An Agenda for the Liverpool City Region
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Chapter 1. Re-industrialisation: the re-birth of the Liverpool City Region's original agglomeration economy?</td>
<td>5</td>
</tr>
<tr>
<td>Chapter 2: Deprivation in the Liverpool City Region</td>
<td>15</td>
</tr>
<tr>
<td>Chapter 3. Where next? Graduate mobility in the Liverpool City Region</td>
<td>21</td>
</tr>
<tr>
<td>Chapter 4. A river runs through it. Harnessing the potential of the Mersey</td>
<td>29</td>
</tr>
<tr>
<td>Chapter 5: Exploring the geography of retail decline in the Liverpool City Region</td>
<td>37</td>
</tr>
<tr>
<td>Chapter 6: Conclusions and Recommendations</td>
<td>44</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>47</td>
</tr>
<tr>
<td>References</td>
<td>49</td>
</tr>
</tbody>
</table>
The emergence of the Combined Authority and the ‘Metro Mayor’ represents a hugely progressive step towards modernising the governance of the Liverpool City Region. This new political office covering a much broader geography than that of traditional local government means that, for the first time since the abolition of Merseyside County Council in 1986, policy will be made at the same scale as the functional economic geography of the conurbation.

As a consequence, in this report our attention has been restricted to five key areas that have been identified as meriting more in-depth scrutiny: the potential for a new agglomeration economy premised on re-industrialisation; identifying the character, spatial incidence and intransigence of deprivation; the city region’s status as an attractor of graduates; the energy generating potential of the river Mersey, and; the changing face of the retail economy.

The first issue, ‘re-industrialisation’, emerges both from recent research and what we learnt from canvassing opinion amongst public and private sector actors in the city region. Recent evidence on ‘re-shoring’ and an industrial renaissance more widely across Britain had been picked up in policy documents (e.g. Liverpool City Region LEP, 2016) and resonated with many of the stakeholders that we consulted at the work’s inception. However, our review of the literature showed that there was little in the way of evidence regarding how deeply-rooted or widely-distributed these industrial activities were in the Liverpool City Region; was there enough evidence to support the view that this economic activity constituted the beginning of a new agglomeration?

‘Identifying the character, spatial incidence and temporal nature of deprivation’, our second issue, was raised repeatedly by stakeholders as the principal brake on the Liverpool City Regional economy. Many of those who made this point referred to it as a perennial issue. This description resonated with researchers at the University of Liverpool who have developed new ways of thinking about (and mapping) deprivation where the longevity of the issue is a key variable. Consequently we have been able to respond to the desire felt amongst the policy community to gain a deeper understanding of the specific nature of deprivation (for example, the qualitative differences between areas where, say, income deprivation or health deprivation are relatively more or less important) and the process whereby deprivation becomes an entrenched characteristic of a neighbourhood. Both of these advances could support the development of a new generation of spatially-targeted policies.

In this report we have chosen to look at a relatively small range of issues that have been hand-picked as worthy of greater, more fine-grained scrutiny. In selecting these issues we have been guided by both the most recent comprehensive research on the Liverpool City Region and the solicited views of a broad cross section of leading public, private and voluntary sector actors from across the city region. Our aim is, therefore, not to be comprehensive or wide-ranging in the scope of our investigation but, rather, keenly focussed on what both academic evidence and the view from the ground identify as the most significant issues facing the Liverpool City Region in 2017, the year of its institution.

The wide-ranging extent of the Combined Authority area will require us to take a step back and become accustomed to making policy decisions and devising strategy across all six local authorities – Halton, Knowsley, Liverpool, Sefton, St. Helens and Wirral. As we collectively embark upon this exciting new chapter it is, therefore, important to take stock of our starting point and identify those issues upon which our attention should be most sharply focussed from the outset.

Identifying the most significant priorities that face us can be accomplished in two ways. Firstly, surveying recent work on the Liverpool City Region provides some clues to the most pressing issues. However, much of this research is wide ranging in scope and primarily provides an aggregate impression of the Liverpool City Region. Probably the best example of this kind of work is the State of the Liverpool City Region (Parkinson, 2016) which covers a huge breadth of indicators – social, economic, environmental. We can take a cue from such work to sharpen our focus on specific issues that have been identified as requiring greater, more fine-grained scrutiny. Secondly, there is a great deal of tacit and informal knowledge – the practical understandings accumulated in the real world – that is not well-captured by the primarily data-driven approach of most academic studies.

In this report we have chosen to look at a relatively small range of issues that have been hand-picked as worthy of greater, more in-depth attention. In selecting these issues we have been guided by both the most recent comprehensive research on the Liverpool City Region and the solicited views of a broad cross section of leading public, private and voluntary sector actors from across the city region. Our aim is, therefore, not to be comprehensive or wide-ranging in the scope of our investigation but, rather, keenly focussed on what both academic evidence and the view from the ground identify as the most significant issues facing the Liverpool City Region in 2017, the year of its institution.
Our choice to focus on the city region’s status as an attractor of graduates, our third issue, arises from recent research and media reportage, both national and local (Centre for Cities, 2009, 2016; Foresight Future of Cities, 2016; Liverpool Echo, 2016), which reaffirms the essentiality of a graduate workforce for there to be a meaningful connection between a city region and the high growth sectors of the global economy. Whilst research such as the State of the Liverpool City Region report provides a window onto the subject of graduate retention our engagement with policy makers at the inception stage of this research revealed that we lack a more clearly-focussed understanding of how we fare with respect to graduate attraction and mobility more widely. By examining secondary data sets from HEFCE, researchers at Liverpool John Moores University were able to produce some new insights into this question.

Perhaps the most obvious issue that we could not ignore in this report given the media attention it has garnered is the question of the viability of energy generating potential of the Mersey. Although there was ubiquitous interest in this issue and there has been some work already conducted on specific proposals the full range of options has so far not been set out in one document. To address this we commissioned new research from the University of Liverpool to explore the full suite of ways in which this immensely valuable natural asset could be a source of renewable energy. In addition we also make the case that, precisely because the river is such an immensely valuable natural asset, we should think collectively about how this resource is sustainably managed.

Finally, we were told repeatedly by those outside the universities that there had been far too little attention paid by the academic community to the issue of retail decline in the city region. The University of Liverpool is almost uniquely well-placed to correct this as one of three national hubs of the Economic and Social Research Council-funded Consumer Data Research Centre. By accessing a range of very large data sets through this facility we have been able to explore trend data on the relative resilience of our city, town and district centres to the global shift from high street to online retail. The evidence on this is clear. Our city region is home to polar experiences; we have some landmark retail destinations that are amongst the nation’s best performers, but we also have some town and district centres that have been radically altered in recent years, possibly fundamentally so. Having identified this select range of questions to focus upon, researchers at the University of Liverpool’s Heseltine Institute led by Dr. Alexander Lord began work on An Agenda for the Liverpool City Region in Autumn 2016. From the outset the work was designed to follow a model of ‘co-production’ where multi-sector collaboration is inscribed into a project. The implications of this approach are far reaching. At the outset it became clear that this would be very different to ‘normal’ academic work. We wanted the research to be fully collaborative in nature and to build on our role as two civic universities. Moreover, we wanted to use every asset at our disposal. It was from these principles that we asked the academic researchers who took lead responsibilities for individual themes in the work to look as widely as possible in harnessing the talents of those outside the universities.

Drawing in expertise from the University of Liverpool, Liverpool John Moores University and the public, private and third sectors from across the city region the project collated a huge amount of data. This ranged from large, secondary datasets accessible to the city’s two largest universities, to new bespoke pieces of research conducted in collaboration with the city region’s policy makers. In aggregate we have gathered a wealth of information, both quantitative and qualitative, that provides both facts and figures as well as a street-level view of what is happening ‘on the ground’.

As this would imply a huge number of people have contributed to the research that underpins this work. Over the period Autumn 2016 - Spring 2017 when the majority of the primary research was conducted there was an average of over 100 researchers working on this project at any one time.

Whilst it is customary to save thanks until the end of document such as this it is germane to the point just made to acknowledge the debt owed to those who got involved in this work for no other reason than their commitment to the city region and their intellectual curiosity. The list of contributors at the end of this report gives some indication of the breadth of input. For example, a significant debt of gratitude is owed to the final year undergraduate and masters students in the Department of Geography and Planning at the University of Liverpool. These students have made a huge contribution to this piece of work through their participation in the module, Urban Regeneration Project, designed specifically to unearth primary data related to the themes covered in this research. The material they gathered together with their enthusiasm and creative thinking permeates the report.

Despite the complexities of co-ordinating what is a wide-ranging and methodologically-challenging piece of research our aim has always remained consistent: to engage meaningfully with the worlds of policy and practice. Our principal guiding objective was to co-produce new research on the questions that we all – policy makers, citizens and academics alike – want to see investigated.

The results, presented in this report, describe a functional economic city-region of approximately 1.5 million people at a pivotal moment in its history.

In organising this report we cover only five issues. Some clearly represent strengths and opportunities for growth, others represent weaknesses and threats. However, as a caveat we would encourage the reader to see the points of tangency between these concepts. Here Kennedy’s reminder to the English speaking world in 1960 that “in the Chinese language, the word ‘crisis’ is composed of two characters, one representing danger and the other, opportunity” is relevant. What might through one lens appear to be a threat can, through another, be construed as an opportunity. That depends upon the choices of policy makers. We hope this report is helpful to the policy community and illustrates our willingness to support that decision making process, with intelligence, data and research, on a continuing basis.

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CHAPTER 1
RE-INDUSTRIALISATION: THE RE-BIRTH OF THE LIVERPOOL CITY REGION’S ORIGINAL AGGLOMERATION ECONOMY?
1. **RE-INDUSTRIALISATION: THE RE-BIRTH OF THE LIVERPOOL CITY REGION’S ORIGINAL AGGLOMERATION ECONOMY?**

1.1 The Liverpool City Region is a complex network of places that all, fundamentally, share one origin: they are all children of the industrial revolution. From ship-building and glass manufacture to petro-chemicals and automobiles the growth of the whole city region in the nineteenth and twentieth centuries was predicated upon the relationship between a manufacturing hinterland and the gateway to global markets offered by the Port of Liverpool. The post-industrial period from the 1960s onwards was widely reported to have permanently ended the viability of British industry but this view has, in recent times, been questioned and revised. Across Britain there is evidence that manufacturing is becoming an increasingly important part of some city-region’s economies. When taken in aggregate this renewed focus on British industry is supported by Central Government and can be seen in important statements of intent such as the Green Paper ‘Building our industrial Strategy’ (HM Government, 2017).

1.2 The State of the Liverpool City Region report from 2016 (Parkinson et al., 2016) began to outline some important ways in which this sector was becoming increasingly important to the Liverpool city-region. However, that research (and so too the Liverpool City Region’s Growth Strategy document, *Building Our Future*) are wide ranging in their treatment of all the main growth sectors: advanced manufacturing, digital and creative, financial & professional services, health and life sciences, low carbon, maritime and logistics and the visitor economy.

