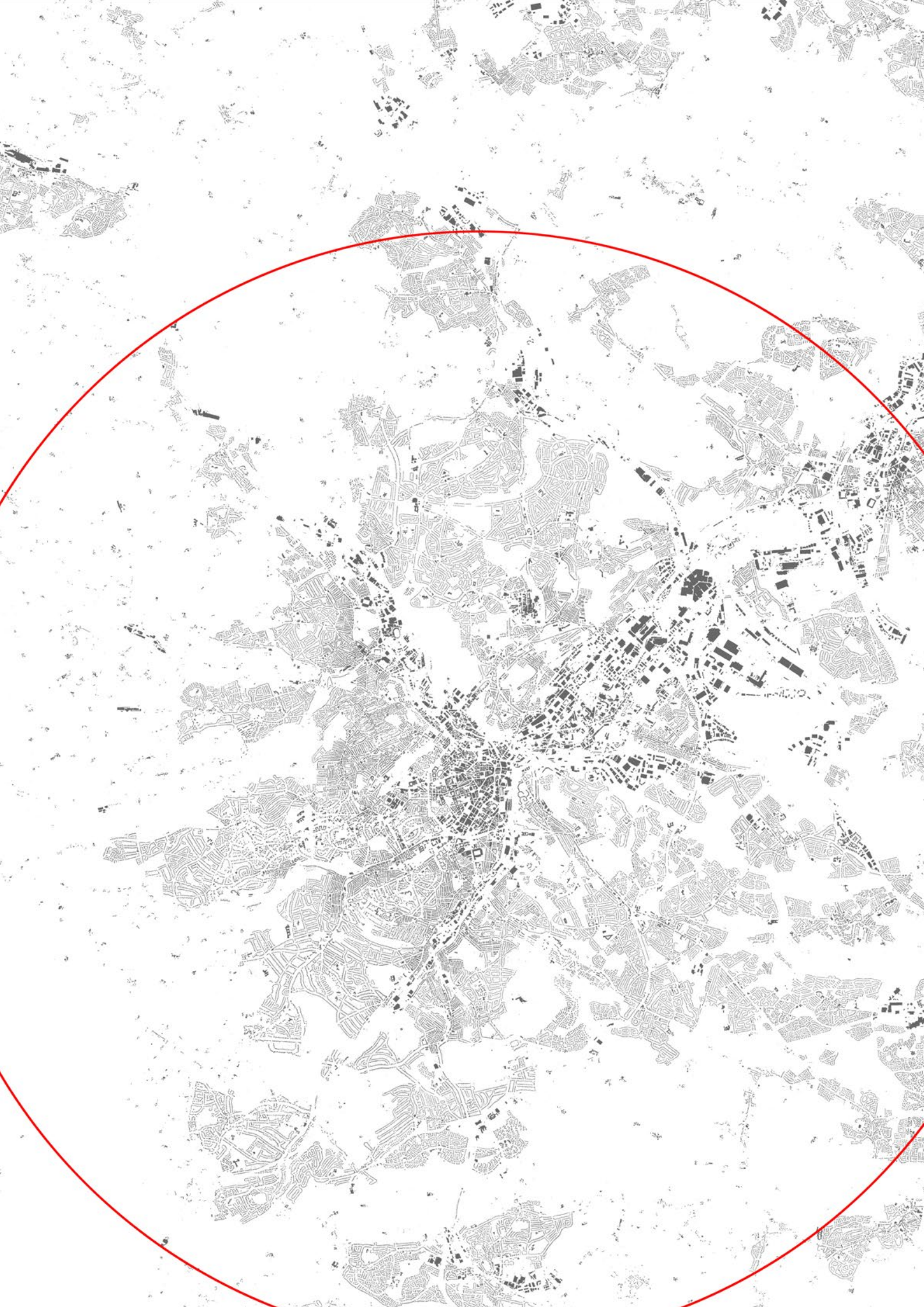
Sheffield
Garden City?

Options for long-term urban growth

Report by URBED
for Sheffield City Council

November 2015

urbed



Contents

URBED
10 Little Lever Street, Manchester, M1 1HR
0161 200 5500, info@urbed.coop, www.urbed.coop

For URBED: David Rudlin with John Sampson, Sangeetha Banner and Vicky Payne
For Sheffield Council: Dave Caulfield, Maria Duffy, Simon Vincent, Rob Thompson, Chris Hanson and John Stonard

This report has been financially supported by Sheffield City Council. The views expressed are however solely those of URBED and should not be taken as those of Sheffield City Council or its officers.

Sheffield City Council

Summary

England somehow seems to have mislaid its second city. In most nations there is a second city that is roughly half the size of the first city which, in England, would mean a population of around 4 Million. In the Victorian era the potential second city was Manchester, in the 1960s it was Birmingham, and for a short period it could even have been Sheffield. Without this second city we find ourselves struggling to do everything we want to do; business, Government, media and culture in the overheated, crowded capital, while in the Midlands and the North there are cities able and willing to step up. It is not just a second city that we lack – all of our provincial cities are under-sized and under-perform economically. They all need to grow. This report considers how one of them, Sheffield, might do that.

The problem of course is that far from growing, all of our provincial cities in fact shrank in the second half of the 20th century. A combination of economic restructuring, suburbanisation and the economic draw of London saw all of our cities lose population and economic activity particularly Manchester and Liverpool (and Glasgow in Scotland). Sheffield's population loss occurred later, and was less pronounced but the city is still a smaller city than it was at its peak in 1951 when it was home to 577,000 people.

If we place the argument that our provincial cities need to grow, alongside the requirement for substantially more housebuilding then the solution seems obvious.

However in the last ten years something remarkable has started to happen. All of the UK's provincial cities have started to grow again. Sheffield gained nearly 50,000 people between 2001 and 2011. A combination of economic revival in the early 2000s combined with a resurgence of city centre living and the renewal of inner city districts, saw a period of rapid growth, reversing the trend of the previous decades. True the pace of growth has slowed since the 2008 recession but it has not gone into reverse.

Set alongside this is a national housing crisis. We need to be building around 240,000 homes a year to deal with population and household growth and in the last few years we have managed less than half of this. The result is a national housing shortage and stress within the housing market which meant that housing became a major issue in the 2015 general election. There is a great deal of debate about the extent to which the planning system is part of the problem or part of the solution, but it is certainly the case that many authorities are struggling to find the space to allocate land to meet their projected housing needs.

If we place the argument that our provincial cities need to grow alongside the requirement for substantially more housebuilding then the solution seems obvious. Rather than foist housing on unwilling rural authorities, why don't we build within our cities, replace their lost urban populations and use their 'vast reserves' of brownfield land? When URBED won the Wolfson Economics Prize in 2014 by setting out proposals for the expansion of a prosperous medium sized city onto its surrounding green fields, we were accused of ignoring this urban agenda – even though our essay did say that 60% of all new housing should go onto brownfield land. This report for Sheffield has allowed us to redress the balance by looking in detail at how the principles in our Wolfson essay might be applied to a major city.

The starting point for this has been to understand the area that we are dealing with and the level of growth that we should be planning for. Neither question is as easy to answer as it may seem. In terms of the area, we decided early on that the city region was going to be too large to study, while the boundary of Sheffield City was too small. In Uxcester we confined our proposals to a 10km circle drawn around the city centre and in Sheffield we decided to expand this to 15km to take in the functional conurbation of Sheffield, Rotherham, and small parts of North East Derbyshire, Chesterfield and Barnsley.

