks at all spatial levels and the second study (Wong, Schulze-Baing and Rae, 2006) examined the spatial structure and spatial connections across the UK. The latest study, *A Map for England* (Wong et al, 2012), aims to bring the two together by examining the interplay between policy needs and spatial contexts via mapping the government's policy and programme delivery. Since there is not a single place or data source within government that makes all of these maps available to view, 'A Map for England' is designed to help policymakers make better judgments about how individual policy proposals interact with, and affect, the development of the country as a whole through better spatial planning. Despite the advancement of GIS technology, there has been a long acknowledged gap between its research development and its application in planning practice (Vonk et al., 2005), which Batty (2004, p.327) regards as 'the tragedy of the field'. The comments made by Gilfoyle and Wong (1998) in the late 1990s remain true today that the large majority of GIS applications in British planning remain lower order activities of cartographic outputs, rather than for analysis and decision-making. The RTPI initiative has, however, been greeted with an enthusiastic response and associated debate from planners and the media. Interestingly, some politicians have subsequently drawn upon the findings of the study to argue their points in public government committee hearings (see RTPI, 2014).

Against this context, this chapter aims to serve two purposes. First of all, it considers whether there has been any concerted effort to improve the spatial coordination of policy during the two decades or more of policy experiments since the 'patchwork quilt' and 'spaghetti bowl' analogies. Secondly, rather than using traditional

quantitative data or qualitative texts, this paper demonstrates the analytical and visual impact values of employing GIS mapping overlays to identify the patterns of spatial synergies and conflicts arising from policies and programmes to serve as a robust monitoring tool for spatial policy coordination. To do so, the key planning challenge of housing delivery in England is used to illustrate how such a methodology can usefully be employed.

## **The Appraisal of Government Policies and Programmes**

Before the commencement of any spatial mapping work, the study started with a systematic scanning exercise of policy documents and web sites of different government departments and their agencies and NDPBs (non-departmental public bodies). This exercise was undertaken in January 2012 and covered a total of 95 relevant sources (see Wong et al, 2012). These included documents and websites from the Department for Business, Innovation and Skills; the Department for Communities and Local Government; the Department for Environment, the Department for Environment, Food and Rural Affairs; the Department for Transport; the Department for Culture, Media and Sport; HM Treasury; Home Office; Cabinet Office; British Waterways; Environment Agency; and Natural England. The scanning exercise first sought to identify which of these national policy documents had a spatial content and which were essentially 'aspatial' in nature. Such an analysis is useful as it "captures the representation of space in language, and reveals some of the power relations which contest these representations" (Jensen and Richardson, 2001, p.704).

After appraising the 95 sources, just over a third (37) are found to have an explicit spatial expression and/or spatial consequences in terms of including maps, spatial diagrams, or with clear spatially-referenced data/text. The remaining two-thirds, nonetheless, consist of policies/programmes that have clear spatial consequences and outcomes but do not articulate such characteristics explicitly. Given the spatial consequences, explicit or otherwise, of a wide range of government policy, it is perhaps rather surprising that there is no single national strategy document that tries to provide any kind of integrated spatial framework, drawing on all these sectoral policies and programmes and how they cumulatively interact and affect the

development of the country. Among the documents that shy away from making any spatial articulation, and can thus be categorised as ‘aspatial’ in nature, it is something of a concern to find not only the Coalition government’s recent National Planning Policy Framework (NPPF) (DCLG, 2012), but also the majority of the earlier national Planning Policy Statements/Guidance (PPS/PPGs), largely lack spatial expressions. Yet these national policy documents are supposed to be an integral part of the spatial planning system, providing an overarching framework for spatial planning across England. This begs the question of how local planning can be expected to perform the coordination and management role of sustainable development when there is no obvious spatial framework to join up different sectoral policies across different regions in England, let alone across the UK as a whole.

Despite the fact that the NPPF is an ‘aspatial’ document, it is clear that government policies and programmes do have spatial implications. In some instances these are made explicit, such as in the case of the high speed rail network proposals and other projects set out in the National Infrastructure Plan (HM Treasury, 2011). Other mainstream government policies (e.g. on supply-side measures for tackling non-employment, on investment in flood risk prevention projects, etc.) also have implications for the spatial distribution of economic activity and development opportunities. Yet a clear understanding of these differential spatial operating contexts and potential outcomes is particularly important if local authorities are to successfully contribute to the UK Government’s national objectives and planning policies (see DCLG, 2012) for sustainable development and securing economic growth, via their preparation of local plans and strategies.

Moreover, administrative boundaries at regional and local levels do not define functional entities. Economic, social and spatial processes do not stop at an administrative boundary. Rather, there are ‘spill-over effects’ reflecting inter-area linkages. This is perhaps most clear in the case of London, the South East and East of England regions, where all three regions are influenced by the role of London as a ‘World City’ and where a key policy area, the Thames Gateway, straddles regional boundaries. Elsewhere, there are also important functional (commuting and migration) links, for example, between parts of Derbyshire (in the East Midlands) and Sheffield (in Yorkshire and the Humber), and southern Milton Keynes. Certain sub-

regions, such as High Peak and northern Cheshire, have strong linkages with the Greater Manchester Local Enterprise Partnership. Relevant information with regard to these spatial functional connections, taking account of issues such as strategic housing market areas and flood risk, can help to inform local authorities in developing more robust local spatial planning and growth strategies.

## **Mapping the Spatial Contexts for Future Planning**

Planning is a future oriented activity and development across different local authority and partnership areas is very much affected by a combination of the physical constraints of landscape designation and emerging development trends, as well as the government's own policies and programmes that can exacerbate or reduce such trends. The designation of national parks and areas of outstanding natural beauty, as protected environments and landscapes within England, sets out physical restrictions on the development of land (see Figure 10.1). The longstanding planning tool of national green belt policy, which limits growth of the conurbations and major towns into their surrounding countryside, imposes further restrictions on development, often in areas exhibiting the greatest development pressures. This has led to controversial debates over whether there is a need to revise current green belt policy in order to release land for house building to address the pressurised housing markets, especially in the wider South East region that surrounds the Greater London conurbation. These restrictions also mean that the country's main urban centres are often tightly defined by the green belt and the scope for development in some regions is very limited. For example, potential development in the South West region is limited by environmental and green belt designations and, as a consequence, mainly focused within particular parts of the counties of Somerset and Devon. In contrast, the areas with less national land use restrictions tend to be located on the eastern side of England, such as within the East Midlands and Eastern regions and parts of Yorkshire and the Humber.