1.3 We present data for the growth sectors, but our central focus is on advanced manufacturing. The reason for this can be seen by looking behind some of the headline figures that have been used to describe the Liverpool City Region economy at a coarse scale. In this respect the most recently available data shows that total FTE employment in the Liverpool City Region (LCR) stood at 511,400 in 2015. Of this, 230,900 or 45.2% fell under six growth sector categories. Taking these categories as the starting point for our analysis we can look at the geography of these 6 specific growth sectors of the city-regional economy in Figure 1.1. This points to a suite of economic assets that are geographically actually very diffuse.
1.4 Figure 1.1 reveals that each borough has significant concentrations of employment in high-growth economic activity. Although, as might be expected Liverpool accommodates significant concentrations of high growth activity, the majority of the city-region’s high growth economy is actually outside the urban core, geographically distributed across all six boroughs. Looking a little more closely at how these growth sectors actually break down over space we can see that there are actually very significant geographic concentrations of high-growth activity across the city region that would be masked by aggregate, non-spatial measures. Adding in the temporal dynamic in Figure 1.2 reveals an additional facet to the story: some of the city-region’s boroughs have experienced startling growth in the high growth sectors over the period 2009-2015. Indeed, the standout performer in this respect is Knowsley where growth sector employment in aggregate has grown by just under 45% over this six year period, outstripping the national average by a factor of over 3 times. Even on the absolute measures set out in Figure 1.3 Knowsley has added almost twice as many jobs in high growth sectors as the next nearest city regional borough (Liverpool) over this period. But which high growth sector is it that is driving this sea change in Knowsley?

Figure 1.2: The six growth sectors: total employment % change in FTE employment 2009-15

![Figure 1.2 showing growth sectors % change in FTE employment 2009-15](source: Business Register and Employment Survey)

Figure 1.3: The six growth sectors & total employment (including growth sectors) – change in FTE employment 2009-15

![Figure 1.3 showing growth sectors & total employment change in FTE employment 2009-15](source: Business Register and Employment Survey)
1.5 To gain a greater degree of clarity regarding what explains the changes depicted in Figures 1.2 and 1.3 we need to develop some comparative statistics. In this respect a valuable measure of the degree to which an area has a greater or lesser exposure than average to any particular sector of the economy is the Location Quotient – see Box 1.1. The value of this index for us will be to look much more closely at the contexts, such as Knowsley, that have experienced a sustained expansion in an aggregate measure (‘growth sectors’) to see which constituent element of this aggregate measure is really driving the phenomenon. In short it should provide clearer answers to the question of where growth comes from; what is its geographical incidence across our city region and how do the concentrations that we can identify compare to national averages?

1.6 Figure 1.4 shows location quotient data for the six growth sectors across the Combined Authority. The data clearly shows one standout performer – advanced manufacturing.

Box 1.1: Location quotients (LQs) explained

Location quotients (LQ) are calculated from the proportion of total FTE employment in each industrial sector in a geographical area of interest, in this case LCR, compared against the proportion in a larger geographical area, in this case the national figure for England. They quantify how concentrated a particular industry is, in the geographical area of interest compared to the national average.

- A LQ of ‘2’ would indicate that the proportion of total FTE in an industrial sector is twice as high in the region of interest as compared with the national.
- A LQ of ‘1’ would show that the proportions in the region and nation are identical.
- A LQ of ‘0.5’ would indicate that the proportion in the region is half that of the proportion nationally.

A high or low LQ is not in itself necessarily a good or bad thing – it simply reports the degree to which an area is comparatively over or under weight with respect to a particular economic activity. However, high concentrations of activity in industries that are seen to be of high economic value or growing would generally indicate the presence of a driver for economic agglomeration.

Jay Karecha, Liverpool John Moores University

Figure 1.4: Liverpool City Region: Location Quotients in Growth Sectors, FTE Employment 2015, (England = 1.00)

Source: Business Register and Employment Survey
1.7 Stated simply Figure 1.4 paints a picture of a city region that has strong concentrations of activity in three of the advanced manufacturing categories – the location quotient data clearly demonstrates this to be well in excess of the national average even when considered at a city-regional scale. To answer the related questions of where the incidence of this economic activity is most strongly located we can disaggregate employment in the advanced manufacturing sector down by local authority in Figures 1.5 and 1.6.

Figure 1.5: Advanced manufacturing: ‘medium to high tech manufacturing’ sectors, LCR LAs, FTE Employment 2015

Source: Business Register and Employment Survey; Notes: Totals may not sum due to data rounding. * The scale bar has been limited to 1800 in all charts for comparability purposes, however the ‘automotive’ bar in the Knowsley chart is consequently truncated. Its true value, shown in the data label, is 5,600.
1.8 Getting further behind these figures can be achieved by adding location quotient statistics to this aggregate employment data to produce a measure that sheds further light on the weight of specific high value industrial sectors. Reporting the data in this way reveals important insights into the relative strength of the geographic concentration of economic activity.

1.9 In what follows we have disaggregated the category “advanced manufacturing” into its constituent sub-elements and measured the geographical dispersion of this economic activity across the Liverpool City Region, selecting the most relevant indicators for further analysis.

1.10 Figure 1.7 presents FTE employment and location quotient data to reveal new insights into the economic geography of the city region. By examining data on employment in the pharmaceuticals industry with the relative strength of this industry in the context of its local economy – the location quotient – we can interrogate the strength of this sector’s geographic incidence. Displaying the data in this way allows us to show, crucially, both the spatial distribution of employment associated with this economic activity and the degree to which our stand out performers relate to the national average.
1.11 Presenting the data in this way reveals some important insights into both the geographic origins of the economic contribution arising from this important sector and also the degree to which the sector is under or over represented within this same economic geography. Dwelling on these figures for a moment shows that 60.1% of the city region’s employment in pharmaceuticals originates in Liverpool and, as a proportion of that borough’s total employment, this is 5.22 times the national average. By contrast, although Halton accommodates less (32.6%) of the city-region’s employment in this sector it is a much greater proportion of this borough’s economy; its LQ of 11.33 indicates that this is proportionately twice Liverpool’s exposure to this sector.

1.12 Interpreting the data could lead to various conclusions. On one reading boroughs such as Halton are ‘punching above their weight’, making a disproportionately large contribution to a growth industry based upon a similarly disproportionately high exposure to this sector. Alternatively a more diversified economy in which pharmaceuticals would necessarily have a lower LQ might be more resilient to changes in this industry and less susceptible to macro/global economic changes.

1.13 If we apply the same approach of combining employment data and location quotient data as illustrated by Figure 1.7 to other aspects of ‘advanced manufacturing’ we can produce statistics across all of the city region’s six boroughs. For example, performing the same analysis for ‘chemicals’, adds to our understanding of the geography of economic activity but also points to the concentration of consonant industries. Again, Halton stands out as worthy of special mention. At 38.7% it is the single largest contributor of employment in this sector when viewed in comparison to its city-regional neighbours. However, its LQ of 8.77 suggests this industry plays a significantly larger role in Halton than the national average.

1.14 Again, the interpretation of the data requires caution. There is compelling evidence that our city region boasts a significant concentration of economic activity related to chemicals and pharmaceuticals in Halton: a contribution that is disproportionately large relative to the rest of the borough’s economy. As high growth sectors this performance should be celebrated. However, that celebration should be tempered by the equally valid conclusion that an industrial strategy to build upon this success might look at distributing this activity more widely and supporting the growth of other sectors in Halton to broaden the borough’s economic base.

60.1% of the city region’s employment in pharmaceuticals originates in Liverpool.
5.22 times the national average.

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Figure 1.8: Chemicals: FTE Employment total; Location Quotient compared with England; & % share of LCR total, 2015

Source: Business Register and Employment Survey. Notes: Totals may not sum to LCR totals due to rounding.
How widely are the benefits felt?

1.15 When considered at the aggregate level of the city region the growth in advanced manufacturing is quite startling. However, our subsequent analysis shows that this masks extreme variation in experience. Some boroughs have experienced rapid and significant growth over the period 2009-2015. By contrast others have recorded double digit declines over the same period, below the average for the region. Figure 1.12 summarises the percentage change in FTE employment, 2009-15, for the six advanced manufacturing sectors combined. But what explains this broader portrait of uneven geographical development and what response is required by policy makers?

Figure 1.9: Advanced manufacturing – % change in FTE employment 2009-15

1.16 On any measure of growth in advanced manufacturing over recent years Knowsley clearly stands out as a story worthy of further investigation. Breaking ‘advanced manufacturing’ down into its constituent sub-sectors reveals that the automotive industry is the principal driver of economic activity in the borough. The very strong concentration of this industry in Knowsley has profound local consequences. Figure 1.10 shows both the dominating effect of this sector in Knowsley (LQ of 15.38 compared to LQs of<1 in every other borough) and its wider contribution to the city region.
1.17 In many other global city regions where there is a strong automotive industry the corresponding supply chain is often more geographically diffuse and reflected in an attendant category (although nomenclature varies slightly from nation to nation), “Machinery, electrical and transport equipment”. In the Liverpool City Region this relationship holds good, as indicated in Figure 1.11.

1.18 The lessons to draw from Figures 1.10 and 1.11 are threefold. Firstly, there is strong evidence that growth in one particular aspect of advanced manufacturing, the automotive industry, has been a significant driver of high value economic growth in Knowsley. However, the degree to which this has radiated out through attendant supply chain effects across the city region appears to be limited – although this is a question worthy of further research. Secondly, the undeniable asset that this concentration of activity represents has had a profound effect on the economy of Knowsley itself; the automotive industry represents a significantly greater proportion of employment (a factor of over 15) in Knowsley than the national average. Enjoying this kind of exposure to a high growth sector of the global economy can be rewarding but also bears risks: a more diversified local economy may be a worthwhile aim of city regional economic growth policy. Thirdly, the agglomerating effects of the automotive industry have almost certainly brought wider economic benefits to the wider city regional economy. However, this has so far not offset declines in other advanced manufacturing industries, for example Wirral has experienced a 12% decline in advanced manufacturing – we could perhaps do more to extend the spatial extent of the localised effects of the advanced manufacturing sector.

Figure 1.10: Automotive: FTE Employment total; Location Quotient compared with England; & % share of LCR total, 2015

Source: Business Register and Employment Survey; Notes: Totals may not sum to LCR totals due to rounding.

Liverpool, 600; 0.51; 9.7%
Halton, 200; 0.41; 2.0%
Sefton, 100; 0.17; 1.2%
St. Helens, 100; 0.26; 1.3%
Wirral, 100; 0.10; 0.8%

Figure 1.11: Machinery, Electrical and Transport Equipment: FTE Employment total; Location Quotient compared with England; & % share of LCR total, 2015

Source: Business Register and Employment Survey; Notes: Totals may not sum to LCR totals due to rounding.