In terms of housing numbers our starting point was the proposals being developed in the City Region to create 70,000 jobs over 10 years. These employment targets are generating housing requirements based upon assumptions about who will take these jobs, how many will be local and how many will be in-comers. These assumptions produced a spread of housing requirements for the city region up to 200,000 new homes, half of which would need to be accommodated within our 15km radius. It is true that the more recent population projections, following the recession, have reduced these numbers, but we have stuck to the higher figure of 100,000 new homes

within the 15km area circle around Sheffield. This is a combined figure for both Sheffield and Rotherham, and is higher than the housing projections currently being considered by both authorities.

We have used this higher figure because we believe that growth is good, as we describe in Part 1 of this report. We believe that the Sheffield conurbation needs to pursue a much more ambitious growth agenda, as Manchester is doing. Indeed, like the Centre for Cities, we believe that population growth is a catalyst for economic growth rather than vice versa. Growing the population, increases catchment spending power – supporting projects like the New Retail Quarter. It generates income for the Council and makes the city's workforce more attractive to employers and more likely to generate new businesses.

The question we ask in Part 2 of this report is how we can we accommodate this level of growth over 20 years? Where would we build 100,000 homes? How much could be accommodated on brownfield land and how much, if any, would have to spill over onto green fields? We do this by looking at five potential sources of housing capacity:

Urban Capacity: We start by looking at brownfield housing capacity that has been estimated by the Councils at a little over 20,000 homes. There are much greater areas of brownfield land in the city region, but only a small proportion of this is within the city itself where land tends not to stay vacant for long before it is occupied by low value uses like parking and yard space. We do however assume that brownfield land is a dynamic resource that is created as quickly as it is used up. We therefore felt able to anticipate that over the 20 year plan period the current stock of brownfield land, plus new brownfield land, would provide a capacity of around 32,000 homes.

Urban Intensification: There are many other types of Urban Capacity such as the subdivision of larger homes, backland development, the intensification of low density Council estates (of which there are many in Sheffield), the development of car parks etc. The main impediment to this capacity coming forward is often the planning system itself. We estimate that there is capacity in the study area for 18,000 homes from this source.

Remodelling: We identify two parts of Sheffield that were once busy residential neighbourhoods and now have very little housing; Neepsend and Attercliffe. They are now characterised by relatively low density commercial use (that is nevertheless protected by planning policy). We suggest that such uses are not appropriate within a mile of the centre of a city like Sheffield and that the neighbourhoods could be remodelled as in-town Garden Cities (or Sustainable Urban Neighbourhoods). These two areas we estimate could accommodate 20,000 homes.

This gives us 70,000 homes within the conurbation's urban area, leaving us 30,000 homes to accommodate elsewhere. Here we suggest two possibilities:

Accretion: The response of most planning authorities to this problem has been either to look at the next field around the edge of the settlement or to seek to export growth to surrounding districts. Neither are very sustainable forms of development and cannot easily be served by public transport or existing services so become car-dependent. We suggest that there may be some small scope for accretion (5,000 homes) where sites are near to existing centres.

Extension: Which leaves us with urban extensions. As we suggested in our Wolfson essay we believe that it is better to take a confident bite out of the Green Belt rather than nibbling around its edges. We therefore suggest that the majority of the remaining growth goes into urban extensions and suggest Mosborough (which was planned as an extension in the 1970s), Waverley (which is already being developed by Rotherham) and three smaller extensions at Bassingthorpe (also allocated by Rotherham), Oughtibridge and Stocksbridge in total accommodating 25,000 homes.

This achieves 100,000 homes and in Part 3 of this report we start to explore how this might be realised and what structures would need to be put in place. It is possible that the Government will introduce powers in this Parliament to facilitate housing growth zones or garden cities and this report provides a starting point for the sort of initiatives that Sheffield could put forward for these programmes. Key elements of any strategy will need to be mechanisms to assemble land and to capture its value for investment in new infrastructure such as extensions to the tram system.

The problem is that very little of what we say in this report is compatible with the planning system as it currently operates. Much of the 70,000 home capacity of the urban area cannot be measured to the satisfaction of a planning inspector and in any case would fail the deliverability test. If Sheffield were therefore to go with the ambitious growth figures that we suggest they could find themselves forced to make more greenfield allocations. The best way to avoid this is to downplay the city's growth figures. This of course is why we struggle to build the second, or indeed the third, fourth and fifth cities that we need as a country.

Introduction

Over the years URBED have become known as advocates of urban development and the regeneration of towns and cities. It therefore came as a surprise, to some, when we won the 2014 Wolfson Economics Prize for an essay on Garden Cities[1]. This after many years in which the Garden City lobby and the advocates of urban development had seemingly been at loggerheads.

Our Wolfson essay did not, in fact, argue for Garden Cities. On the contrary it suggested that it was impossible to build free-standing new settlements that could be sustainable as anything other than dormitory suburbs. We should instead be expanding existing towns and cities that already have a full compliment of facilities and public transport; places like the fictional city of Uxcester (which we invented for our Wolfson essay) or indeed the somewhat bigger city of Sheffield.

We argued in the essay that 60% of all new housing should go into existing urban areas and suggested that the northern cities could probably achieve substantially more than this. Our focus on Uxcester allowed us to explore the issues in smaller cities with intense pressures for growth and very limited brownfield capacity. Places like Uxcester or York, Oxford, Chester and Cambridge can only grow if they are allowed to expand beyond their existing built-up area and the most sustainable way of doing this is to take a confident bite out of their Green Belt rather than allowing it to be nibbled away, or to build some far-flung new town.

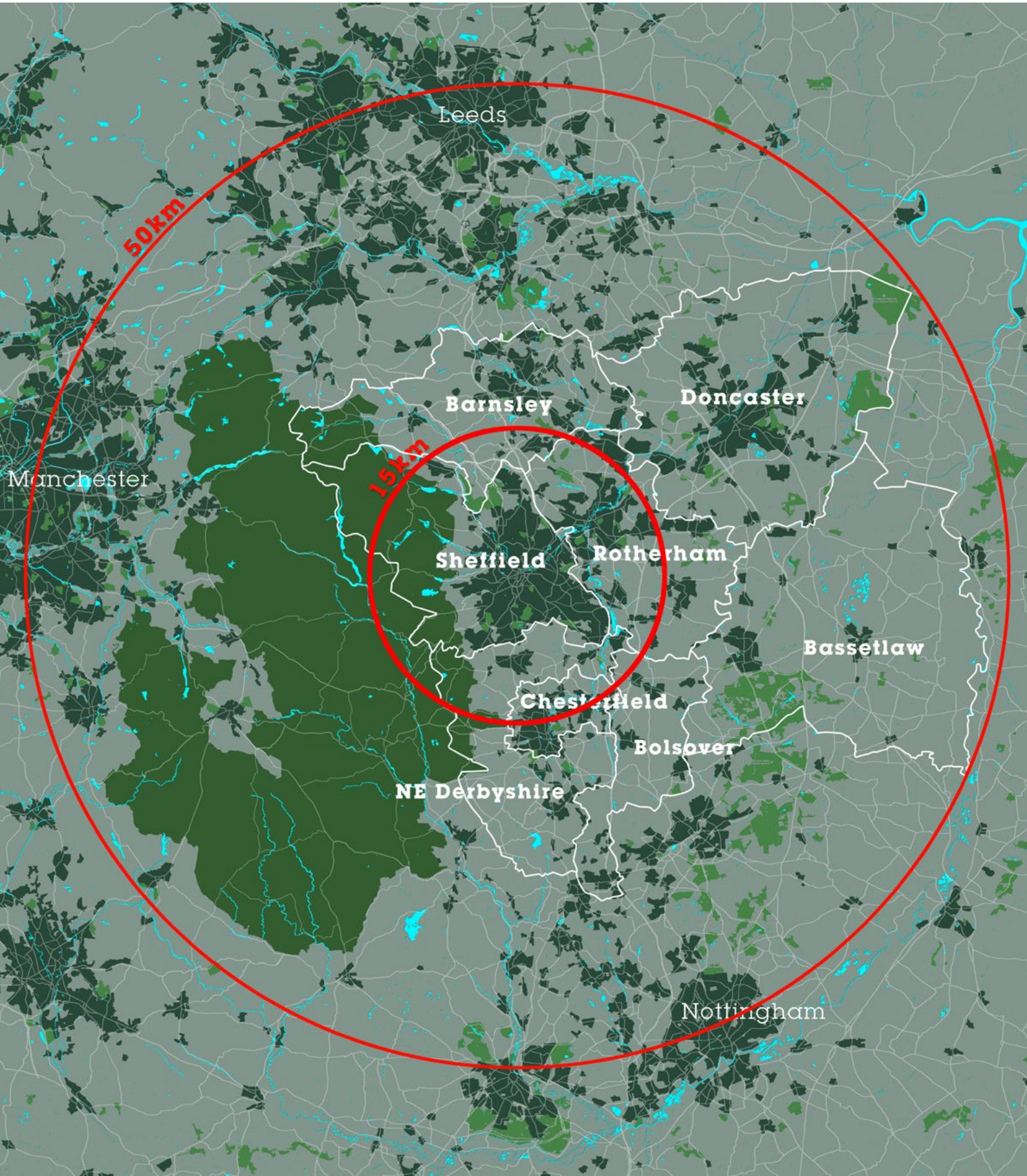
We were at pains to argue that the regeneration of our larger cities should remain our first priority