Besides landscape designations, the general socio-economic development patterns reveal very important contextual information that underpins the rationale and vision for spatial planning across the country. Figure 10.2 shows the distribution of gross value added per head as well as highlighting areas containing England's 20 percent

most deprived population<sup>1</sup>. This map clearly illustrates the long standing 'North-South' divide by drawing a line between the Severn and the Wash Estuary. This line encapsulates the socio-economic and political differences between different regions in Britain, mainly the southern regions against the rest. This broad generalisation of an affluent south and a less well-off north does, however, mask major variations in these regions. While southern England, on the whole, enjoys higher GVA per capita, some of the southern coastal areas do have lower GVA and exhibit significant pockets of deprivation. It is also interesting to note the complex spatial phenomenon of London where affluence and deprivation co-exist in the same space.

Meanwhile, the situation in northern England shows that deprivation tends to go hand in hand with low levels of GVA in the major urban conurbations, especially in the Mersey belt (the urban areas running across the North West region from Liverpool in the west to Manchester in the east), the West Midlands, Tyne and Wear, Teesside and West and South Yorkshire. Many of these areas have suffered from the decline of their industrial legacy and many are previous coal-mining areas. There are, however, pockets of very affluent areas, such as Cheshire which is a renowned commuting hinterland for high earners working in Liverpool and Manchester. By combining these two maps, a long list of potential spatial planning challenges has already emerged. These challenges will be further analysed in the next section through an examination of the interaction between these spatial contexts and the government's policies and programmes, using the case of housing delivery.

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<sup>1</sup> The 20% most deprived areas are based on the value of the 2010 Index of Multiple Deprivation. The spatial unit of analysis is the Lower Super Output Areas (LSOAs), which are socially homogeneous areas. Each have an average of around 1,500 residents and 650 households.