Liverpool, 300; 0.36; 11.0%
Halton, 300; 1.34; 10.1%
Sefton, 200; 0.84; 9.7%
St. Helens, 400; 2.04; 16.3%
Wirral, 100; 0.45; 5.7%

Knowsley, 5600; 15.85; 85.0%
Looking Further

1.19 The evidence presented here clearly shows that there are very strong concentrations of economic activity in the advanced manufacturing sector particularly within Halton and Knowsley. The evidence on this is sufficiently strong to potentially make this sector a case worthy of special attention by policy makers. One possible option in this respect could be the development of an industrial strategy for the Liverpool City Region equivalent to that prepared at the national scale by Central government.

1.20 Of course this would necessitate further research. In this respect two important questions present themselves.

Firstly we have too little evidence on the degree to which the agglomeration of economic activity stalls at local authority boundaries. The existence of ‘untraded dependencies’ - a common specialist pool of labour, a well-established logistics network and an institutional support network - has been identified in other urban regions across the globe as an important driver of economic agglomeration. Some of the evidence we have presented here would suggest that the concentrations of activity in advanced manufacturing are just that – concentrated. Is there something preventing this economic activity spreading out across local authority boundaries?

Secondly, in this report we have obeyed the boundary of the Liverpool City Region Combined Authority Area. However, it should be noted that the original agglomeration economy of which the Liverpool City Region was a component was through its symbiotic relationship with Greater Manchester. Many of the most meaningful linkages between the two city regions are now so long standing - such as the world’s first passenger railway – to be inscribed into the DNA of what is in effect a broader economic geography.

Further research is required on the degree to which some of the trends identified in this research are similarly present in the Greater Manchester City Region and, if so, whether a harmonised approach to economic development could be mutually beneficial to each city region.
CHAPTER 2
DEPRIVATION IN THE LIVERPOOL CITY REGION
The Liverpool City Region faces several challenges. Statistics on productivity and the rate of business births have been quoted extensively and show the city region to be below the levels recorded as the national average.

However, it is important to remember that indicators like productivity and business start-ups are dependent variables: they depend upon (and can be affected by) a host of other variables. For this reason it is critically important that we contextualise some of these statistics and look behind them for clues to what underpins issues such as low productivity.

To begin thinking about this question we must first acknowledge that the city region has a long standing issue with entrenched deprivation. Measuring, cataloguing and displaying this data cartographically serves to illustrate the extent and variation in the issue and is an established way of informing spatially-targeted policy. However, by disaggregating the data that comprises the Index of Multiple Deprivation to allow for meaningful comparative statistics reveals some interesting patterns. Firstly, as we know, poverty is multi-dimensional and temporal. However, understanding the differences, for example, between income deprivation and health deprivation across the city region reveals important insights into how we might think about tailoring interventions to places. Secondly, by looking at the historical incidence of deprivation we can reconsider the value of displaying statistics that are customarily presented as a ‘snapshot’ of poverty’s geography. This allows us to explore the hypothesis that your life chances are not just a function of how deprived the neighbourhood you

Figure 2.1: Index of Multiple Deprivation 2015, Liverpool City Region

Deprivation percentile among all English LSOAs where lowest is most deprived

0.1 - 10.0
10.1 - 25.0
25.1 - 50.0
50.1 - 99.8

Sources: Boundaries downloaded from the UK Data Service. Contains Ordnance Survey data © Crown copyright and database right 2017. The Indices of Deprivation 2015 have been constructed for the Department for Communities and Local Government (DCLG) by Oxford Consultants for Social Inclusion (OCSI). Areas shown are 2011 Lower-layer Super Output Areas. The map has been drawn by Jay Karecha, European Institute for Urban Affairs, Liverpool John Moores University.
2.4 To reveal our first point contrast Figures 2.1 and 2.2. The first image depicts the Index of Multiple Deprivation, the most common reference point for a composite measure of poverty. There are clear concentrations of poverty across the city region. However, when we disaggregate the data to look at one specific category - access to housing - in Figure 2.2 we reveal a very different picture.

2.5 Disassembling the IMD statistics in this way allows us to pick out important trends regarding the specific character of the problems we face in the Liverpool City Region and, by extension, identify the indicators that might underpin why we perform below the national average in relation to productivity.

2.6 Barriers to accessing housing, illustrated in Figure 2.2, serves well to illustrate this point. As the IMD is usually reported as a composite indicator the relative strength of the connections between the constituent variables are often masked. For example, parts of the UK that have some of the worst statistics on access to housing and housing deprivation - particularly some London Boroughs – actually boast some of the best numbers in relation to productivity. Similarly, when all other variables are held constant and we look solely at housing deprivation, the Liverpool City Region actually fares relatively well - certainly better than in relation to other aspects of deprivation.

2.7 This is not to conflate the issues of housing and productivity or to imply that there are no problems in the Liverpool City Region’s housing markets. Correcting market failure in areas of low-demand was one of the principal objectives of spatially targeted policy from the late 1990s onwards, particularly through interventions such as the Housing Market Renewal programme. However, it is important to note that, at the time of writing,
happiness deprivation is not statistically the principal explanatory variable in accounting for the specific character of deprivation experienced in the Liverpool city-region. It may also be unlikely that focussing on housing deprivation per se provides a route to addressing the city-region’s issues with low productivity and business climate.

2.8 Turning to the academic literature for some clues there is a great deal of well-established evidence that now posits a correlation between productivity with health/well being and entrepreneurialism with skills (Arora, 2001; Faggian and McCann, 2009). If we perform a similar statistical task in breaking the IMD down into its constituent elements for these two categories – health and education – we see some startling results. Beginning with health deprivation the Liverpool City Region is a profoundly unhealthy place:

2.9 The extent and incidence of health deprivation in the Liverpool City Region is striking. When the multi-faceted IMD is disaggregated it is clear that the most significant hallmark of poverty in the Liverpool City Region is poor health.

2.10 If we apply similar logic to education and skills we can see that this is another area where attention is required: a very large proportion of the city-region’s working age population are not equipped with the education and skills that are required to thrive in an economy that is increasingly dependent upon science, engineering, technology, mathematics and the creative sector. Although the geographic incidence of this aspect of deprivation is less pervasive than statistics on poor health there are significant concentrations across the city region.

2.11 Addressing skills deficits is a hugely complex issue that will require a multi-faceted approach. It will demand new methods of providing education and training opportunities for all life stages, work-based learning and access to education opportunities within communities and out of traditional working hours. Whilst acknowledging the breadth of the issue, it is clear that one core part of building a Liverpool city regional agglomeration will comprise attracting and retaining a graduate workforce – the subject of Chapter 4.

2.12 Before addressing this specific issue of graduate mobility, however, there is one further aspect of deprivation that is often over-looked but which is significant in explaining outcomes: deprivation is path dependent and longitudinal. That is, the outcomes experienced by people who live in deprived neighbourhoods are not just a function of conditions in that neighbourhood at a particular moment in time, they are a function of the length of time over which such conditions have prevailed. We are now better than ever at demonstrating this temporal aspect...
DEPRIVATION IN THE LIVERPOOL CITY REGION

Figure 2.4: Education, Skills and Training Deprivation 2015, Liverpool City Region

2.16 On the balance of the presented evidence it is perhaps unsurprising that the entrenched poverty that is present in some of the city region’s neighbourhoods and the particular nature of this poverty, particularly characteristics such as ill-health and low educational attainment, is matched by lower than national average rates of productivity.

2.17 Addressing these issues will demand a concerted and joined-up approach by policy makers. Part of this will be targeting policy interventions both spatially and thematically. The next generation of urban policy should seek to arrest and reverse the trends that have bequeathed a decades-long history of urban decline in some of the city region’s neighbourhoods. In practice this may be less about interventions in the built environment and more about affecting human agency: healthier lifestyles, providing access to valued programmes of education and training, creating socially cohesive mixed communities (See box 2.1). The evidence presented here provides some first clues regarding how we might be able to support a renewed conviction to tackle what is seen by many as the single largest brake on realising the city region’s full potential.
Box 2.1
An enduring issue – chronicling the entrenched nature of deprivation

2.13 The Liverpool City Region contains some of the most deprived wards in England.

The factual basis for this statement is the index of multiple deprivation (IMD) – the most common measure of multi-faceted poverty. However, the IMD is a relatively recently developed tool that allows us to explore periodic changes in deprivation. In most of the academic literature it is well established that poverty has important structural and systemic aspects – in short it is a problem that has an entrenched geography. To understand this issue more fully researchers at the university of Liverpool have developed new statistical and cartographic ways of looking into the past to explore patterns of deprivation from when they first became established. To illustrate we can produce two maps of the Liverpool one using IMD data from 2015, the other from 1971.

2.14 The maps show two alternative measures of deprivation for small areas called Lower Layer Super Output Areas (LSOAs). The Townsend score (shown for 1971) combines information on employment, housing tenure, car or van access, and overcrowding. The index of multiple deprivation (IMD; shown for 2015) is the sum of information over seven domains of deprivation (income; employment; health and disability; education, skills and training; barriers to housing and services; crime; living environment). The IMD is not available as far back as 1971 and so alternative measures must be used to assess long-term patterns. The two measures (when computed for similar years) show similar patterns and the comparisons between 1971 and 2015 are, therefore, sensible. In both maps, deprivation is divided into ten groups – as an example, class 1 indicates LSOAs which are amongst the most deprived 10% of all LSOAs in England. The maps show that deprivation patterns have remained constant over the 44 years covered by the data, with high rates of deprivation in some neighbourhoods of north, east and south Liverpool in both 1971 and 2015. This persistence of deprivation highlights the challenges faced in the metro area – areas within the Liverpool City Region are amongst the most deprived in all of England for the whole of the period 1971-2015.

2.15 The evidence on this basis is clear – the period over which an area has been deprived is very relevant in describing how entrenched these patterns have become. For some neighbourhoods in Liverpool we have a 40+ year history of deprivation which sheds new light on the seeming intractability of addressing these issues. However, between this analysis of where deprivation is most rooted and the foregoing analysis of its particular character we argue that new spatially and thematically targeted approaches can be tailored to neighbourhoods in a renewed conviction to address this deeply rooted issue.

Prof. Chris Lloyd, University of Liverpool.
For data and tools to explore population change in Britain see: www.popchange.liverpool.ac.uk/
CHAPTER 3
WHERE NEXT? GRADUATE MOBILITY AND THE LIVERPOOL CITY REGION
3.1 There is now a great deal of contemporary evidence that a ‘triple helix’ relationship between business, universities and government is the hallmark of advanced city-regional economies (Etzkowitz, 1993; Ranga and Etzkowitz, 2013). All of the growth sectors catalogued in Chapter One, including the nascent agglomeration activity around advanced manufacturing, increasingly demand highly skilled employees. Evidence suggests that the businesses choices with respect to where they locate themselves is strongly correlated with the presence of a local labour market that has a high proportion of graduates.