While we were at pains to argue that the regeneration of our larger cities should remain our first priority, there were some who accused us of proposing green field expansion as an alternative to brownfield development and urban regeneration[2]. We were therefore pleased when Sheffield City Council asked us how the principles set out in our Uxcester report might be applied to a big northern city. This report, produced in discussion with both the Council's officers and with the Sheffield City Region Heads of Planning Group, is the result of that request.

Uxcester was a nice simple place, (it was in fact based on York). It had a population of around 190,000 people living in 86,000 households and was surrounded by farmland, sparsely scattered with villages. Sheffield is more complicated. The city Council area has a population almost three times the size of Uxcester. However the functional conurbation includes Rotherham which increases the population to 818,000. It also sits within a City Region, including Doncaster, Barnsley and Chesterfield as well as large areas of countryside (including parts of the Peak District) with a population of 1.8 million.

The Local Authorities across the City Region have been working together to plan for population and jobs growth. The Strategic Economic Plan[3] has set a target to create an additional 70,000 jobs in the region over the next 10 years (2014-24). This jobs figure has, in turn, generated a series of housing growth figures based on the rates of economic activity in the region. This is slightly confusing because, if the current (low) levels of economic activity are maintained, then more housing will be required because the jobs will be taken up by in-migrants to the city. Alternatively if economic activity rates were to increase to the average for England and Wales, more local people would take the jobs and less new housing would be required.

The initial household growth figures resulting from this jobs target were initially calculated at 140-200,000 new homes required over the next 20 years in the City Region in addition to the present 800,000 households. The higher end of this range represents a growth rate of 12.5%/decade. However the projection of household growth has become a process that is both highly politicised and extremely technical. Across the country, Local Plans are being challenged by planning inspectors for projecting too little housing, and in one case (Durham) too much housing. The figures are also being scrutinised by consultants working for developers and land owners


Leeds
50km
Barnsley
Doncaster
Manchester
15km
Sheffield
Rotherham
Bassetlaw
Chesterfield
Bolsover
NE Derbyshire
Nottingham

These are proper planning questions of the kind that Abercrombie was asking

who are often running their own projections. Edge Analytics have been undertaking work on these projections for the Sheffield City Region[4]. The original projections used a 2008 base, whereas the more recent figures are derived from a 2012 base (updated to 2014). Because of this they reflect the lower growth rate during the recession which has reduced the projections as shown on the bottom line of the table opposite. These lower projections may make it easier for the city to meet its five year housing supply, but we are more interested in returning to the growth rates of the early 2000s so have used the 2008 base projections.

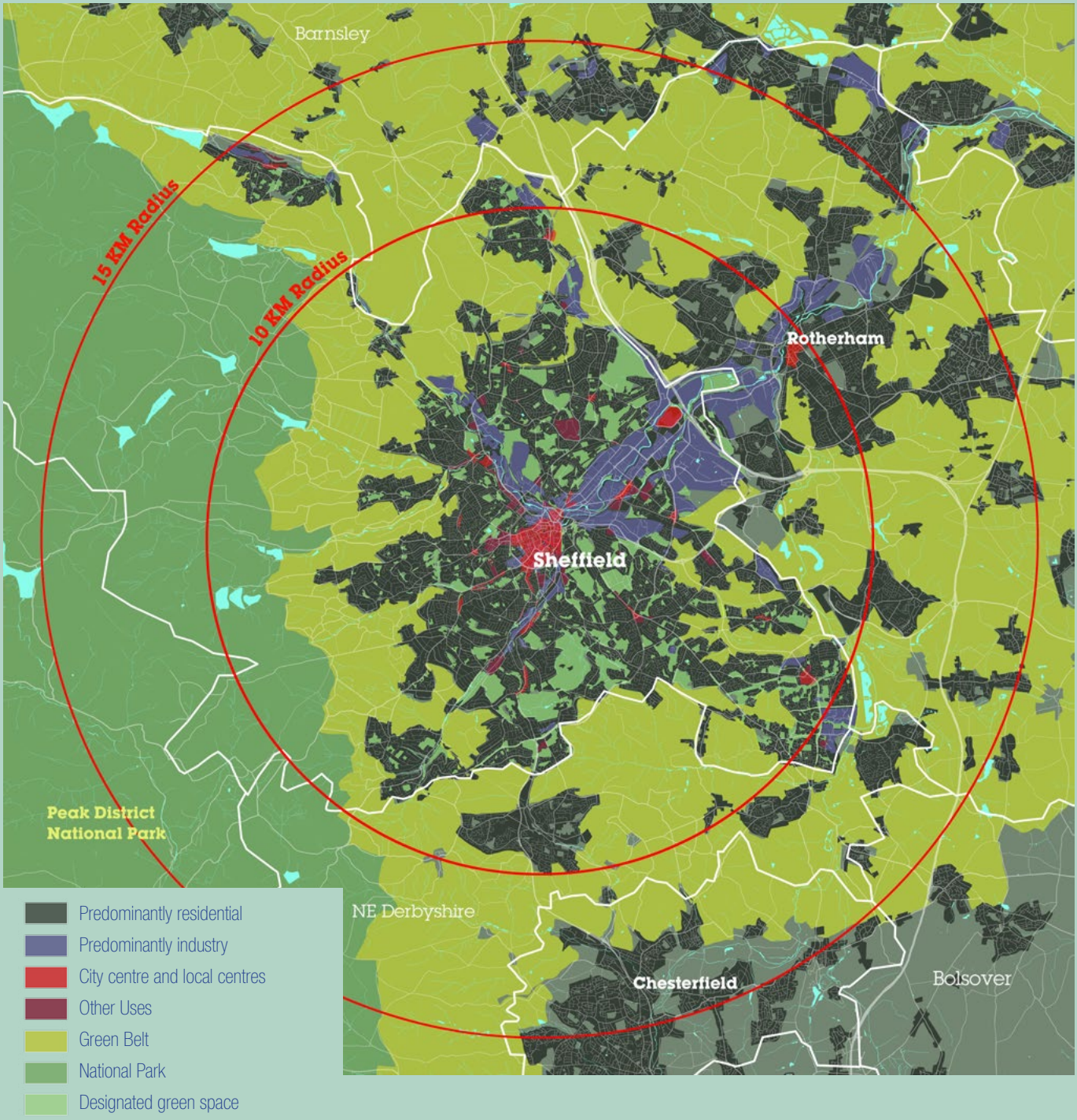
These figures relate to the city region but, as we started work, it became clear that this was too large an area given our limited resources and access to data. In Uxcester we confined ourselves to a circle with a 10km radius around the town centre – which represents a 20 minute tram ride. Sheffield is a city with a greater draw so we expanded the circle to 15km taking in the urban area of Sheffield and Rotherham plus small parts of the surrounding boroughs. This area, which we call the Sheffield Connurbation in this report, has been the main focus for our work. The planning work in the City Region has allocated the projected jobs and housing figures to each of the Local Authorities. In both cases the allocations are skewed towards Sheffield, so that just under half of the new jobs and homes are to be located within the Sheffield Conurbation. This suggested a housing need for the conurbation of 66-95,000 homes using the 2008 base projections.