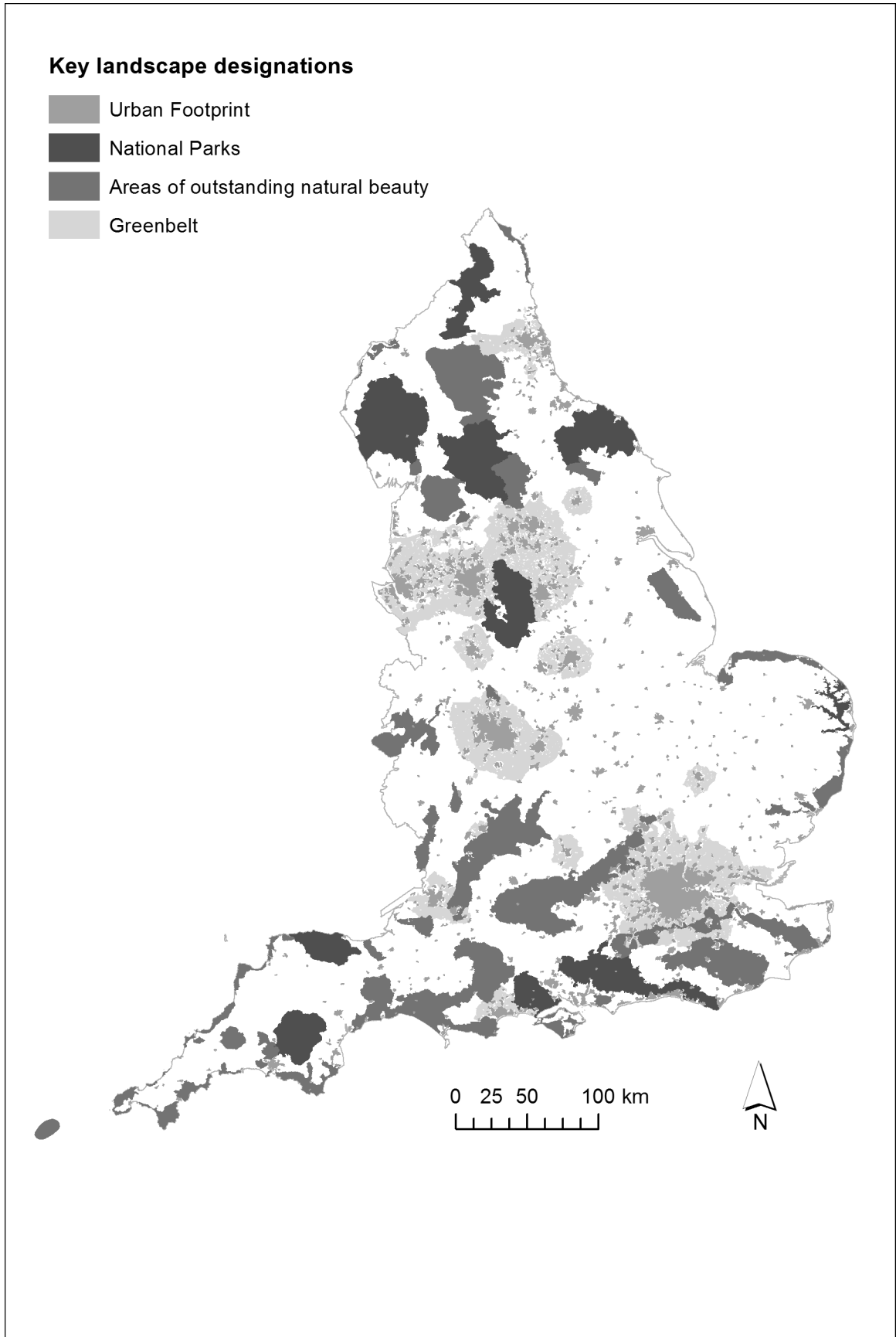


Figure 10.1 Key landscape designations



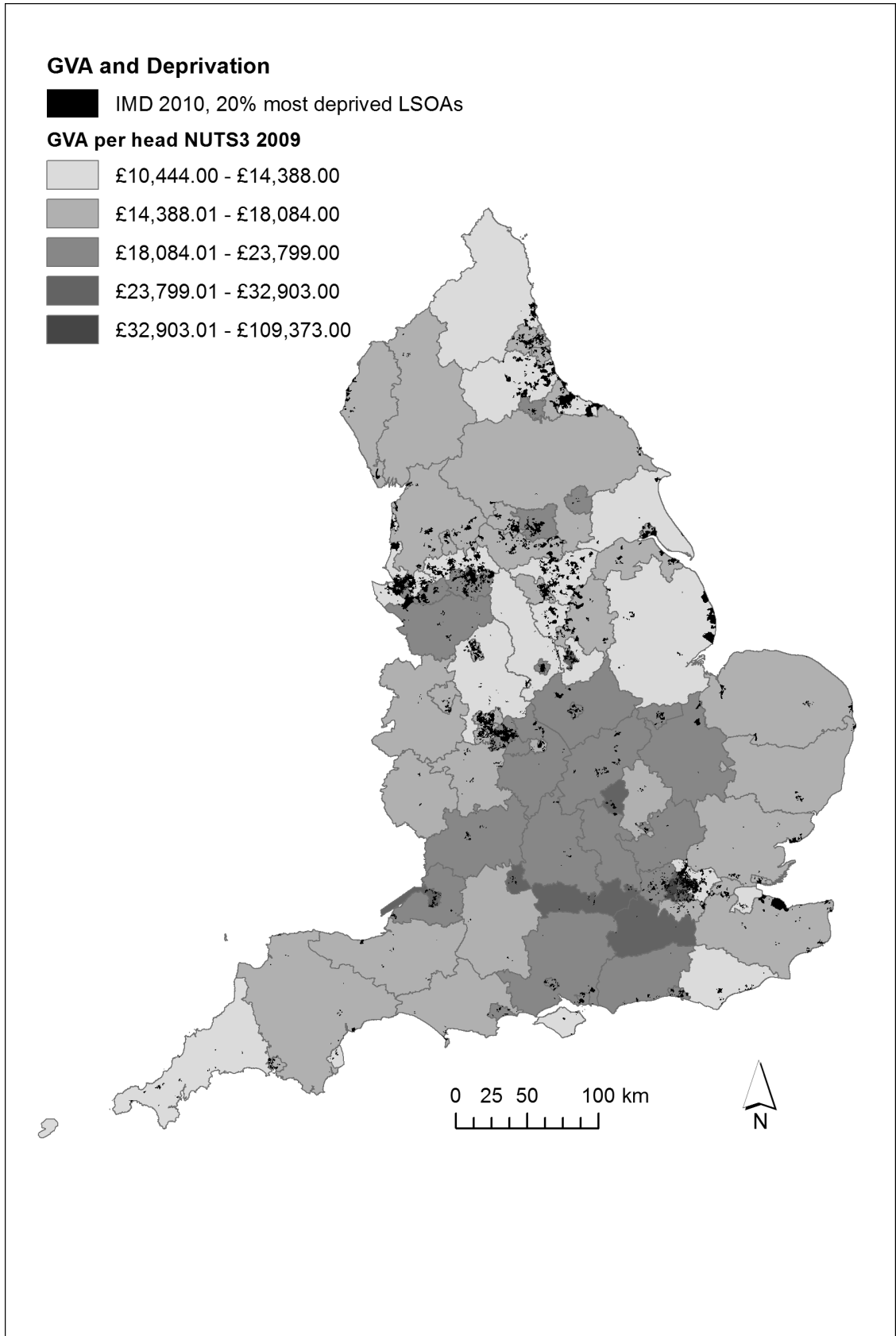


Figure 10.2 Gross Value Added and Index of Multiple Deprivation

## **Spatial synergies and conflicts of policies and programmes**

Based on the spatial map data compiled from government documents and websites, an analysis was carried out to identify key planning challenges and opportunities in terms of the spatial synergies and conflicts presented in different national policies and programmes and their interaction with the wider socio-economic and environmental context. In this chapter, the analysis focuses on examining the relationship of trend based household growth projections and the spatial context of housing delivery and the interaction with other government policies and programmes.

A core map was produced to highlight areas with very high projected household growth. GIS overlay analysis was then used to impose different spatial contexts, and different government policies/programmes, onto it. The map overlays are used predominantly to display spatial synergies and/or conflicts caused by the interaction of existing development trends and pro-growth policy interventions, and between government policies/programmes across different sectors. The analysis presented here is not meant to be comprehensive or exhaustive, but rather to serve as an example to illustrate the importance of adopting an open, guidance approach to enhance the understanding of the cumulative spatial impacts and opportunities brought by different policies and activities. Such a guidance or visioning process should seek to formulate a conception of space and place that is understandable by a wide variety of actors, such that it results in a collective way of 'seeing' (Healey, 2007) to facilitate collaboration and discourse to occur.

The NPPF (DCLG, 2012) makes it clear that the government's key housing objective is to significantly increase the delivery of new homes. However, it does not articulate the spatial distribution of future housing supply and demand. Instead, it requires local planning authorities (with neighbouring authorities where housing market areas cross administrative boundaries) to prepare a Strategic Housing Market Assessment (SHMA) to assess their full housing requirements in terms of the scale and mix of housing and the range of tenures. They are also required to prepare a Strategic Housing Land Availability Assessment (SHLAA) to establish realistic assumptions about the availability, suitability and the likely economic viability of land to meet the identified requirement for housing over the plan period. The outcomes of conducting

SHMA and SHLAA are to ascertain the spatial requirements of different types of housing within the local plan. The National Infrastructure Plan (HM Treasury, 2011), however, goes further to articulate the inter-sector connections between new housing delivery and infrastructure provision. It argues that new housing has to be supported by infrastructure, and that infrastructure providers therefore need to have certainty over new housing delivery before making investment decisions. The National Infrastructure Plan makes reference to the land supply proposals of emerging local plans and the need for local authorities to work together across boundaries to properly plan for infrastructure provision (para. 4.24) as well as potential funding sources (para. 4.5). However, in spite of the emphasis on policy coordination of housing delivery and the provision of services, employment and infrastructure, there is not any overview of the spatial patterns of delivery at the strategic, national level across different government departments. The analysis here aims to illustrate this knowledge gap.

Areas with the highest projected household growth (above the 27% average) during 2008-2033 are mainly found in commuting areas to major townships and urban areas. In Eastern England, high growth areas are found around the major townships of Ipswich, Colchester, King's Lynn, Cambridge and Northampton. High growth is also expected in the Ashford/Kent area and in part of London in the South East. Significant growth is projected in the South West Region: the M5 corridor near Bristol; and areas around Exeter and North Dartmoor. In the Midlands, major increase is projected around South Derbyshire, Warwickshire, and the High Peak area. When moving further north, there is a growth belt running from the Yorkshire Dales, Bradford, Leeds, Selby, York, West Lindsey, East Riding and Hull.

By simply overlaying the maps of physical constraints and projected household growth together in Figure 10.3, the potential conflicts in locations with high landscape value and with high projected household growth are clearly highlighted. Obvious clashes are found in the Yorkshire Dales, the coastal areas of Norfolk and Suffolk, and in Devon. Similarly, Figure 10.4 shows that certain high growth areas may have conflicts of interest over areas with low levels of habitat fragmentation such as in Dartmoor and the Ashford and Kent area. It is interesting in this context to note the recent thoughts of the Coalition government to introduce a seismic change to the

long-standing policy of restricting housing developments areas with high landscape and ecological values. The proposal is to relax planning regulations that allow for up to three dwellings to replace or convert existing farm buildings in national parks and other areas of outstanding natural beauty (see Wollaston, 2014). This has set off a contentious debate over the shortage of affordable housing in national parks and the devastating effect of adding development pressures to already fragile rural landscapes and ecosystems. There is a major worry that, rather than meeting the housing needs of the low income rural population, these additional developments will simply cater for the second, holiday and luxury home markets. The GIS mapping analysis that we demonstrate here could offer a useful toolkit for the public and key stakeholders to be better informed on proposals like this.