3.2 For some years policy makers and academics alike have held the view that the presence of significant higher education institutions is a great advantage in supporting the development of such a graduate workforce - so long as the city region within which those HE institutions are located can retain those graduates. In more recent times our approach to looking at this question has become more sophisticated. The standout city regions around the globe do not just retain those individuals who chose to study in that city-region, they also attract graduates who choose to relocate there post-graduation (Foresight Future of Cities, 2016).

3.3 So, how well do we do at retaining our graduates and, equally importantly, attracting those who have studied elsewhere to settle in the city region? In their report The Great British Brain Drain the Centre for Cities (2016) showed ‘Liverpool’ to be a net gainer of students. However, we must be careful here to identify boundaries. The data upon which this report was premised defined ‘Liverpool’ as the local authority areas of Liverpool and Knowsley only. Does looking at the same question at the broader geography of the Liverpool City Region affect our understanding of graduate mobility?

3.4. In short, boundaries make a great deal of difference. In this chapter, researchers at Liverpool John Moores University have compiled statistics for the Liverpool City Region using data provided by the Higher Education Funding Council for England (HEFCE). Using these data and the city-regional geography of Local Economic Partnerships allows us to focus on the migration patterns of domestic students. Whilst many British HEIs attract significant numbers of international students data on such international students is less easily obtained. Moreover, focussing on the movements of domestic students makes sense as the vast majority of these students choose to remain in the UK post-graduation whereas most international students return to their home country post-graduation (British Future and Universities UK, 2014; Wu and Wikes, 2017). Using HEFCE data allows us to explore the patterns of where English-domiciled students go to study and then where they choose to locate themselves post-graduation.

3.5 To begin we can ask the question, where do potential students from the Liverpool City Region go to study?

3.6 The map in Figure 3.1 shows where students originating in the Liverpool City Region go on to study. Graduate retention at this ‘home-to-study’ stage in the Liverpool City Region was 44.5% for the period under consideration. More widely the map shows that, when considered at this aggregate level, students originating in the Liverpool City Region have quite strongly defined geographic preferences to remain in the North West or, with diminishing strengths, migrate to Yorkshire, London or the North East. On the basis of this evidence no other region of England represents a significant lure to LCR students.

3.7 By contrast, Figure 3.2 shows that, outside this concentration of students from the Liverpool City Region who choose to remain in the LCR for study, the geographic spread of where other students are drawn from is relatively broad. This said, there are many LEP areas in the south of England, notably the East of England, the South West and parts of the South East that account for less than 1% of the student body in LCR. Broadening the geographic appeal of higher education in the LCR would clearly be desirable if we are to diversify the domestic student mix.

3.8 When put in geographical context the proportion of students who choose to locate themselves in their home city region to undertake higher education is relatively high in the Liverpool City Region: only London, the North Eastern and the Greater Manchester City Region have greater concentrations of students who originate from the same locations. When measured against some other logical comparators the statistics for the LCR are significant - over 10 percentage points greater than the Sheffield City Region, for example.
Figure 3.1: Where do students from LCR go to study?

Where do students from Liverpool City Region go to study? 2010/11-14/15

Sources: Boundaries downloaded from the UK Data Service. Contains Ordnance Survey data © Crown copyright and database right 2017. The data are sourced from HEFCE’s analysis of the HESA student record, the Education and Skills Funding Agency individualised learner record data. Data are for Liverpool City Region-domiciled students who are entrants to study for a first degree and registered at Higher Education Institutions or Further Education Colleges, between the academic years 2010-11 and 2014-15. Figures are for percentage of Full-Person Equivalents. The map has been drawn by Jay Karecha at the European Institute for Urban Affairs, Liverpool John Moores University.

Where students’ study postcodes lie in an overlap area between two LEP areas, the number of students has been equally apportioned between the two LEP areas.
Where do students who study in Liverpool City Region come from? 2010/11-14/15

Sources: Boundaries downloaded from the UK Data Service. Contains Ordnance Survey data© Crown copyright and database right 2017. The data are sourced from HEFCE’s analysis of the HESA student record, the Education and Skills Funding Agency individualised learner record data. Data are for Liverpool City Region-domiciled students who are entrants to study for a first degree and registered at Higher Education Institutions or Further Education Colleges, between the academic years 2010-11 and 2014-15. Figures are for percentage of Full-Person Equivalents. The map has been drawn by Jay Karecha at the European Institute for Urban Affairs, Liverpool John Moores University. Where students’ study postcodes lie in an overlap area between two LEP areas, the number of students has been equally apportioned between the two LEP areas.
WHERE NEXT? GRADUATE MOBILITY AND THE LIVERPOOL CITY REGION

Figure 3.3: Where did students studying in the LEP grow up? 2010-11/2014-15

LEP areas (number of graduates)

% of students

Grew up elsewhere  Grew up in LEP

London (120,095) 64.9 35.1
North Eastern (23,520) 46.8 53.2
Greater Manchester (36,520) 46.7 53.3
LIVERPOOL CITY REGION (21,175) 44.2 55.8
Leeds City Region (37,380) 39.4 60.6
Greater Birmingham and Solihull (73,655) 35.8 64.2
Sheffield City Region (19,490) 33.9 66.1
Derby, Derby’s, Nottingham & Notts (42,025) 30.3 69.7
West of England (12,900) 20.9 79.1

Source: HEFCE

Notes: the ‘number of graduates’ refers to those who provided an employment postcode in England in response to the ‘Destination of Leavers from Higher Education’ survey.

Figure 3.4: Where do students study and find employment? 2010/11-2014/15

LEP areas (number of graduates)

% of students

Stay for study, leave for employment  Leave for Study, do not return

London (120,095) 46.7 12.0
North Eastern (23,520) 56.6 18.5
Greater Manchester (36,520) 39.0 21.7
LIVERPOOL CITY REGION (21,175) 42.6 24.6
Leeds City Region (37,380) 35.3 26.7
West of England (12,900) 33.1 30.8
Greater Birmingham and Solihull (73,655) 30.1 29.0
Sheffield City Region (19,490) 24.3 29.4
Derby, Derby’s, Nottingham & Notts (42,025) 28.4 34.1

Source: HEFCE

Notes: the ‘number of graduates’ refers to those who provided an employment postcode in England in response to the ‘Destination of Leavers from Higher Education’ survey.
Where do students find employment?

3.9 Following the first move that matches a prospective student with their place of study the next moment at which graduate mobility becomes a general question is post-graduation as graduates seek employment.

3.10 Figure 3.4 shows the data on student mobility ordered by a stay/leave binary relative to the student’s home city region. This approach picks up the dynamics of student mobility and reflects those who stay for study and employment, ‘returners’ (those who leave for study but return to their home city region for employment), those who ‘leave and do not return’, and those who stay for study but leave for employment. In general data for the Liverpool City Region compares relatively favourably with other city regions. For example, the proportion of students who stay for study and employment (35.3%) is significantly greater than the same measure in Birmingham (24.3%) or Sheffield (30.1%).

3.11 One area highlighted by Figure 3.4 worthy of further scrutiny is in relation to the category ‘stay for study, leave for employment’. Here, the Liverpool City Region loses more ‘home grown’ students than any of the other presented city-regions: at 9% this is a relatively significant number of those who have chosen to remain in the Liverpool City Region to study but subsequently leave post-graduation.

3.12 However, this data must be balanced against statistics on the relative proportion of people who found employment in the same city region in which they studied. On this question Figure 3.5 illustrates the position for the Liverpool City Region in relation to some other English City regions with clear similarities between LCR and comparable city regions such as the Sheffield City Region.

3.13 To interpret these statistics we must differentiate between relatively more open and closed student markets. Some locations appear to have disproportionately high levels of student retention at the home-to-study stage that is then carried over to the study-to-employment stage. In the Liverpool City Region this is less true than it is for some other city regions – whilst the city region is a popular choice for students at the home-to-study stage, by the moment of graduation we lose more of this group of students than any other city region for which we have presented statistics.

3.14 Moreover, the proportion of students who find employment in the LCR following graduation from an LCR institution is just 53%, meaning that 47% of graduate employment comes from outside the LCR. When coupled with the disproportionately large proportion of students who originated in the LCR, chose to study here but then left post-graduation (9%) what remains is an apparently quite open student market. Stated alternatively, evidence on student mobility relative to the LCR would suggest a fluid student market in which a large proportion of graduate

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**Figure 3.5: Did graduates who found work in LEP area, also study in the LEP area? 2010/11-14/15**

<table>
<thead>
<tr>
<th>LEP areas (number of graduates)</th>
<th>Studied elsewhere</th>
<th>Studied in LEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>North East (22,880)</td>
<td>73.2</td>
<td>26.8</td>
</tr>
<tr>
<td>Leeds City Region (40,250)</td>
<td>70.6</td>
<td>29.4</td>
</tr>
<tr>
<td>West of England (17,740)</td>
<td>70.5</td>
<td>29.5</td>
</tr>
<tr>
<td>LIVERPOOL CITY REGION (19,150)</td>
<td>73.0</td>
<td>27.0</td>
</tr>
<tr>
<td>Greater Manchester (26,595)</td>
<td>72.3</td>
<td>27.7</td>
</tr>
<tr>
<td>Greater Birmingham &amp; Solihull (23,095)</td>
<td>72.1</td>
<td>27.9</td>
</tr>
<tr>
<td>London (180,765)</td>
<td>43.1</td>
<td>56.9</td>
</tr>
<tr>
<td>Greater Birmingham &amp; Solihull (27,359)</td>
<td>38.9</td>
<td>61.1</td>
</tr>
</tbody>
</table>

Source: HEFCE. Notes: the ‘number of graduates’ refers to those in employment who provided both a study postcode and a work postcode in England in response to the Destinations of Leavers of Higher Education survey.
Where have graduates who find work in Liverpool City Region studied? 2010/11-14/15

Figure 3.6: Where have graduates who find work in LCR studied?
jobs are filled by those who are attracted to the LCR from elsewhere - something Figure 3.6 serves well to illustrate:

3.15 In conclusion the Liverpool City Region is home to some world class assets in the HEI sector. When taken together they comprise a geographic concentration in research and development which also supports a student community that is a significant economic asset to the city region. When taken in aggregate the findings presented in this chapter illustrate that the Liverpool City Region is a relatively open system with respect to graduate mobility: we lose a disproportionately large number (when compared to other English city regions) of our local students to other parts of the UK at the study-to-employment stage but, crucially, we are an attractive proposition to graduates who have studied elsewhere.