Later in this report we explore the different growth scenarios. However, as we describe in Part One of this report, the UK's provincial cities are smaller than they should be and the household projections are an opportunity to address this. We have therefore set ourselves a target based upon the Sheffield conurbation growing by 100,000 homes over the next 20 years. If we take account of the fact that this takes in Rotherham and parts of Barnsley, North East Derbyshire and Chesterfield, this is comparable to the high level growth scenario under the 2008 base projections. Nevertheless it is quite a long way above the most recent figures and represents a growth rate of 14%/decade. While it is an aspirational target, it is in line with the plans in Leeds and Manchester and is necessary, we would argue, if Sheffield is not to fall behind its neighbours.

This translates into 4,000 jobs and 5,000 new homes a year within the 15km circle that we have drawn around the conurbation. The question we ask in this report is how would you accommodate this level of growth? Is it the case, as many have argued, that it can all be accommodated on brownfield land, and if so what incentives are required? How should the city expand? How should this relate to public transport, to employment growth and infrastructure provision? How can all of this be funded? As Dave Caulfield, Sheffield's Director of Regeneration and Development Services said when we started the work, these are proper planning questions of the kind that Abercrombie was asking when he prepared the 1924 and 1931 plans for Sheffield. Indeed these are the questions that all cities should be posing and they should be seeing their housing figures, not as a massive headache, but as an opportunity to regenerate and reshape their city for generations to come.

	Existing	Natural Growth Rate/ Year	Projected Growth Rate/ Year	Added in 20 Years	Added in 40 Years
Uxcester					
Population	190,000				
Households	86,000	860	2,150	43,000	86,000
		1.0%	2.5%		
Sheffield/Rotherham					
Population	818,000				
Households	351,000	3,000	5,000	100,000	200,000
		0.9%	1.4%		

	Sheffield		Conurbation		City Region	
Population	552,000		818,000		1,800,000	
Households	237,000		351,000		795,000	
	total	per yr.	total	per yr.	total	per yr.
Houses built 2004-14 (net figure)		1,170		1,665		
Household projections based on the trend up until 2008		2,920		3,760		
New homes needed to as a result of the Regional Economic Strategy if Economic Activity Rates improve	38,000	1,900	56,600	2,830	140,000	7,000
New homes needed to as a result of Regional Economic Strategy if Economic Activity Rates do not improve	53,000	2,670	76,400	3,820	200,000	10,000
Revised household projections based on the lower growth rates to 2012	38,000	1,900	50,200	2,510	102,400	5,120



Part 1

The Growth of Cities

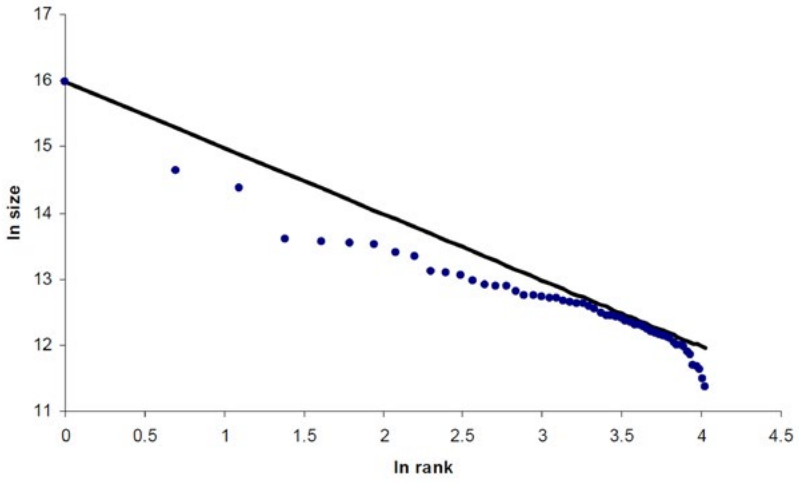
1a. Urban Renaissance

Zipf's law relates to the distribution of data. It suggests, for example, that the most common word in a language will occur twice as frequently as the second most common and three times as frequently as the third etc. In 1999 the economist Xavier Gabaix showed how Zipf's law related to cities [5]. He demonstrated how in most countries, the largest city is twice the size of the second city, three times the size of the third etc.

England does not fit this rule – London is more than three times larger than any other city. If we assume that the problem is not that London is too large, then we appear to be missing our second city. As the graph from the LSE below shows[6], all

All of England's 'second tier' cities are smaller than they should be, Sheffield included

of England's 'second tier' cities are smaller than they should be, Sheffield included. This is not just a statistical anomaly, cities have become the drivers of economic growth across the world and as the Centre for Cities has shown[7], the larger the city the more efficient its economy. The UK economy therefore suffers because its second tier cities are too small. This lies behind the Coalition Goverment's interest in the 'Northern Powerhouse' and the previous Government's promotion of the 'Northern Way'.



Zipf Plot for English Cities: England's "second tier" cities are undersized.
http://spatial-economics.blogspot.co.uk/2012/10/are-britains-second-tier-cities-too.html