With the growing concerns of climate change and the unpredictable natural events associated with the temperature change, large scale housing developments have to take account of flood risks and water supply issues. High levels of flood risk are projected in the high growth areas near the coastal areas of North Somerset and Hull and East Riding (see Figure 10.5). At the opposite end of the problem is relative water stress. As clearly shown in Figure 10.6, areas on the eastern side of England (with the exception of the Yorkshire growth areas) tend to suffer from more serious levels of water stress (partly related to their higher levels of drought risk). Unfortunately, these eastern locations also incorporate most of the projected high household growth areas. Our map overlays clearly indicate that any major housing developments in these sensitive areas will need to seriously take flood risk and water supply into account.

Another key concern of housing policy and delivery is to meet market demands and ensure housing affordability. Figure 10.7 and Figure 10.8 provide mapping overlays between GVA and deprivation with the projected high household growth areas. The projected high household areas tend to be found in southern England – in areas with very high GVA per capita such as London, Cambridgeshire, Oxfordshire, Bristol and North Somerset. However, very high growth is also projected in some areas with moderate GVA per capita levels, such as in the Eastern region and Devon. High growth areas in northern England exhibit varied levels of GVA, with a mix of affluent and rural localities. As might be expected, with the exception of London and parts of

West Yorkshire, there are no areas of high projected household growth which are also in areas with concentrated deprivation. Figure 10.9 shows the relationship between areas projected to have very high household growth rates and their respective housing affordability ratios (normalised house price versus average household income). It is interesting to discover that there is a very neat spatial divide in terms of the affordability ratio of different high growth areas. The 'North-South' divide neatly summarises the situation, revealing the high growth areas north of the dividing line are much more affordable than is the case on the southern side of the divide. If we overlay this map on top of Figure 10.3, it can be seen that the high growth areas that are least affordable are those located in national parks and areas of outstanding natural beauty. This justifies the concerns expressed by the media that the government's proposal to allow for more house building in these areas will mainly fuel more second homes rather than addressing local housing needs.

**Key landscape designations and household growth projection**






-  Districts with projected household growth above 35%, 2008-2033
-  Urban Footprint
-  National Parks
-  Areas of outstanding natural beauty
-  Greenbelt