3.16 Becoming an increasingly attractive destination for a geographically broader swathe of the domestic student market and also for the graduate employment market will be important for the continued development of the LCR. Although some of the findings of this chapter are quite positive if we are to develop a graduate workforce to support the vision of a city regional agglomeration predicated on a fuller exposure to the growth sectors of the global economy, we must develop connections between the universities and industry and, by relation, continue to develop how we attract and retain highly skilled people.

3.17 Addressing the issues outlined above has already begun through a geographic focus on the area where the most significant concentration of university-industry connections are in evidence – Liverpool’s Knowledge Quarter. As Box 3.1 explains, this initiative represents an important contribution to engineering the kinds of academy-business links that could underpin a fundamental re-evaluation of how prospective students and graduates see the Liverpool City Region.

Box 3.1: Building the Liverpool Knowledge Quarter

Knowledge Quarter Liverpool (KQ Liverpool) brings together the city’s main concentration of science, education and healthcare assets, to collaborate in a creative environment. We aim to encourage the commercialisation of research, support more start-ups and spin-outs, grow SME’s and attract inward investment and by doing so create high value employment in the city region and close the GVA divide with London.

To do this KQ Liverpool sets out to foster and promote the dynamic and innovative science, health and digital industries operating within the Knowledge Quarter and through collaborative partnerships the wider city region. Key strengths include life sciences, preventing and treating disease and infection, sensor technology, materials chemistry, sports science, digital & tech.

KQ Liverpool is already home to some of the world’s most influential players in science, health, technology, culture and education and has over £1bn of new developments underway, including the new Royal and Clatterbridge Hospitals, the Rutherford Cancer Centre, Sensor City and the Materials Innovation Factory, the latter of which is a joint venture with Unilever.

KQ Liverpool has a plan that focuses on three main areas: Making the place, improving connectivity and attracting investment & creating opportunities.

A key part of these plans will be Paddington Village, a £1bn flagship expansion site that will house 1.8m square feet of science, technology, education and health space. With Greenwich Village in New York as inspiration, Paddington Village will be a great place to live, work and socialise.

At the heart of Paddington Village, on Paddington Central, will be two major health and educational facilities, The Royal College of Physicians and Liverpool International College, a hotel and conference centre, the Rutherford Cancer Centre and new Science and medical buildings will complete this first phase of the 30-acre Paddington Village development.

At the other end of the Knowledge Quarter, next to Lime Street Station, the KQ Gateway site is undergoing substantial master planning and will further add to the choice of world-class science and innovation space in the city region.

Add in plans to reinvest in Liverpool’s existing science assets, and provide even greater levels of business support, and the future for innovation-led businesses in Liverpool is bright.

KQ Liverpool also intends to support programmes that invest in the 54,000 students that already study in the city and reposition Liverpool at the forefront of global innovation. Attracting the best students and academics and retaining graduates will be key to the growth of the city and region in the future.

Sally Bloor and Colin Sinclair – Knowledge Quarter Liverpool
CHAPTER 4
A River Runs Through It. Harnessing the Potential of the Mersey
A port on the right side of the country?

4.1 The relationship between Merseyside and the maritime economy is inextricable. Once a buoyant metropolitan economy that flourished precisely because of its position at the mouth of the Mersey, in the later 20th Century as the life ebbed from British industry and the UK forged new relationships with mainland Europe, there seemed few reasons to look to the sea. By the 1980s with traditional maritime industries seemingly in terminal decline and the port dismissed as being on the ‘wrong side of the country’ the prospect for the city region to regenerate on the basis of its coastal location seemed remote. The city-region’s adaptation to the post-industrial economic climate through the later 1980s and 1990s was painful but remarkable and has been thoughtfully documented (Parkinson, 1986; Couch, 2003). However, the intervening years have seen considerable new investment in the port and advances in renewable energy that, when coupled with the wider industrial renaissance across the city region now means that the city region’s marriage to the sea is once again recognised as an economic advantage.

4.2 The opening of “Liverpool 2” in 2016 now means that a much larger class of container ship can be accommodated, opening the port up to new business opportunities and going some way to re-orientating the British geography of shipping and logistics. Box 4.1 describes the latest exciting proposals with respect to the further development of the Port.

4.3 At the same time that the city region’s traditional logistics-orientated maritime economy is expanding the development of renewable energy technologies have highlighted the potential of the river and estuary to provide a new source of energy generation. But what options are available to us with respect to harnessing the river to generate energy? There are actually several ways in which the river could contribute to energy generation – some of which are mutually incompatible. It is, therefore, a propitious moment to take stock and consider the various options and how we might think collectively about managing the asset that the river represents. To address this we report here on new research conducted at the university of Liverpool (Becker, 2017) which has explored the full range of ways in which the river might support renewable energy generation: various approaches to harnessing tides; water-source heat pumps and water-borne photovoltaics.

Box 4.1: The River Mersey in Economic Context: the view from Peel Ports

The River Mersey is the third busiest estuary in the UK handling in excess of 25,000 commercial shipping movements per annum, providing access to the Port of Liverpool and The Manchester Ship Canal. The combined tonnage handled is in the region of 40 million tonnes making the Mersey Ports one of the most important international trade gateways outside of London and certainly very important in the context of the Northern Powerhouse initiative. The strength of the Mersey Ports are the diversity and range of cargos handled which in turn serve a number of key economic clusters and key industries - automotive, petrochemical, energy, construction, food manufacturing, agriculture and retailing. There is an increasing focus upon retail imports led by consumerism and a corresponding demand for port-centric warehousing and distribution.

Peel Ports are at an advanced stage in delivering an unprecedented investment programme of some £750 million preparing the infrastructure at the Port of Liverpool and The Manchester Ship Canal for decades to come. Some of the flagship projects include the £400 million Liverpool2 deep-sea container terminal providing post-panamax vessel capability for Northern Britain and a £100 million investment in the Liverpool Biomass Terminal linked to the supply of wood pellets to Drax Power Station in Yorkshire. Other investments include new multi-modal warehousing at Port Salford and the delivery of expanded facilities for the handling of automotive steel and animal feed.

Working with Government and public sector agencies Peel Ports are lobbying for much needed road and rail connectivity which is critical to the effectiveness of supply chain logistics. There are also challenges around the identification and delivery of expansion land at the Port of Liverpool and upon The Manchester Ship Canal which is critical to the success of key economic sectors and clusters. There is an increasing emphasis upon sub-regional partnership working and positive discussions are taking place with the Metro Mayors (for the Liverpool City Region and Greater Manchester) as well as a strong desire to maintain momentum around the Northern Powerhouse agenda. In the context of strategic (Trans-Pennine) transport the creation of Transport for the North is a welcome addition in furthering the economic development in the North.

Warren Marshall, Group Planning Director, Peel Ports
Tidal energy in context

4.4 Tides, unlike other sources of renewable energy, are an extremely predictable and reliable power source. Tidal power can be harnessed in two ways; through tidal range or tidal stream. The situation of the LCR with its direct access to areas of dock, coastline and the Mersey estuary allows considerable scope for energy generation from either/both methods.

Tidal range

4.5 Tidal range technologies include barrages and lagoons which harness potential energy from the difference in “head height” created by the tides. Tidal barrages and lagoons operate in a similar way to traditional large scale hydroelectric power in that they use a barrier to create a difference in head height between two bodies of water on either side of that barrier. When the desired head height difference is achieved the water is allowed to pass through turbines, generating electricity. Tidal range turbines can be multi-directional, allowing them to generate on both the ebb and flood tides producing power four times a day. Both barrages and lagoons generate electricity from tidal range, however, barrages depend on the complete separation of an estuary or bay from the sea whilst lagoons may be constructed as a barrier enclosing a section of coast or as a fully self-enclosed barrier offshore. There are several examples of barrages worldwide, the oldest being La Rance in France which was completed in 1966 (Charlier, 2007) which has a net output of 480 GWh per year. The newest is at Lake Sihwa in South Korea which has a 254 MW capacity and began operating in 2012.

Table 4.1: Comparison of configuration and predicted energy outputs of previous Mersey barrage studies.

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Capacity (MW)</th>
<th>Output (TWh/y)</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Energy</td>
<td>1984</td>
<td>621</td>
<td>1.32</td>
<td>27 x 7.6 m α, 23 MW turbines, with 18 sluice gates. Ebb generation</td>
<td>(Mersey Tidal Power, 2011)</td>
</tr>
<tr>
<td>Mersey Barrage Company</td>
<td>1991</td>
<td>700</td>
<td>1.45</td>
<td>28 x 8 m α, 25 MW turbines, with 46 channel sluices. Ebb generation</td>
<td>(Sustainable Development Commission, 2007)</td>
</tr>
<tr>
<td>University of Liverpool, Joule project</td>
<td>2009</td>
<td>621</td>
<td>1.07</td>
<td>27 x 7.6 m α, 23 MW turbines, with 18 sluice gates. Ebb generation</td>
<td>(Burrows et al., 2009)</td>
</tr>
<tr>
<td>University of Liverpool, Joule project</td>
<td>2009</td>
<td>621</td>
<td>0.98</td>
<td>27 x 7.6 m α, 23 MW turbines, with 18 sluice gates. Ebb and flood generation</td>
<td>(Burrows et al., 2009)</td>
</tr>
<tr>
<td>University of Liverpool, Joule project</td>
<td>2009</td>
<td>1863</td>
<td>1.72</td>
<td>81 x 7.6 m α, 23 MW turbines, without sluice gates. Ebb and flood generation</td>
<td>(Burrows et al., 2009)</td>
</tr>
<tr>
<td>Mersey Tidal Power</td>
<td>2010</td>
<td>700</td>
<td>0.90</td>
<td>28 x 8 m α, 25 MW turbines, with 18 sluice gates. Ebb generation with fixed starting head of 3.9 m</td>
<td>(Aggidis and Benzon, 2013)</td>
</tr>
<tr>
<td>Mersey Tidal Power*</td>
<td>2011</td>
<td>700</td>
<td>0.92</td>
<td>28 x 8 m α, 25 MW turbines, with 18 sluice gates. Flexible ebb generation with starting head optimised for maximum energy for 8 months and head limited to 3 m for 4 months of every year</td>
<td>(Mersey Tidal Power, 2011)</td>
</tr>
</tbody>
</table>

*In this study the barrage location was moved 300 m downstream compared to previous studies to avoid Devil's Bank.

4.6 The potential to generate tidal range energy from the Mersey has been under discussion for over 35 years. It was initially proposed in the early 1980s by Merseyside County Council and most recently under the banner of Mersey Tidal Power (a partnership of Peel and the North West Development Agency (NWDA)). Whilst a range of locations have been investigated, the one identified as most suitable is the stretch from around New Ferry in Wirral to Dingle in Liverpool (Band A in Figure 4.1).