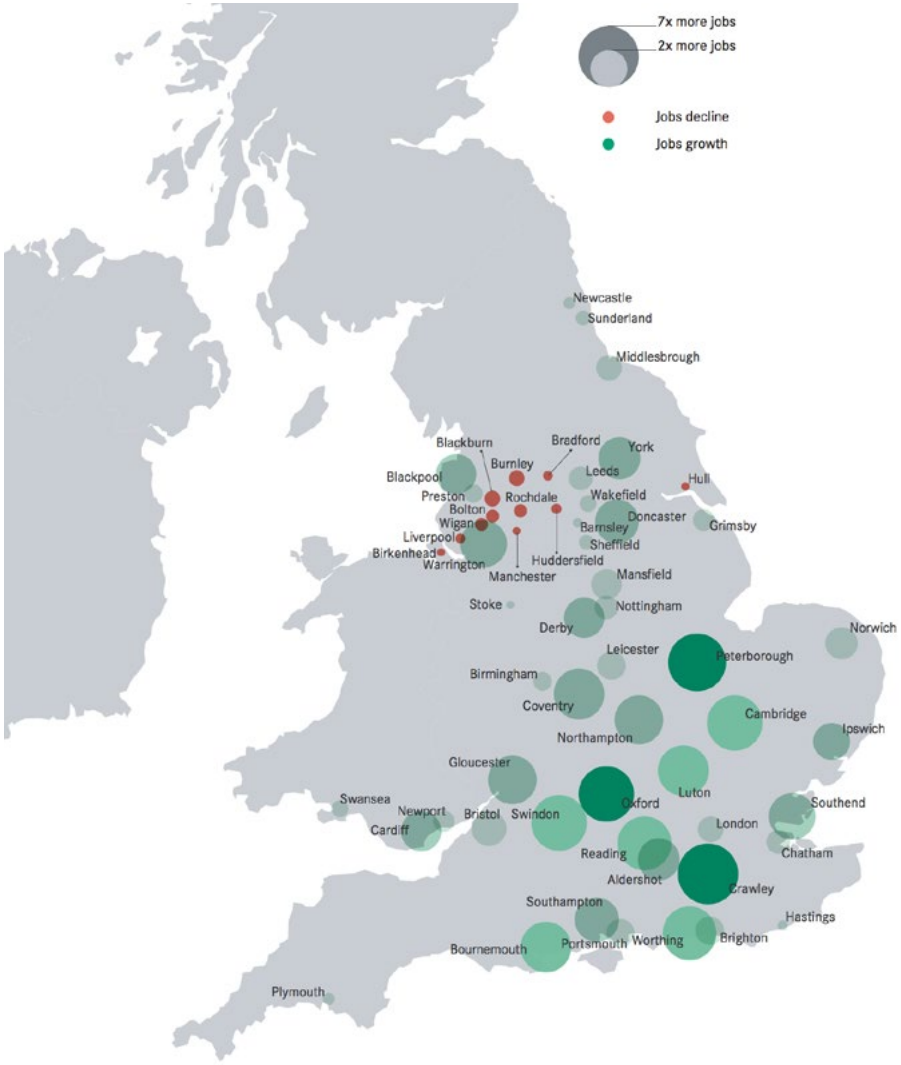
The size of England's main cities is illustrated on the table opposite. This compares the size of the core city with the wider conurbation based on the former Metropolitan Counties (which are not the same as the City Regions). All statistics such as this are subject to boundary issues. Larger authorities like Leeds and Birmingham contain their own suburbs and so population dispersal does not register as population loss, unlike Manchester (see page 17). However the trend across the table is that the core cities have lost population. Liverpool and Manchester have lost the most people over the longest period. Sheffield maintained its population due to its strong industrial base up until 1981 after which it declined for three decades. What is remarkable is the recent recovery. All of the provincial cities have grown strongly since 2001; London by 13%, Manchester by 19% and the others (including Sheffield) by around 7%. While the 'second tier' cities have achieved this from a relatively low base, it does create a momentum for growth which is encouraging after years of decline.

The population decline shown on this table has multiple causes. Clearly an important component is the economy of the city. The plan opposite from the Centre for Cities shows jobs growth across a hundred cities in the UK with the larger cities generally doing very poorly. All have seen the loss of traditional industries at some point in the last 100 years and have suffered accordingly. However as the Centre for Cities also shows, economic growth in recent years has not been due to traditional factors like transport, raw materials and the size of your workforce, but rather the quality of your workforce, the number of graduates, skilled workers and knowledge networks. One of the reasons for the recent growth of the second tier cities is that they actually do quite well in this respect. They include universities and are good at attracting and retaining graduates who are looking for urban lifestyles. It is still true as the Centre for Cities warns that too many graduates are sucked into London. However larger cities like Sheffield have the potential to grow both their population and their economy.

Population (thousands)	1911	1931	1951	1961	1971	1981	1991	2001	2011
Greater London	7,161	8,110	8,197	7,977	7,529	6,806	6,809	7,322	8,174
Inner London	4,998	4,893	3,679	3,481	3,060	2,550	2,627	2,859	3,232
Outer London	2,162	3,217	4,518	4,496	4,470	4,255	4,263	4,463	4,942
West Midlands	1,780	2,143	2,547	2,724	2,811	2,673	2,629	2,568	2,738
Birmingham	526	1,003	1,113	1,179	1,107	1,021	1,007	985	1,073
Greater Manchester	2,638	2,727	2,716	2,710	2,750	2,619	2,570	2,516	2,683
Manchester	714	766	703	657	554	463	439	423	503
West Yorkshire	1,852	1,939	1,985	2,002	2,090	2,067	2,085	2,083	2,226
Leeds	430	446	483	505	710	749	718	716	752
South Yorkshire	963	1,173	1,253	1,298	1,331	1,317	1,302	1,266	1,344
Sheffield	450	455	512	513	581	579	548	513	553
Merseyside	1,378	1,587	1,663	1,711	1,662	1,522	1,450	1,368	1,381
Liverpool	746	856	789	741	610	517	481	442	466
Tyne and Wear	1,105	1,201	1,201	1,241	1,218	1,155	1,130	1,087	1,105
Newcastle	112	267	286	292	336	312	384	266	280

<20% fall	10-20% fall	5-10% fall	0-5% fall	0-5% rise	5-10% rise	10-20% rise	20%+ rise

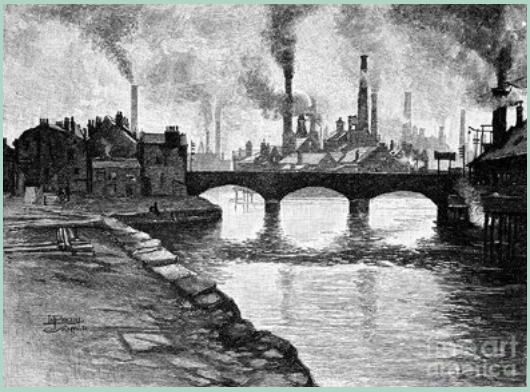
Based on UK Census Data



Jobs Growth in English Cities: 1911-2013.
Source: Compiled by Centre for Cities from Census 1911; ONS 2014, Business Register and Employment Survey

Stages of the City's Growth: While Sheffield was the first city to introduce a Green Belt in 1938 there has been a considerable amount of outward expansion since 1941

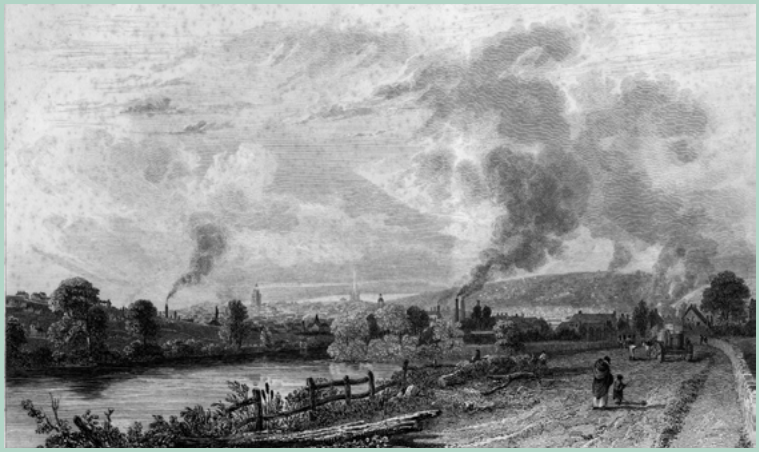
Below: A view of the River Don in 1884



1.b The Development of Sheffield

In 1937 George Orwell wrote "Sheffield, I suppose could justly claim to be called the ugliest town in the old world". It is a city that might always be said to have prioritised function and industry over frivolous things like outward appearances. However unlike many of our other large cities, Sheffield is an ancient place. Its roots probably lie in the settlement that grew up around the Norman castle built soon after the conquest of 1066 although the river crossing was used by the Romans. The town's market charter dates from 1296 and by the 14th Century it had grown into a large town, already known for the manufacture of knives. By the 1600s it was the main centre for cutlery manufacture outside London.