Figure 10.3 Key landscape designations and household growth projections

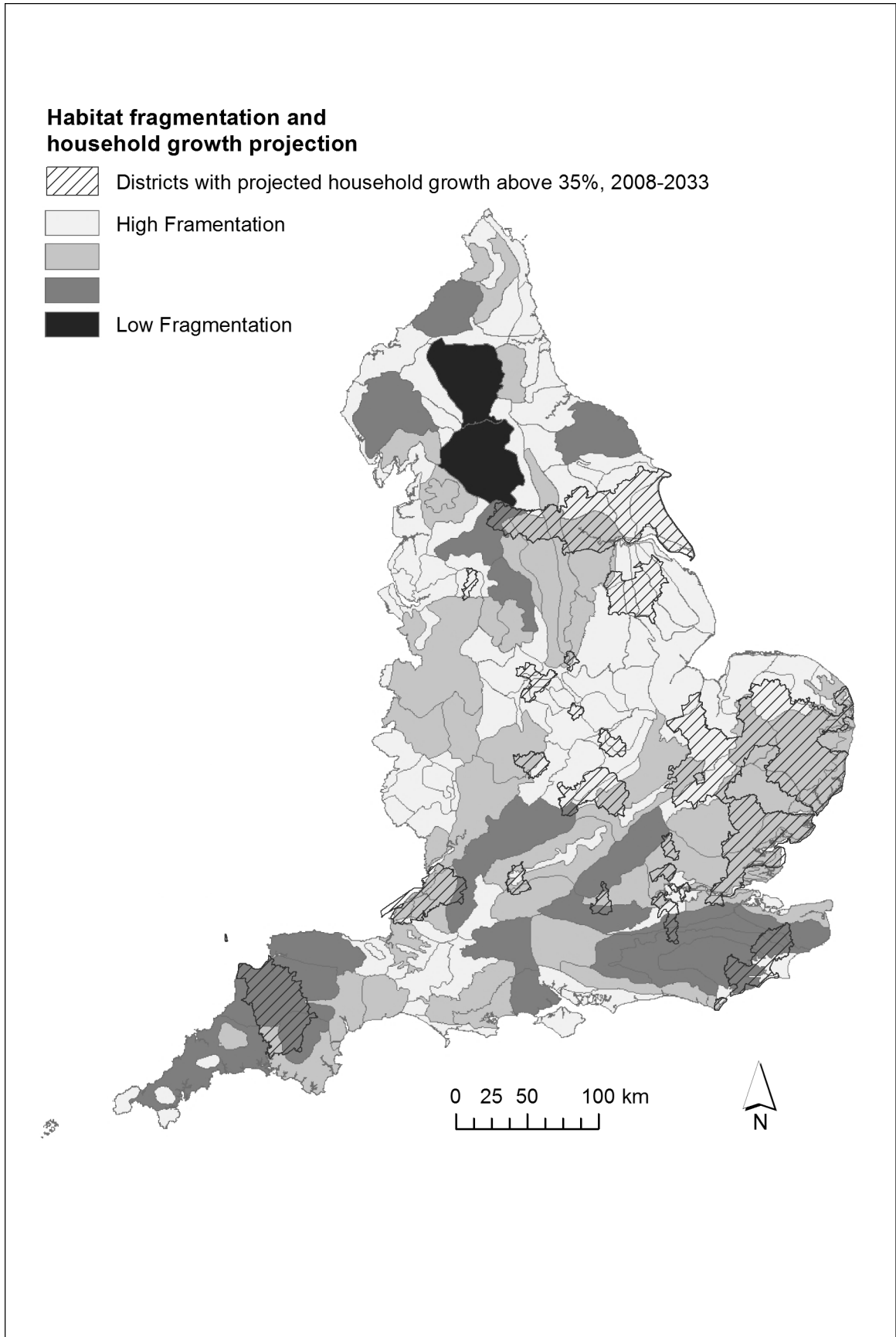


Figure 10.4 Habitat fragmentation and high household growth projection

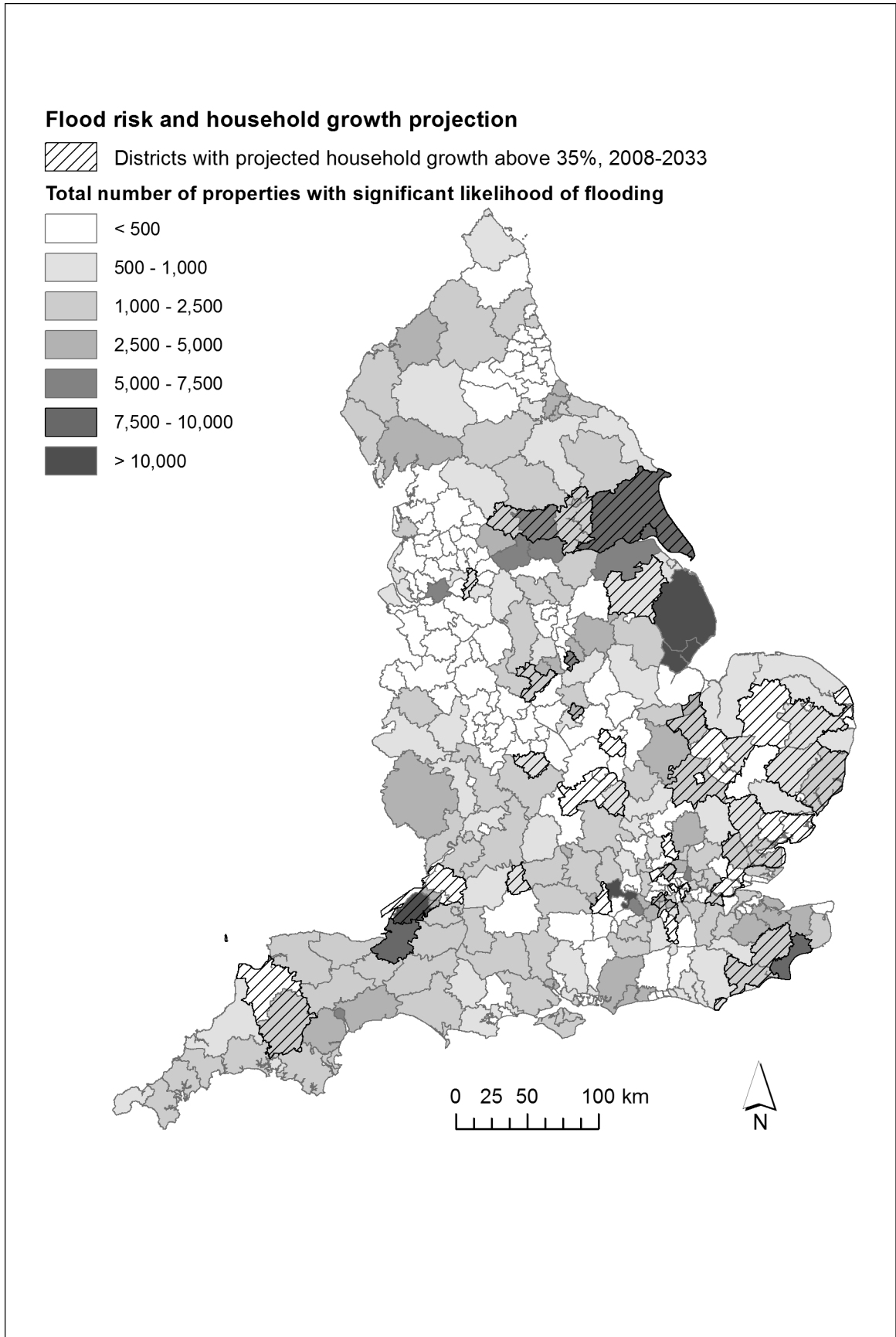


Figure 10.5 Flood risk and high household growth projection



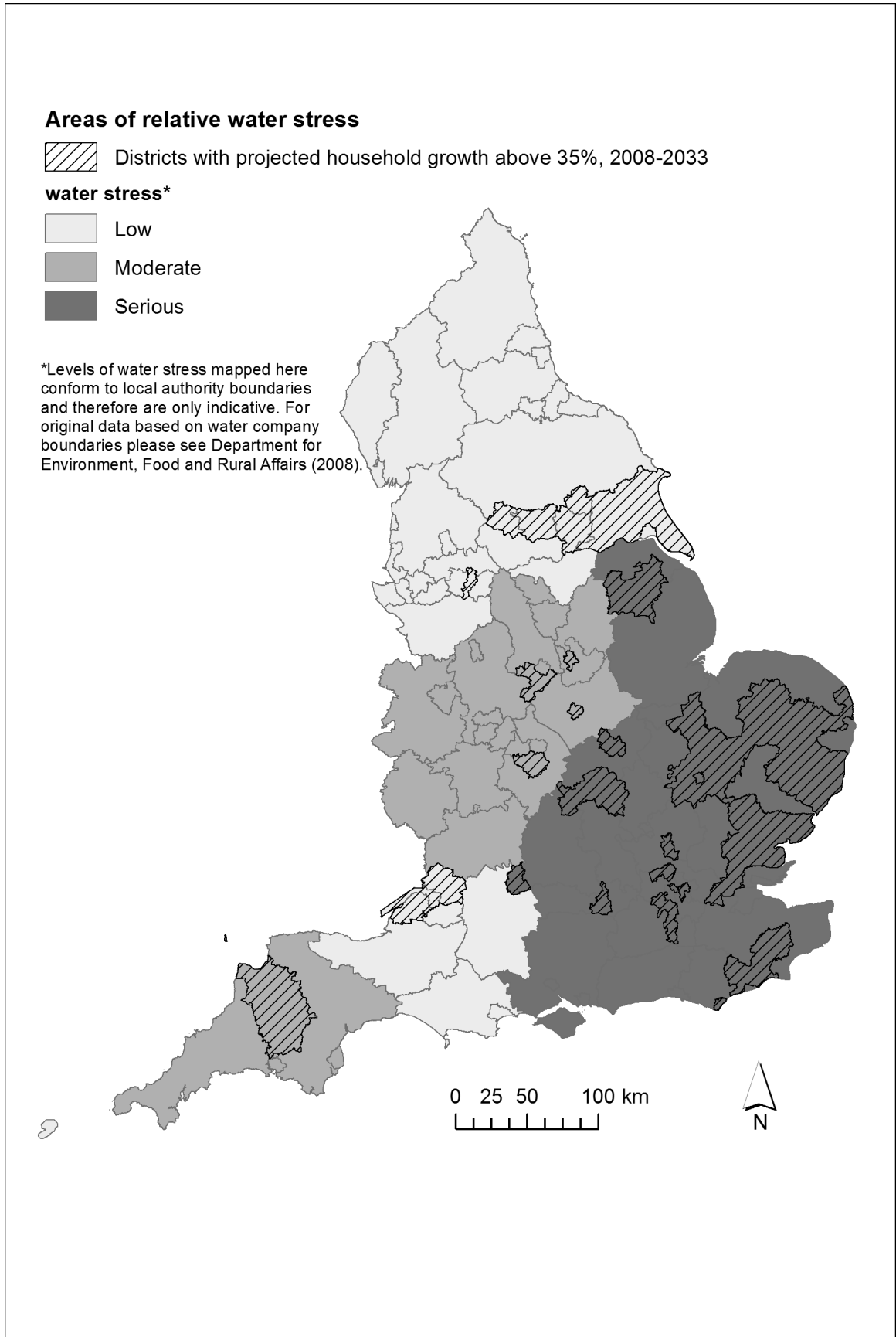