4.7 The amount of energy it would be possible to produce from a tidal barrage such as this is dependent on a range of factors. These include the location of the barrage; the type, size and
number of turbines within it; whether energy is generated on
the ebb tide only, or both ebb and flood; and whether additional
pumping is used. Output calculations can only be made following
design decisions, however, although there are very few barrages
worldwide, the technology is established and it is therefore
expected that calculations made for previous reports and
feasibility studies should provide a reasonably accurate guide to
what could be achieved. These figures are presented in Table 4.1
below.

4.8 Whilst the Mersey estuary is a strong candidate for a future tidal
barrage there are environmental, navigational and cost issues
that must be addressed. A barrage would cause disruption
to the natural tidal cycle within the estuary with a decrease
in exposed mudflat area. Mudflats are an important zone for
primary production within the estuarine system and represent an
important feeding habitat, particularly for migratory birds. This is
recognised in the environmental designations with which large
areas of the estuary and Liverpool Bay have been awarded.

4.9 A barrage would also represent a barrier to shipping within the
estuary. Whilst the barrage location can be selected to minimise
disruption and lock gates are included in the design, navigation
times are likely to be increased which could have economic
implications to both LCR and the wider North West region.

4.10 A barrage on the Mersey could present opportunities in addition
to energy generation if developed strategically. These include
 cultural and transport benefits such as a potential visitor centre
and a pedestrian crossing and cycleway over the river. It may
also be the case in light of predicted future sea level rise that
a tidal barrage could offer improved flood protection. A recent
study found that a barrage in the proposed location at Band A
could reduce the number of people affected by flooding (Hinkel
and Lincke, 2015).

4.11 Tidal lagoons present an alternative opportunity to generate
electricity. Although such a scheme is not likely to be feasible
within the narrow confines of the Mersey estuary, the wider
Liverpool Bay area represents a potentially much more feasible
location (Sustainable Development Commission, 2007, Burrows
et al., 2009, Lyddon et al., 2015).

4.12 Worldwide, to date, there have not yet been any tidal lagoons
constructed and therefore they are a relatively untested
technology. However, there are advanced plans to site a lagoon
in Swansea Bay. It was given planning consent in 2015 (Roche et
al., 2016) with development due to begin in 2018 although it is
still awaiting a marine licence.

4.13 The advantage of a tidal lagoon is that the estuary is not cut off
from the sea and is therefore still navigable by shipping. The
environmental impacts are likely to be reduced as a smaller area
of coastline is affected by the change in tidal regime.

4.14 Although it is expected that the total amount of energy produced
by a lagoon would be lower than that produced by a barrage, this
would be dependent on the area impounded. It should also be
noted that lagoons may in some cases provide some degree of
flood protection in addition to energy supply (Angeloudis et al.,
2016).

Tidal stream

4.16 The tidal stream (or current) represents another possible way of
generating energy from the river. This energy can be captured
in a turbine, in much the same way as with a wind turbine. These
aquatic turbines can be sited individually or as part of an array,
equivalent to a wind farm.

Figure 4.3: Some examples of tidal steam device designs (a) an
open-centre turbine being deployed (Openhydro, 2016) (b) a
floating tidal energy platform (Bluewater, 2016) (c) a tidal array
(Tidal Energy Today, 2015)
4.17 There are currently a wide variety of tidal stream devices in the design and testing stages, from horizontal and vertical axis turbines to energy conversion via an undulating membrane, some of which are shown below (Figure 4.3). Turbines can be attached to the sea bed or hung beneath floating platforms or other structures such as storm surge barrages.

4.18 The National Oceanography Centre (NOC) at the University of Liverpool has produced a model of the tidal current in the Mersey Estuary and Liverpool Bay to understand whether horizontal axis turbines could be used in this location (De Dominicis, 2017). Rotors range from 1.5 to 20 m in diameter, and the smallest size was assumed here, which along with the height of the hub and a water depth of 5 m above the device, gives a minimum required water depth of 7.5 m. It was identified that the only location with suitable water depth, current power density and capacity factor is at the mouth of the Mersey near New Brighton, represented by the triangles in Figure 4.4. For an array of 130 small turbines at this location (the outlined areas could together accommodate about 100 times that number) the annual energy output would be over 1 GWh, enough for about 300 homes. Whilst this is an approximate estimation of the potential output of a tidal array using one of the available turbine designs in the Mersey, it demonstrates potential to generate energy from the tidal stream.

4.19 Water source heat pumps (WSHP), which may also be referred to as surface water heat pumps (SWHP) use heat pumps and/or chillers, alongside the surface water heat source or sink to provide heating and/or cooling dependant on the location or application.

4.20 The Liverpool Docks have been identified by Liverpool City Council as a potential location for generation of heat using WSHPs. A funding bid for a feasibility study has been submitted to the Department for Business, Energy and Industry Strategy (BEIS) Heat Network Development Unit (HNDU). The study will investigate the potential for heat generation from the docks area, outlined below (Figure 4.5).

There is additional potential to include water source heat as part of the regeneration project at Wirral Waters, as well as extension to the North Docks and other bodies of water in the Liverpool City Region.

4.21 Solar photovoltaics (PV) convert sunlight directly into electricity; it is an established technology and can be installed with few moving parts. A recent development uses this proven technology in a new setting, floating on the surface of water as “floatovoltaics”. These can be installed quickly, within a few weeks or months, the cooling effect of the water may improve the efficiency of the panels and the shading they provide reduces algal growth. There are recently installed examples at Godley Reservoir, Greater Manchester and Queen Elizabeth II Reservoir, Surrey (Figure 3.17). Both these locations are owned by water companies (United Utilities and Thames Water respectively) who use the power generated for their own operations. There have not yet been any developments in saline water which would require additional protection from corrosion and may require more complex mooring systems. However, the problem of mooring would be less of an issue in more sheltered estuarine or dock areas.

4.22 There may be areas of dock suitable for siting this technology, particularly in the Liverpool North Docks which are surrounded by fewer tall buildings than those further south and would therefore be less subject to shading. The docks at Wirral Waters and reservoirs at Knowsley could also provide good locations for floating solar PV.
4.23 As the preceding sections describe, there are a range of possibilities for the river Mersey to play a significant role in the provision of renewable energy for the Liverpool City Region. The river is a shared environmental asset which is cherished by citizens. Therefore, whilst it is clear that the Mersey is likely to be central to many aspects of the future development of the city region it is equally clear that careful governance will be needed to realise the river’s full potential.

4.24 To explore these issues in greater detail with the policy community we conducted a River Mersey focus group in March 2017 which helped formulate ideas for taking the River Mersey agenda forward.

4.25 One of the key messages of the focus group was that the city region is home to a great deal of expertise on river and coastal management accumulated over a sustained period. Table 4.2 sets out the chronology of important initiatives in this regard. However, despite its importance to so many the Focus Group noted that, at the current time, the Mersey was no single agency’s responsibility. With this in mind the group highlighted the value in drawing together economic, social and environmental agendas associated with the river; harnessing the legacy and capacity of multi-sectoral partnership working in the area; and adopting a catchment based approach which recognises the close interconnection of terrestrial and marine ecosystems. These common themes have been consistently raised for many years and are evident in work produced on the Mersey Basin Campaign (Wood et al., 1999) and most recently by the River Mersey Task Force (2014, 2016). In addition the Focus Group highlighted the value of the role played by Lord Heseltine in the 1980s as a ‘champion’ for the river and the simple, inclusive, yet...
flexible narrative of the Mersey Basin Campaign which had been powerful in galvanising and maintaining support and action over time.

4.26 The outstanding achievements related to river governance outlined in Table 4.2 received international recognition when the Mersey Basin Campaign won the International Thiess River prize in 1999 and much of the recent history of river governance has been connected to the Campaign’s efforts and legacy in different ways. The end of the MBC in 2010 coincided with the recent period of organisational change in the city region more widely and marked a phase of transition in river governance. Nevertheless there is an immense body of practical experience in river governance in the city region. The emergence of the Combined Authority and the City Regional Mayoralty offers a new opportunity to harness this expertise in the cause of re-thinking the governance of the Mersey. Table 4.3 provides a range of examples of river governance from elsewhere that could provide inspiration in considering potential ways forward.

Table 4.2 Key Developments in River Mersey Governance 1985 - 2017

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>1985 – 2010</td>
<td>Mersey Basin Campaign - 25 year central government funded campaign established my Michael Heseltine aimed at: improving river basin quality, encouraging sustainable waterside regeneration, engaging individuals, businesses and communities in the process. Promoting and supporting multi sector partnership working to address economic, social and environmental regeneration taking a catchment to the sea approach.</td>
</tr>
<tr>
<td>1995</td>
<td>Mersey Estuary Management Plan - Comissioned by the MEMP Mersey Estuary Project Group and prepared by the University of Liverpool. A framework for coordinated action addressing critical management issues (Estuary Resources, Economic Development, Recreation and Implementation) so as to secure the sustainable development of the Mersey estuary and to maintain and develop its position as one of the region’s most valued environmental assets.</td>
</tr>
<tr>
<td>2002 – 2010</td>
<td>Mersey Waterfront (Regional Park) - Executive team and management board hosted by the Mersey Partnership aiming to: transform, energise and connect the Mersey Waterfront and all of its assets, to create a unique sense of place which attracts people to live, work, invest and visit. Mersey Waterfront Regional Park Strategic Framework: Identified 10 windows of opportunity for regional park development.</td>
</tr>
<tr>
<td>2010 – present</td>
<td>Mersey Rivers Trust (Formerly the Healthy Waterways Trust) - A charity created after the close of the MBC and now associated with the national Rivers Trust movement, it is the Rivers Trust for the River Mersey and its catchment. It is host for the Catchment- Based Approach in the Mersey river basin.</td>
</tr>
<tr>
<td>2012 – 2016</td>
<td>Shadow River Mersey Task Force - In December 2012, a shadow River Mersey Task Force was established to examine the feasibility of the River Mersey becoming the cleanest and most ecologically diverse river in an urban setting by 2045”. It has produced two reports Making the Most of the River Mersey (2014) and The Value of the River Mersey (2016).</td>
</tr>
<tr>
<td>2012 – present</td>
<td>Nature Connected - The LCR Local Nature Partnership bringing together public, private and community sector organisations to link the natural environment to economic, social and environmental goals.</td>
</tr>
<tr>
<td>1980s -present</td>
<td>Mersey River Festival - Now the International Mersey River Festival, this longstanding annual event provides a public celebration of many aspects of LCR’s maritime heritage and culture.</td>
</tr>
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</table>
4.27 In reviewing the approaches to river governance from other city regions the Focus Group pointed to the Blue Ribbon Network embedded in the London Plan as an example of good practice. The Mayor of London’s initiative in making the Blue Ribbon network a key feature of the London Plan and in hosting the London Waterways Commission were noted in this regard. Interest was also expressed in a reinterpretation of Hudson River Keeper concept in the form of an independent champion charged with providing an annual report for the river.