A hundred years later a series of innovations, including the crucible steel process and silver plating, meant that it grew into one of the world's first industrial cities. Its population expanded from around 30,000 in 1800 to almost half a million by the early 1900s, becoming an incorporated borough in 1832 and gaining its city charter in 1893. Its steel trade thrived throughout much of the 20th century and by the 1950s it was the fourth largest city in the UK (after London, Birmingham and Liverpool). However the steel industry was hit badly by the Oil Crisis in the 1970s which caused steel prices to fall and energy prices to rise. Its decline happened later than some of the other cities although this also means



View towards Sheffield from the Attercliffe Road

that it has had less time to recover. The steel and cutlery industry still exists in the city. Forgemasters is the largest independent steel works in the world and makes complex high specification castings for, amongst others, the nuclear industry.

Attempts to regenerate the city in the 80s and 90s were only partly effective. The City Council viewed Meadowhall as being key to regenerating the Lower Don Valley following the collapse of the steel industry, which has had a significant impact on the city centre retail offer. The World Student Games in 1991 were used to develop Ponds Forge and the Don Valley Stadium and were regarded at the time as not being a success (financially at least). More recently the city has been much more successful in developing the city centre with an award-winning set of public realm works and the development of the Cultural Industries Quarter (CIQ) and Kelham Island Neighbourhoods.

Facing Page:
1843 Map of Sheffield


B R I G H T S I D E B I E
Old Park Wood
Owlerton
Hall Carr Wood
SHEFFIELD
NORFOLK PARK
NETHER HALLAM
Buck Wood

1c. Planning for Growth?

We have been worrying about urban decline for the last 40 years or so. However we have been worrying about urban growth for much longer. The modern planning system when it was created in the late 1940s was built on the assumption that cities were big, bad, dangerous places, deleterious to the health of the population and inefficient for the country's economy. The planning system set out to control the growth of cities with Green Belts, and to deal with the inevitable pressures that this would create by building overspill estates and new towns. Meanwhile within cities the aim was to clear slum housing and to rehouse the population in new 'Garden City' or high rise Council estates. Even the latter, like Park Hill were built at significantly lower densities than the terraced housing that they replaced.

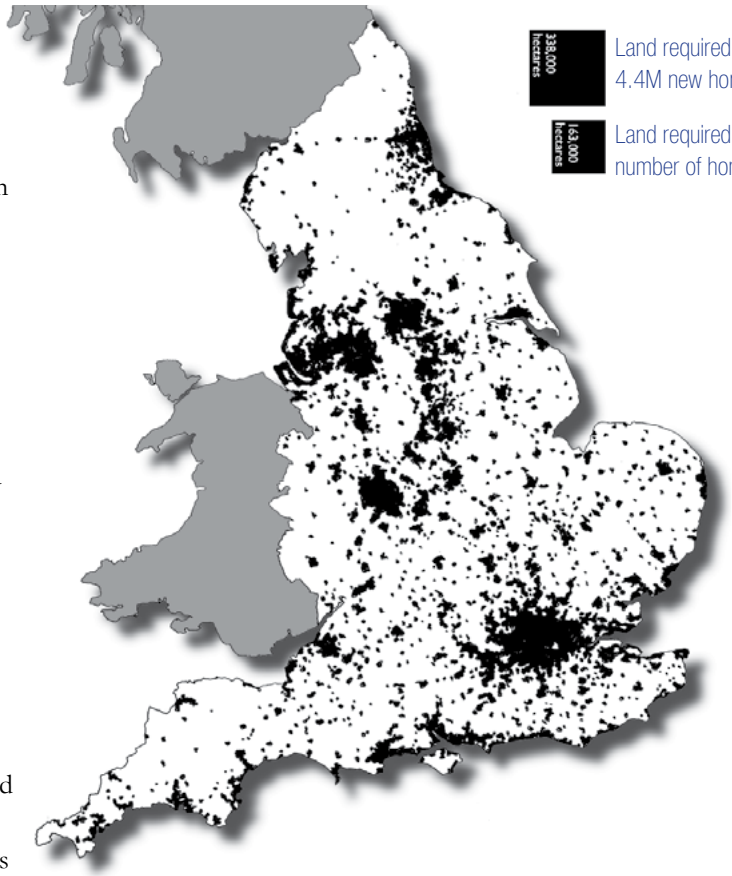
All of our large cities – including London until recently – have fewer people living in them than they did forty years ago

This promotional booklet published by Sheffield in 1959 to celebrate the completion of Park Hill, was written in English, French and Russian.

The decline of the population of the larger cities in the post-war years was therefore not just the consequence of economic decline, it was planned. Indeed the depopulation of cities was almost certainly a cause rather than just a symptom of this decline. All of our large cities – including London until recently – have fewer people living in them than they did forty years ago. In many inner city neighbourhoods population decline has been drastic - although nowhere in the UK has sunk to the levels of somewhere like Detroit in the US.

From the mid 1970s onwards urban decline started to become a concern. This was initially seen as confined to parts of the inner city but increasingly became seem as something that affected whole cities. The symptoms were population loss, as the people moving out of the city were not replaced by inward migration; economic decline, as jobs lost through economic restructuring were not replaced with new activity; and town centre disinvestment, as activity moved to out-of-town centres. Generally it was more affluent, qualified people who moved out, leaving parts of cities characterised by high levels of deprivation and a low skilled workforce. While Sheffield suffered from all of these trends (particularly its retailing), its economic decline happened later than elsewhere and its population loss was less dramatic.

Since the mid 1970s there have been a range of initiatives to address the problems of cities, from Urban Development Corporations and Enterprise Zones to the more recent Urban Regeneration Companies and Housing Market Renewal (HMR) of the 2000s. The latter was a response to housing market collapse and abandonment in many northern towns and cities including Liverpool and Manchester. However, while Sheffield was designated as a Market Renewal Area, and did some of the most innovative HMR schemes, it never suffered from market collapse. The same could not be said of Manchester where large scale abandonment of Victorian terraces took place. As work by Anne Power[7] dem-



onstrated, this was not because of depopulation but because of the large number of subsidised new homes that had been built in Manchester undermining demand for the older housing stock.

This highlights the difficult relationship between housebuilding and population projections. Manchester may have allowed the rate of new housebuilding to exceed its capacity for growth. However it did so in an attempt to reverse the spiral of population decline. Places that build houses, inevitably have an increasing population. The projections then use these population growth figures to calculate future needs, allocating more housing to areas with growing populations - as a result of which their populations increase even further. The cities and industrial towns of the north have had the opposite problem with their population projections perpetuating their low growth rates.

The recent upturn in city populations, described in the last chapter, has changed this situation, creating an opportunity for cities to harness population growth as part of their regeneration. The country is becoming divided into places that are resisting growth and arguing to reduce their housing numbers, and those that are embracing growth, even offering to take housing from neighbouring authorities. Sheffield has an opportunity to embrace this housing growth agenda to support its economic growth. This happens by increasing spending power in its catchment area, by expanding the local tax base (by around £1,200/yr/house), by making the workforce more attractive to employers and by attracting and retaining talented and qualified people. Just as falling populations contribute to economic decline, so population growth is as a driver of economic growth.

As we will see, many of the larger cities are debating whether they should plan for a rate of housebuilding greater than their projected population growth. There is an opportunity for all of the UK's 'second tier' cities to tap into the nation's need to increase its housing output to embark on a period of growth that Zipf's law suggests that we need.

There is an opportunity for cities to tap into the nation's need to increase its housing output to promote levels of growth above their current population projections.