Figure 10.6 Relative water stress level and high household growth projection

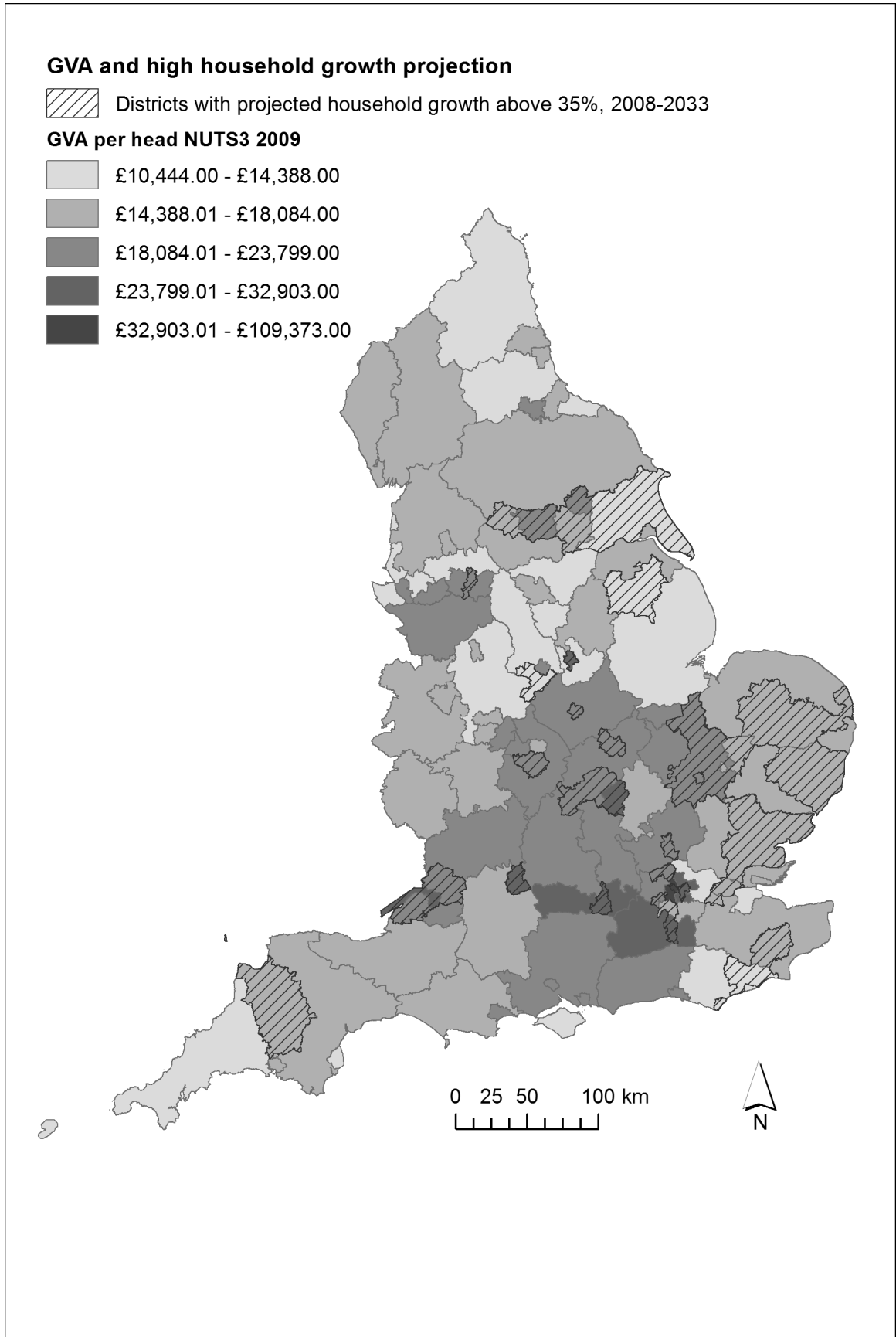


Figure 10.7 GVA and high household growth projection

**Multiple Deprivation and high household growth projection**

- IMD 2010, 20% most deprived LSOAs
- ▨ Districts with projected household growth above 35%, 2008-2033