4.28 Because the river is a public good that is close to the hearts of all who live in the Liverpool City Region and a potentially economically valuable, if sensitive, environmental asset there is perhaps a case for an agency or a strategy (or both) to manage the Mersey. Our focus group pointed to the role such a strategy could play in creating the conditions for holistic, sustainable river management. In parallel this could mean the creation of an agency to oversee the implementation of this strategy similar to the approach taken elsewhere. Such an agency – a ‘River Mersey Commission’, for example - could build upon the legacy of the Mersey Basin Campaign in providing a clear focal point for river matters.

<table>
<thead>
<tr>
<th>Table 4.3 Selected Examples of River Governance from other city regions</th>
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<tbody>
<tr>
<td><strong>The Thames</strong></td>
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<tr>
<td><strong>The Severn</strong></td>
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<tr>
<td><strong>Plymouth Sound</strong></td>
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<tr>
<td><strong>Hudson River</strong></td>
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<td><strong>Ireland</strong></td>
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CHAPTER 5
EXPLORING THE GEOGRAPHY OF RETAIL DECLINE IN THE LIVERPOOL CITY REGION
5 EXPLORING THE GEOGRAPHY OF RETAIL DECLINE IN THE LIVERPOOL CITY REGION

5.1 Consumer spending is a hugely significant component of economic growth in the UK. Figure 5.1 illustrates the sustained growth experienced in this sector from June 1980 to January 2017. Aside from the aftermath of the financial crisis of 2008 onwards our long-term, collective enthusiasm for consumer goods and services has shown little sign of abating. In the context of the variables that define national income accounting – consumption, business investment, government expenditure and net exports - household consumer expenditure accounts for a huge proportion, approximately 60%, of the UK economy (Cadman, 2016).

5.2 Behind these headline figures, however, there are profound changes in how the retail economy has developed. The model with which we have lived for generations and which is explicitly inscribed into planning policy - 'town centre first' – is seemingly being overwritten in favour of new methods of matching buyers and sellers of consumer goods. The rise of online retail (and related multi-channel and ‘click and collect’) has represented a profound change to the way consumer goods are bought and sold.

5.3 The effects on the British high street of these changes have been startling. Whilst traditional bricks-and-mortar retailing has been static and in some locations in decline online retail sales have been growing significantly and now exceed £130 billion per year. As a result some analysts have pointed to a systemic shift in the consumer economy: for example, research by the accountancy and business consulting firm BDO (2016) shows that online retail sales (excluding food) grew by 18% in 2016 and 27% over the two years 2015-2016 at the same time that traditional high street retail has stagnated.

5.4 The corresponding response by policy makers has been to consider the prospects for the British high street through commissioned research and review (Portas, 2011; Rhodes, 2015) explicitly at this national scale. But, of course, the degree of vulnerability to high street decline is geographically variable. Some places are more resilient than others. In our own city region we have some startling examples which serve to define the variability of experience even in areas of close proximity to notable success stories, such as retail destinations like Liverpool One to high streets which have become symbols of decline (Murphy and Miller, 2016). So, what attributes make some of our retail centres a viable proposition for the future and what can we do about those centres that are more vulnerable? To answer these questions we first need some evidence on the geographic extent of the issue.

5.5 This chapter uses a large data set on occupation rates in UK retail centres which was collected via a large number of local surveying teams during 2014, 2015 and 2016 by the Local Data Company which the University of Liverpool has access to through the ESRC-funded Consumer Data Research Centre. The most recent survey from September 2016 indicates that in Liverpool City Region there were 11,284 retail and service outlets, of which 1396 (12.4%) were vacant. This was higher than the national average at 9.1% in 2016. Figure 5.2 shows the spatial distribution of all retail and service outlets in the Liverpool City Region with vacant units highlighted in yellow. Just under 61.4% (6929) of these retail and service units were located within town centres and high streets defined by the UK government’s typology (DCLG, 2004) with the remaining units being spread across retail parks, smaller neighbourhood centres and free-standing stores.
5.6 Of the six local authorities that comprise the Liverpool city-region, the Liverpool Local Authority District had the highest number of retail and service units with 4437 of which 600 (13.5%) were vacant. The total number of outlets in Liverpool local authority district corresponds to 39.3% of the total number of retail and service units within the City Region. As Figure 5.2 shows, the second largest number of retail and services units was recorded in Sefton (2355), followed by Wirral (2201), St Helens (975), Halton (736) and Knowsley (580).

5.7 In terms of the composition rates we use the official broad retail and service categories adopted by the UK government (DCLG, 2009). These include comparison goods (items which consumers buy infrequently, such as domestic appliances, where consumers typically make careful comparisons on the basis of attributes, price and quality), convenience goods (those items that are widely available and bought regularly, such as toothpaste), leisure, other services and vacant outlets. From Figure 5.3, which shows the breakdown for each local authority, it can be seen that the highest vacancy rate in 2016 was in Knowsley at 14.3% and the lowest in St Helens at 10.2%. Overall, the most dominant retail/service category was leisure in Liverpool and comparison retail in the remaining local authorities.

5.8 Identifying the geography of the retail economy can be achieved by focussing on those areas recognised as town centres, high streets and retail/leisure parks in the UK government’s official catagorisation (DCLG, 2004). In the Liverpool City Region there were 32 such town centres and high streets in 2016 and 23 retail/leisure parks as shown in Figure 5.4. It should to be noted that these town centres exclude most of the very small local centres and shopping parades that are present in many communities.

5.9 A closer analysis of the data used to generate Figure 5.4 reveals that the retail landscape in the Liverpool City Region is dominated by the Liverpool local authority area which includes 10 town centres, followed by Wirral with 7, Sefton 6, Halton 4, Knowsley 3 and St Helens with 2. This is hardly surprising given Liverpool’s historic centrality as a retail destination which was reinforced by the opening of Liverpool One in 2008. In aggregate of the 6787 town centre and high street retailers and service providers located in the Liverpool City Region 39.4% (2731) could be found in Liverpool. However, across the city region the number of vacant outlets in 2016 stood at 982, equivalent to 14.2%, which was considerably higher than the national average of 10.9% (DCLG, 2014).

5.10 Figure 5.5 shows how this vacancy rate from 2016 varied spatially. The majority of town centres across the Liverpool City Region recorded vacancy rates above the national average, shown in red, with a small centre at New Ferry having the highest vacancy rate at 30% (33 out of 109 units vacant). Most of the town centres with particularly high
Figure 5.4: Town centres and retail parks by size in Liverpool City Region

Source: Consumer Data Research Centre, University of Liverpool. Produced by Dr. Les Dolega

vacancy rates were located in relatively more deprived areas including Kirkby (24%), Everton (20%), Birkenhead (19%), Wallasey (19%) and Kirkdale (18%). At the other end of the spectrum, there were several town centres, shown in green in Figure 5.5, that recorded vacancy rates well below the national average. Typically, these were the centres located in relatively more affluent areas such as Woolton (1.5%), West Kirby (2.5%), Bromborough (4.2%), Formby (4.5%) and Heswall (4.7%). The map below illustrates the coincidence between deprivation and retail vacancy rates. The size of a circle denotes magnitude of the vacancy rate for a particular town centre and the darker shading of polygons indicates higher deprivation levels.

5.11 To avoid snap-shot bias we should put this data into historic context: a key aspect of assessing town centres’ economic performance pertains to their historic vacancy rates in relation to both temporal and spatial trends. This can be used to determine their growth or decline trajectories. The historic data available to this study included 3 data sets from relatively recent points in time - 2014, 2015 and 2016. An increase or decrease in the measured vacancy rate of a centre is the most commonly used indicator of its economic health (Wrigley and Dolega, 2011) as set out for the Liverpool City Region in Figure 5.6.

5.12 Overall, the majority of town centres and high streets recorded a decrease in vacancy rate between 2014 and 2016. This is in line with the national picture as town centres were adversely affected by the economic crisis of 2008-09 and the following austerity period was reflected in national peak in vacancy rates in 2012 before gradually falling in subsequent years. However, this process has varied hugely when considered spatially. Figure 5.7 shows that as many as 16 town centres in the Liverpool City Region recorded a decline in vacancy rate, with the largest reductions between 2014 and 2015 recorded in some of those places that had been affected most adversely in the wake of the 2008 financial crisis: (Runcorn, -15%; Bootle, -9%). Conversely, several town centres recorded the opposite trend, seeing increases in vacancy, such as Maghull (+10%), Kirkdale (+6%) and Kirkby (+5%).

5.13 Figure 5.8 shows the spatial variation across LCR town centres and high streets in terms of vacancy rate change between 2014 and 2016 and depicts its magnitude. Of the 14 centres that recorded increases in their vacancy rate during this period 4 are major retail centres: Liverpool, Southport, St Helens and Birkenhead.

5.14 However, looking solely at the decrease or increase in vacancy rates over time tells us only a part of a story as the actual magnitude and persistence of vacancy is also very important. Figure 5.10 shows the relationship between two variables: vacancy rate in 2016 shown on X-axis and vacancy rate change between 2014 and 2016 shown on Y-axis. On the basis of this data town centres and high streets in the Liverpool City Region can be divided into 4 groups:
EXPLORING THE GEOGRAPHY OF RETAIL DECLINE IN THE LIVERPOOL CITY REGION

Figure 5.4: Town centres and retail parks by size in Liverpool City Region

- LL with vacancy rates that are below the regional average and they have decreased since the 2014 survey
- LH with vacancy rates that are below the regional average but they have increased since the 2014 survey
- HH with vacancy rates that are above the regional average and they have increased since the 2014 survey
- HL with vacancy rates that are above the regional average but they have decreased since the 2014 survey

5.15 As Figure 5.10 shows there appears to be a relationship between the current vacancy rate and the recent change in vacancy rate. The strength of this correlation can be statistically measured by the Pearson test. This suggests a statistically significant, albeit relatively weak, positive relationship (p value 0.045) between the two variables. As such, there is a visible split between the strongest and weakest performers with the largest groups of centres falling within either the LL or HH quadrants. The strongest performers (LL) predominantly comprise retail centres in relatively more affluent neighbourhoods such as Woolton, Crosby, Formby and West Kirby. Conversely, the weakest centres (HH) are often located in less affluent areas such as Kirkby, Kirkdale, Birkenhead or Walton Vale. In these areas the vacancy problem may be structural as they experienced only a modest recovery, or even a counter-trend increase in vacancy, by 2012 following the financial crisis. The centres from the LH group, which include Allerton road, Widnes and Huyton are the relatively stable performers. Then, there are the centres from the HL group such as Bootle, Gateacre or Church Street, Runcorn which are relatively weak but their trajectory suggests improvement and the potential for recovery. Finally, there are a small number of outliers such as Runcorn with a very large decrease in vacancy rate or New Ferry that seems to have a persistently high vacancy rate.
Figure 5.7: Change in vacancy rates between 2014 and 2016 for LCR town centres

Source: Consumer Data Research Centre, University of Liverpool. Produced by Dr. Les Dolega

Figure 5.8: Spatial variation in vacancy rate change between 2014 and 2016 for LCR

Source: Consumer Data Research Centre, University of Liverpool. Produced by Dr. Les Dolega
5.16 From the above analysis it is clear that the most robust settings where rateable values are strong and stable remain viable locations for retail investment. In some district and town centres, however, there is huge variation in experience. Some of these locations have experienced profound declines in retail presence and whilst some have begun to recover and stabilise the degree to which this recovery is predicated on a qualitative change in retail environment (towards convenience and discount stores and charity shops) is a relevant question.