In this report we test the possibility of the Sheffield conurbation growing in this way. As we have seen the Sheffield conurbation (including Rotherham) grew by just under 8% between 2001 and 2011 and the sub-regional population projections suggest that it will continue to grow at this rate. In this report we ask whether we might increase this to 14% per decade which is what will be needed for the city to keep track with the other provincial cities.

1.d Sheffield Today

The city of Sheffield's population was 552,698 in the last census living in 229,928 households. This has grown from a low point of 513,000 in 2001 but is yet to reach its peak of 577,000 from 1951. Around 19% of the population is BME and almost 48,000 households comprised of people aged over 65 (of which 29,000 were lone households). There are 16,760 lone parent households with dependent children.

More than 36% of Sheffields domestic properties are semi-detached houses or bungalows and 27% are terraced, both a little higher than the national average. Almost half the dwellings in the Hillsborough ward are terraced and more than 40% in Crookes and Gleadless Valley wards. Dore and Totley and Beighton have the highest proportions of detached houses and bungalows. Almost two-thirds of dwellings in Central ward are purpose-built flats.

Over 58% of households are owner-occupiers, a quarter owning their homes outright. The social rented sector accounts for a quarter of households, whilst 15.6% rent privately. The social rented sector has contracted a little since 2001, particularly those renting from the Council. The proportion of owner-occupiers has fallen marginally, although the proportion with a mortgage has reduced more markedly with the biggest growth has been in renting from a private landlord.

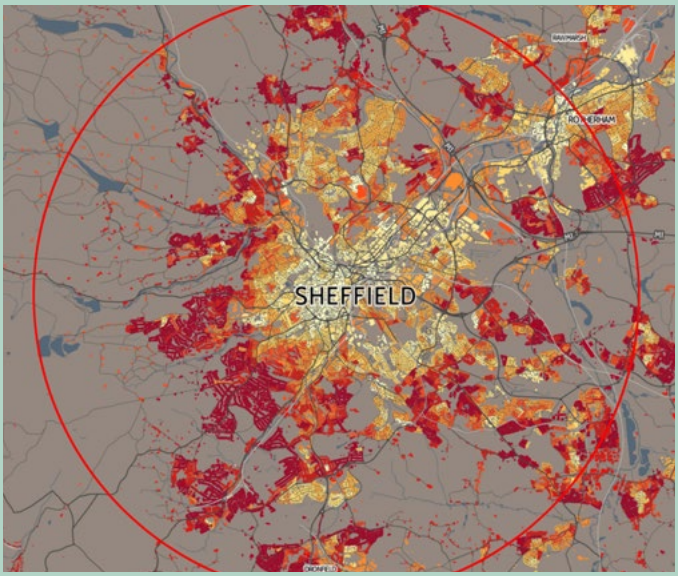
Over a third of economically active people are employed full-time with a small movement to part-time or self-employment since 2001. The proportion of the economically active who are unemployed has increased slightly from 4.2% to 4.8% and more than a third of the unemployed have been out of work for more than a year. The number of NEETs has fallen from 8.2 to 6.6% since 2012. However GVA/head remains low at £17,752 compared to the national average of £21,349.

There are more than 67,000 students aged 16-74 in Sheffield. These include 10,970 aged under 18. The numbers have increased since 2001, when they represented 3.3% of the economically active, to 2011 when that proportion had risen to 5.5%.

Around a third of all jobs in Sheffield are provided by the public sector, which includes public administration, defence, education and health and social work. This is higher than the national average at 28%, although as a large city Sheffield has two universities and several teaching hospitals, plus a number of Government offices. The largest private employment sector is retailing while the sector that has contracted the most is manufacturing, down to 9.3% from 15.5% in 2001.

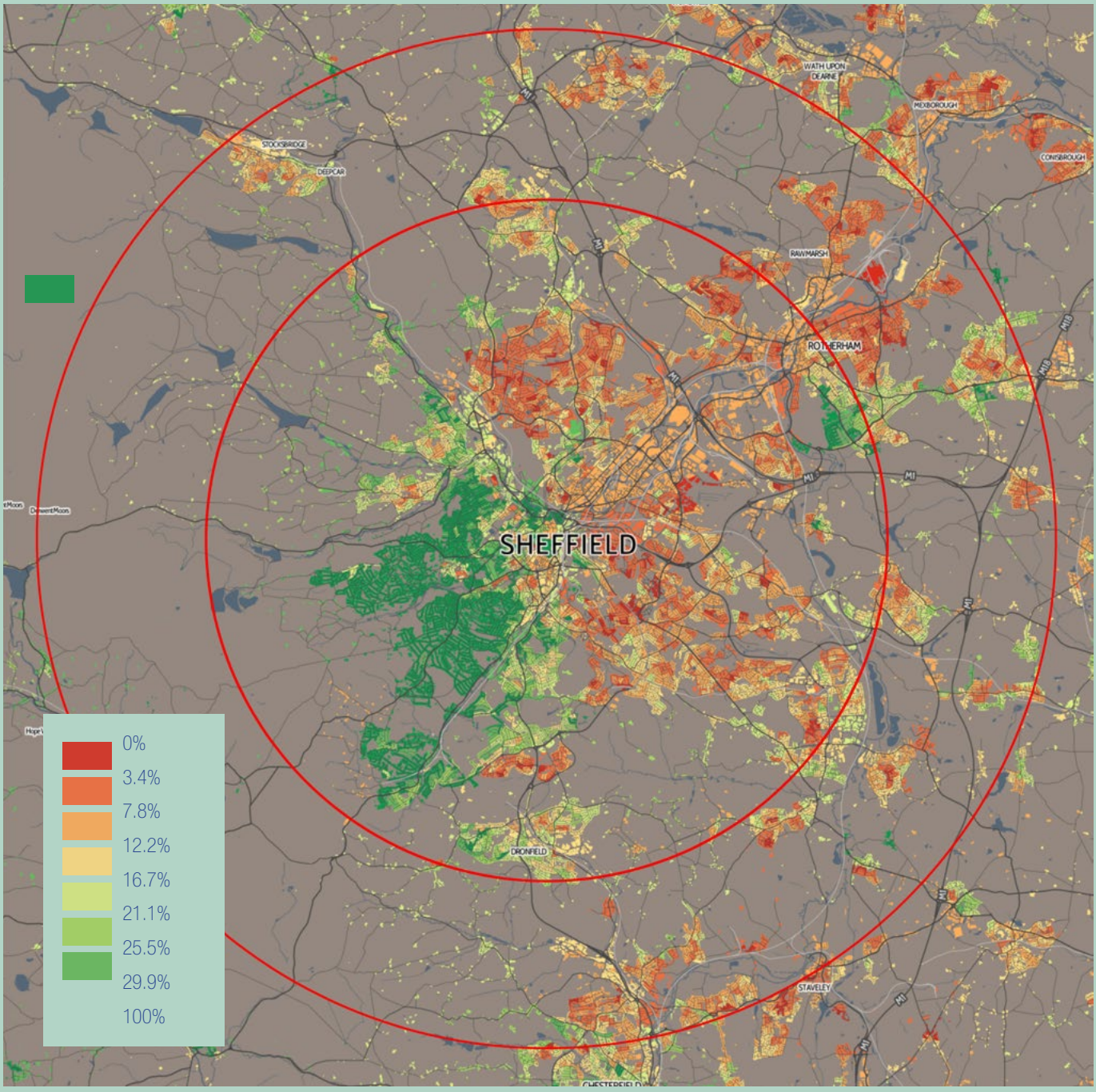
Source: Sheffield City Council website: 2011 Census Data: Briefing Notes https://www.sheffield.gov.uk/your-city-Council/sheffield-profile/population-and-health/2011-census/key-statistics.html

Home Ownership



Maps from DataShine based on the 2011 Census
http://datashine.org.uk/
Compiled by ESRC and UCL.