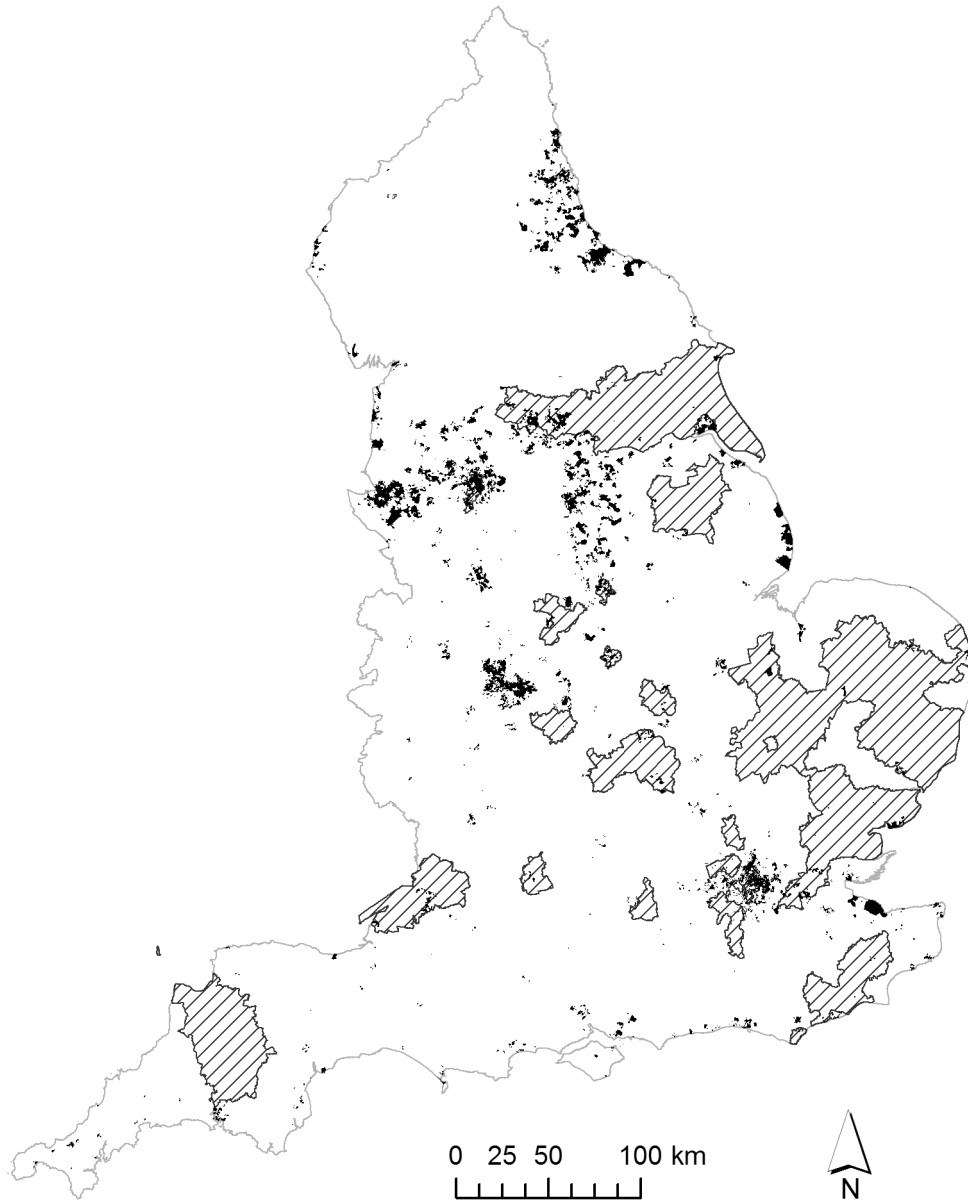


Figure 10.8 IMD and high household growth projection

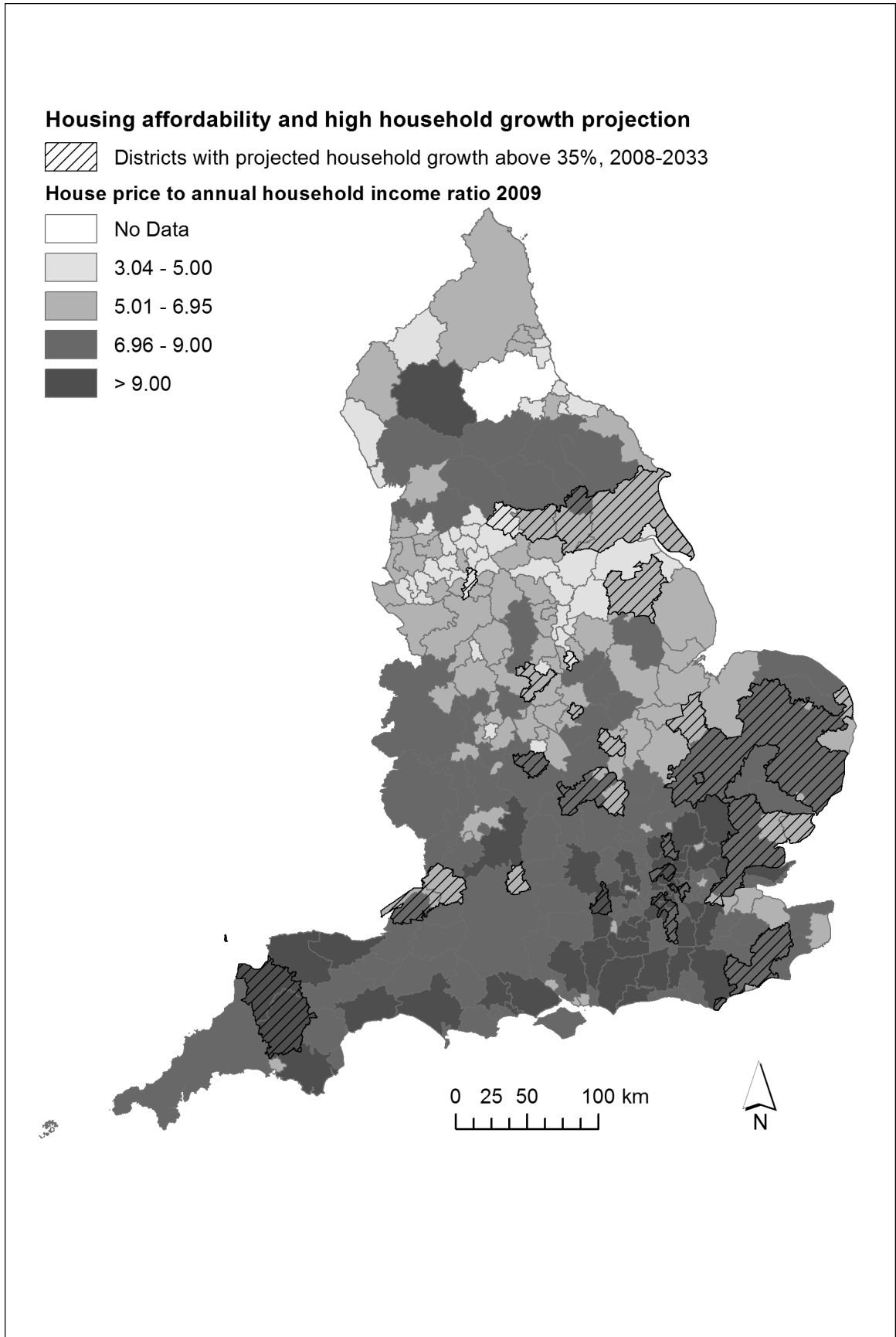


Figure 10.9 Housing affordability and high household growth projection

The housing trend analysis shown here reveals that the government's policies and actions, even without a deliberate spatial framework, have spatial outcomes and, cumulatively, they create differential spatial impacts. While the government acknowledges that one size does not fit all and intends to devolve more planning power to local authorities to address their own local issues, this should not be confused with the need to coordinate activities and to provide spatially integrated guidance to local authorities to deliver local policies. The NPPF deliberately avoids any spatial steering of future housing provision and simply delegates the job to the SHMA and SHLAA exercises at the local level. The analysis of future household projections (the best guess of future housing demand) clearly shows that the high growth areas in eastern England are likely to be in the least sustainable locations as these areas are classified by the Environment Agency as amongst those with serious water stress. While each local authority can attempt to deal with this issue via their local plans, it will not be as effective and efficient for multiple authorities to deal with the same issue independently, without at least some overarching guidance from the government. The maps presented here illustrate a sporadic picture of synergies and conflicts between government policies over different places which fails to optimise the limited resources to support housing development in a strategic and sustainable manner.

## **Discussion and Conclusion**

This study set out to examine the interplay between policy needs and spatial contexts via mapping the policies and programmes of government departments and their agencies and NDPBs. The scanning and appraisal exercise of government documents, reports and websites has proved that many government policies and programmes do have strong spatial expression or, more importantly, significant spatial consequences. The study of government policy documents raised a series of questions around whether current government policy has the scope to respond to strategic spatial challenges. One example, remaining unanswered, is the question of the extent to which national road, rail and digital communications proposals will, in combination, simply concentrate resources along particular strategic corridors and/or complement the potential concentration of resources on eight identified core cities.

Similarly, the relationships between these and other issues (such as the location of new power stations, or future airport capacity) and the spatial context of environmental constraints (for example, National Parks and nature conservation sites) and risks (for example, flooding) are given limited consideration at national level.