5.17 How we meet the challenge of confronting retail decline in those areas where the indicators suggest a sustained trajectory of decline may need to encompass direct action. There is already evidence from the city region of just such an approach with Sefton Council’s acquisition of the Bootle New Strand shopping centre in May 2017. If the patterns that the statistical analysis presented in this chapter illustrate this kind of direct intervention may become increasingly necessary to check systemic retail decline in some areas.

However, in parallel to direct acquisition of retail units we urgently need a strategy to potentially fundamentally rethink the primary function of some of our town and district centres. As the retail industry continues to favour out-of-town premises that fit better with their multi-channel offer, such as ‘click and collect’, the decades-long planning orientation towards ‘town centre first’ looks increasingly outdated. As we have shown in this chapter there are some city and town centres that may be resilient to these broader global trends – particularly where shopping is an activity bound up with the visitor economy – but other places in the city region may already have experienced irreversible decline. Thinking about what we do next in these at-risk town centres should be a priority.
CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS
6.1 The election of a city regional mayor and the creation of the combined authority in 2017 represents a hugely significant moment. Not since the abolition of Merseyside County Council in 1986 has there been a formal tier of governance for the wider functional geography that we now know as the Liverpool City Region.

6.2 This report, timed to coincide with the birth of this new spatial scale of political office, attempts to provide fresh insights into a selection of questions that might help advance debate on the future direction of the city regional economy and inform the development of policy. It was not our intention in this report to provide a complete catalogue of every aspect of the city regional economy but rather to identify a small number of issues that can be understood as of pressing concern. In taking this approach we hope to support the policy community in the development of new city-regional scale economic growth strategies and their articulation in documents such as the Liverpool City Region Sustainable Urban Development Strategy (LEP, 2016).

6.3 In aggregate this report paints a portrait of the Liverpool City Region in which there are many significant opportunities for growth. There is evidence of a nascent agglomeration around advanced manufacturing and global distribution; our estuarine location provides several options with respect to energy generation and we have many of the assets that should make us well-placed to develop a graduate workforce even if there is more to do in achieving this.

6.4 Whist it is true that the city region continues to be adversely affected by long standing deprivation and, in some areas, high street decline, this report provides new insights into the character, incidence, longevity and geography of these issues across the city region. These new ways of looking at these issues is intended to support a renewed conviction to confront the brakes on the city region’s economic and social potential in a spatially-targeted way.

6.5 Our findings point to five priority areas where we believe immediate reflection is required in any future strategy to develop the economy of the Liverpool City Region:

**Industrial Strategy**

6.6 Central government has signalled a clear intention to bolster industrial manufacturing in the UK. Evidence of this can be seen in the Green Paper, Building our industrial Strategy (HM Government, 2017), and initiatives such as the Industrial Challenge Research Fund which is worth in excess of £1 billion over the period 2017-2021. Evidence from Chapter One shows that the Liverpool City Region is extremely well-placed to respond to this agenda through strong concentrations of economic activity in advanced manufacturing. Developing this specialism, encouraging its growth as well as a more even distribution and diversification across the city region will require support. A Liverpool City Region Industrial Strategy could outline our local response to this important national initiative.

In thinking about such a strategy policy makers may wish to consider looking further. On many measures of economic activity the outer boundary of the Liverpool City Region is blurred. The reason for this is that today, as in the nineteenth century when it experienced its most sustained period of growth, the Liverpool City Region enjoys a symbiotic relationship with its nearest neighbour, the Greater Manchester City Region. In many important respects, such as travel-to-work patterns as well as the movement of goods and services, there are very strong connections between the two city regions of Liverpool and Greater Manchester. For our city region to realise its full potential it will be critical that we work constructively with the Greater Manchester City Region over the coming decades and explore shared opportunities for growth. The creation of mayoralities in both city regions in 2017 signals a new moment for strategic thinking on points of tangency that could be complemented by further research on the economic geography of the North West’s urban corridor between Liverpool and Manchester. This could signal a new progressive phase in the relationship between the two city regions.
Deprivation

For some neighbourhoods in the Liverpool City Region deprivation is a long-standing issue. The degree to which the duration over which deprivation is manifest creates entrenchment was a key finding from Chapter Two. However, we were also able to show that the character of deprivation is multi-faceted - put simply, the character of poverty experienced in one part of the city region is often qualitatively different to that experienced in another. With new, sophisticated ways of illustrating the incidence, character and endurance of deprivation we are able to provide policy makers with better neighbourhood profiling. This in turn should support the development of a new breed of spatially-targeted policies designed to more effectively address the limiting of human potential that poverty represents. Further engagement between the universities and the policy community could support a renewed commitment to, first, understand in a fine-grained way and, second, address in a concerted fashion, deprivation in the Liverpool City Region.

Graduate Mobility

The development of the Liverpool City Region’s economy in the twenty first Century will require a highly skilled workforce. Cities already compete on this issue in what is often described as the global competition to attract talent. For most of our competitors this begins with a strategy to attract and retain graduates. Some of the indicators outlined in this report couple with exciting new developments such as the Knowledge Quarter point to the Liverpool City Region being an open and attractive destination for graduates. However, there is still potential for us to do more to attract and retain graduates in the city region. It is on the basis of this evidence that we urge policy makers to consider the development of a City Regional Strategy on Graduate Attraction and Retention. This could be developed in collaboration between all relevant stakeholders and should comprise a clear set of goals on how we can improve our performance in this important area.

The potential of the river and its management

The river Mersey is a huge asset for the city region. Research presented in this report highlights the range of potential ways in which our most significant natural asset could make a significant contribution to energy provision for the city region. However, because the Mersey is a public good that is environmentally sensitive we need to ally our expertise in the environmental science of what is possible and viable in terms of energy generation with an inclusive decision-making process. Unlike many other cities in the UK and around the world which enjoy a similar estuarial position we do not have a governance structure to manage our most significant, shared environmental resource. To develop a coherent, joined-up policy on how we might best collectively manage the Mersey and harness its full potential there may be a case for the creation of a River Mersey Management Initiative which could comprise a governance arrangement, such as a River Mersey Commission, that engages all stakeholders in the preparation of a River Mersey Management Plan.

Retail

Few other variables illustrate the breadth of experience in the Liverpool City Region quite so effectively as indicators on retail. In some areas there is a buoyant retail economy which serves both a city-regional market and a visitor economy in which ‘destination retail’ is a significant attractor. Such facilities perform above the national average and bear favourable comparison with almost any other retail centre in the UK. At the other end of the spectrum our city region is also home to some town and district centres which have seen something close to retail collapse. Rateable values have fallen and vacancy rates are at an all time high. The vitality of town centres is not just an important economic indicator; it has social and environmental implications too. Town centre decline and dereliction can have profound effects on the ‘sense of place’ and area reputation. If the trends identified in this report continue some of our town and district centres are at risk of experiencing the kind of systemic decline that, as we know from deprivation, if it is not halted promptly, can become entrenched – an established and expected fact of life. For this reason we urge policy makers to consider the development of a strategy aimed at exploring all options for town centre regeneration across the Liverpool City Region. Whilst it might be the case that some systemic change is inevitable we should think carefully about what we can expect from our town and district centres in the future and develop new ways in which they might continue to provide a focal point for residents.
ACKNOWLEDGEMENTS
ACKNOWLEDGEMENTS

This report includes important contributions from over a hundred individuals. Thanks are owed to:

Nana Akwesi Agyeman Osei
Alison Ball
Professor Peter Batey
Dr. Amani Becker
Dr. Charlotte Billingham
Sally Bloor
Nia Borsey
Alan Chape
Feng Chen
Jaïyuan Chen
Jie Chen
Xinning Chen
Yiting Chen
Yitong Chen
Wen Cheng
Dr. Sarah Clement
Paul Corner
Qian Dang
Dr. Les Dolega
Qihui Dong
Ziyuan Dou
Situ Du
Yu Du
Dr. Richard Dunning
John Entwistle
Dr. Richard Evans
Mohammed Fahmy Bin Razali
Mark Fletcher
Yulan Ge
Samantha Godfrey
Rui Gong
Xue Gong
Chenjie Gu
Yanan Guo
Yuxin Guo
Harriet Haldenby
Bushra Hasan
Dr. Sam Hayes
Yixin He
Ziyu He
Paul Henbrey

Chi Hin
Huijun Hu
Yue Hu
Jiangnan Huang
Luyi Huang
Yuting Huang
Graeme Ives
Alan Jemmett
Xiaoyu Jin
Yuching Kao
Dr. Jay Karecha
Sue Kidd
Mark Knowles
Hao Li
Jinyang Li
Wennian Li
Zhuoyuan Li
Yishan Lin
Jingjia Liu
Junyou Liu
Lidaichen Liu
Professor Chris Lloyd
Danting Luo
Nicola Mannion
Warren Marshall
Chris Matthews
Richard Mawdsley
Laura McKeating
Walter Menzies
Peter Nears
James Noakes
Paul Nolan
Professor Michael Parkinson CBE
Professor Andy Plater
Xiaofei Qi
Caroline Salthouse
Anne Selby
Yongjia Shang
Jiaqi Shao
Shuai Shao

Professor David Shaw
Mudan She
Wanyue Shi
Colin Sinclair
Han Song
Sue Spink
Dr. John Sturzaker
Yike Sun
Yuet To
Richard Tracey
Mengyue Tu
Akeem Walker-Payne
Jingxuan Wang
Nawen Wang
Pengfei Wang
Xiaoda Wang
Zhiiwei Wang
Dominic White
Ian Wray
Sam Wright
Dongwei Wu
Sichen Wu
Xueyan Wu
Yu Xiang
Siyi Xin
Guanhua Xing
Yu Xu
Zhendao Yan
Ting Yang
Yang Yang
Junyan Ye
Jie Zhang
Qi Zhang
Xixi Zhang
Youyou Zhang
Yu Zhang
Yujiao Zhang
Yijin Zhao
Yi Zhu
Xinyi Zou
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