This review, and the associated mapping exercise, suggested that there was apparently little understanding in government policy of how these sectoral issues might complement or conflict with one another, thus creating synergies or tensions that might lead to future successes or failures in delivery and implementation. Ultimately this situation will contribute to, or frustrate, the future levels of economic growth and sustainable development that the current Coalition Government has committed itself to achieving. Indeed, the delivery of policy priorities in one local authority does not happen in isolation of the delivery of policy priorities in other local authorities – adjacent or otherwise. The strategic level of spatial planning, to address the bigger picture ('larger-than-local') is as important now as it was before the current Coalition government abolished the regional strategies and associated regional institutions such as the regional development agencies. In response, there is a new statutory requirement for neighbouring local authorities to cooperate over addressing a range of strategic priorities, as set out in the NPPF (DCLG, 2012). Although this so-called 'duty-to-cooperate' has some potential to bring policy-makers in different local authorities together, the capacity for effective strategic policy development through this means alone remains doubtful. Yet strategic spatial thinking is a skill that policy-makers can ill-afford to neglect in an era of localism. Without a strategic spatial perspective, there are risks that strategic policy blindness will further undermine efforts to deliver more effective spatial policy co-ordination and will limit the capacity for local policy to respond strategically to spatial outcomes.

The analysis of the household growth and housing delivery presented here further demonstrates that, by placing these spatial expressions together, a spatial reference framework starts to reveal some of the implicit assumptions, or random decisions, of government policy-making. Making these spatial challenges and opportunities more explicit would help to inform policy debate and encourage partnership working to better coordinate and manage the delivery of what are often very complex spatial

planning policies. On the contrary, by not articulating the spatial relationships of planning issues, such as future household growth and the spatial strategy of housing delivery, can lead to disjointed and ad-hoc management of infrastructure and service provisions at the local level. Only when such spatial relationships of policies and programmes are clearly presented and understood, can different spatial scenarios and metaphors, for future spatial opportunities and challenges in England, be developed in a way that can inform long-range, strategic planning and development in the wider European and global contexts.

In summary, there is a general political consensus that policy implementation should be contextual, and that more power should be devolved to local authorities in order to allow them to address their own policy priorities. However, it is important that the co-ordination of activities across boundaries is not lost, and that our understanding of spatial synergies and conflicts is sensitised to the long-term strategic priorities that lie beyond the policy agendas of individual local authorities. The analysis here illustrates that government policies and actions – even without a deliberate spatial framework – create spatial outcomes that, cumulatively, create very stark spatial impacts. In addition, the responsibility for co-ordinating the provision of future housing rests squarely on the shoulders of local authorities, with the Government's own national planning policy framework (NPPF) deliberately avoiding giving any strategic spatial direction. While each local authority can attempt to deal with a wide range of spatial issues through their Local Plans, it will not be effective or efficient for multiple authorities to deal with these issues independently without some overarching guidance from central government. It is these kinds of acute tensions, synergies and conflicts, emerging from different policy agendas and coupled with the asymmetric consequences of devolved political responsibilities, that need to be more clearly understood and monitored, not only for England but across the UK as a whole.

In contrast to this strategic spatial policy vacuum, the analysis in this study does demonstrate the value and potential of applying a GIS analytical methodology to a whole array of planning and sectoral policy issues to identify spatial synergies, conflicts, challenges and opportunities across different spatial scales to inform policy-thinking. With more resources, more sophisticated mapping packages and datasets could be utilized to refine and develop the analysis further and extend the

coverage to all the key topics of the NPPF. The potential value of such GIS mapping lies in its powerful visualisation functions and its associated role in enhancing shared cognition and values to improve decision-making in groups, enhancing trust and facilitating collaboration and consensus during policy-making processes and stakeholder consultations. But even without focusing on the development of perfect technologies and high-end software, the 'A Map for England' study demonstrates that a simple mapping overlay and associated analysis of specific planning issues can catch the attention of planners, politicians and the media (RTPI, 2014). The development of a flexible, guidance approach, with the aide of GIS to facilitate 'planning-as-learning', is therefore advocated as a way forward to achieve better spatial policy coordination (Rae and Wong, 2012; Wong et al, 2008). This collective way of 'seeing' can facilitate debate and learning among stakeholders and help them to 'think spatially, act spatially'.

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Figure	Data Source
10.1	<p>For National Parks and Areas of Outstanding Natural Beauty:            © Natural England, 2010, reproduced with the permission of Natural England.            Data accessed from GIS Digital Boundary Datasets of Natural England,  <a href="http://www.gis.naturalengland.org.uk">http://www.gis.naturalengland.org.uk</a>,            For Greenbelt: Static PDF Map from 2009 available at  <a href="http://magic.defra.gov.uk/staticmaps/maps/gn_belt_col.pdf">http://magic.defra.gov.uk/staticmaps/maps/gn_belt_col.pdf</a></p>
10.2	<p>For the English Indices of Deprivation 2010, Department for Communities and Local Government,  <a href="http://www.communities.gov.uk/publications/corporate/statistics/indices2010">http://www.communities.gov.uk/publications/corporate/statistics/indices2010</a>            For GVA, Office for National Statistics,  <a href="http://data.gov.uk/dataset/gross_value_added_gva_per_head">http://data.gov.uk/dataset/gross_value_added_gva_per_head</a>, Table 3.6            GVA per head (constrained to headline NUTS2) at current basic prices</p>
10.3	<p>For National Parks and Areas of Outstanding Natural Beauty see Figure 1            For 2008-based household projections to 2033, Department for Communities and Local Government Table 406, Household projections by district  <a href="http://www.communities.gov.uk/publications/corporate/statistics/2033household1110">http://www.communities.gov.uk/publications/corporate/statistics/2033household1110</a></p>
10.4	<p>Habitat Fragmentation: Lawton, J.H. Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.J., Tew, T.E., Varley, J., and Wynne, G.R. (2010) Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra, p. 51  <a href="http://www.defra.gov.uk/news/2010/09/24/nature-news/">http://www.defra.gov.uk/news/2010/09/24/nature-news/</a>            For household growth data see Figure 3</p>
10.5	<p>Environment Agency (2009) Flooding in England - a national assessment of flood risk, page 27,  <a href="http://publications.environment-agency.gov.uk/pdf/GEHO0609BQDS-E-E.pdf">http://publications.environment-agency.gov.uk/pdf/GEHO0609BQDS-E-E.pdf</a></p>

	For household growth data see Figure 3
10.6	For Areas of relative water stress see: Department for Environment, Food and Rural Affairs (2008) Future Water: The Government's water strategy for England. London, Stationary Office, page 22. For household growth data see Figure 3
10.7	For household growth data see Figure 3 For GVA see Figure 2
10.8	For the English Indices of Deprivation 2010 see Figure 2 For household growth data see Figure 3
10.9	For housing affordability, House Price Data: DCLG. Household Income Data: ONS Neighbourhood Statistics. For household growth data see Figure 1