Professional Occupations



1e. City Comparisons

Comparing city populations and growth projections is notoriously difficult. England is a very densely populated land, towns and cities merge into one another and overlap so that it can be difficult even to determine the size of their population. The two largest cities by local authority area outside London are Birmingham (with 1 Million people) and Leeds (with 750,000) while Sheffield and Manchester have around 500,000. However these figures depend on where the boundary is drawn, Birmingham includes most of its suburbs, Leeds has a large bite taken out of it by Bradford where as Manchester does not even include part of its city centre.

The former Metropolitan County areas give a better idea of the relative scale of these cities. At this level London has a population of just over 8 Million while Leeds, Manchester and Birmingham are all 2.3-2.7 Million and Sheffield is 1.3 Million. The City Regions are another way of looking at the functional population of the cities (although a city region was never established in Birmingham). If we were to extend the table to include all eight core cities Sheffield would be comparable with Newcastle and Nottingham, and would be larger than Bristol.

Most of our large cities, with the exception of London, now have fewer people living in them than they did in the past.

	Council Area	Metropolitan County Area	City Region
London	NA	8,174,000	20,000,000
Leeds	751,000	2,200,000	3,000,000
Birmingham	1,000,000	2,700,000	3,100,000
Manchester	502,000	2,700,000	3,364,000
Sheffield	552,000	1,340,000	1,800,000

Leeds

Leeds adopted its Core Strategy in 2014[8] which includes plans for 70,000 new homes over the period 2012-2028 (16 years). This is an ambitious number representing 4,679 homes a year within the Council area, a 21% growth in the housing stock over the plan period (13% per decade).

These figures have led to some controversy in the city with civic groups questioning the figures largely because of the assumption that they will require the release of Green Belt land. An article in the Yorkshire Post, March 2015[9], suggests that the new population projections show that the growth of the city has slowed and that a projection-based figure would require 44,500 homes rather than 70,000. Meanwhile the Leeds Housebuilders Consortium, based on work by Nathaniel Litchfield and Partners[10] have suggested that the figure should be 70-77,000 homes to make up for the historic shortfall.

Manchester

As we have said Manchester City Council is a much smaller area. Nevertheless its Adopted Core Strategy (2012)[11] seeks to deliver 60,000 new homes over the plan period 2009-2027 (18 years). In percentage terms this is slightly more ambitious than Leeds, representing 3,333 homes a year. This compares to the 2008 Greater Manchester Housing Market Assessment[12] that projected a requirement for 2,448 new homes a year. Manchester is therefore projecting a 28% increase in its housing stock over the plan period (16% per decade).

Greater Manchester Combined Authority has assumed planning powers and has started work on a combined plan. The Greater Manchester Spatial Framework Stage 1 was published for consultation in September 2014[13] and projected a need for just under 225,000 new homes over the period 2012-2033 (21 years). This is a growth rate of 9% per decade. An article in Place North West in January 2015[14] states that the majority of responses to the plan worry that it lacks ambition and 'does not reflect the desire to become a European premier city'. The Peel Group, advised by Turley, said the report was based on 'historic trends and will perpetuate past inadequacies without set objectives or factoring in growth'.

Birmingham

The Birmingham situation is in a state of flux at the moment. The Strategic Housing Market Assessment[15] which covers the Birmingham and Black Country LEPs projects a need

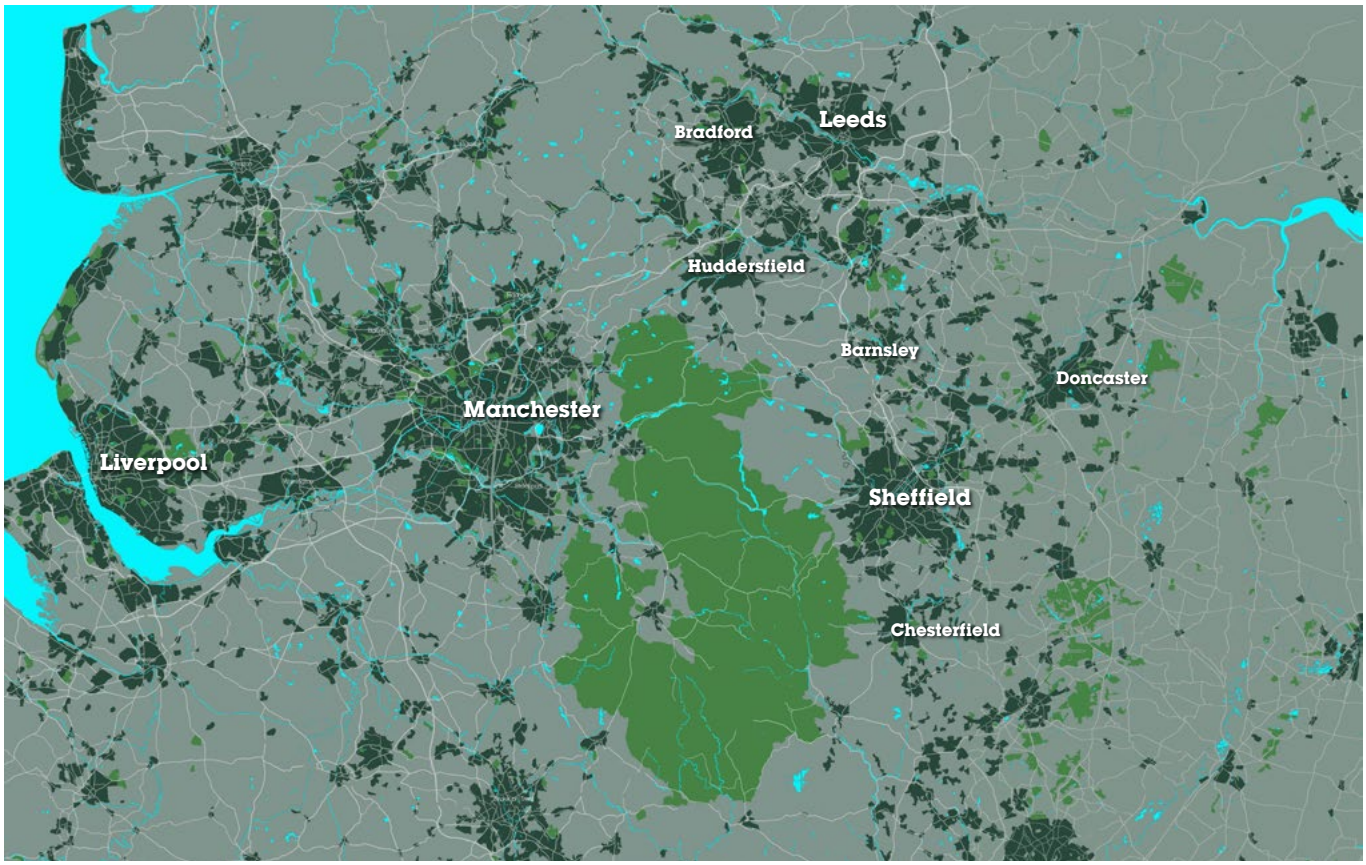
for 9,300 new homes per annum. Of these it is assumed that 4,200/annum arise from Birmingham's growth (10% per decade).

This however is at odds with the figure of 51,100 homes allocated in Birmingham's Draft Development Plan[16]. The shortfall of just under 33,000 over 20 years has recently been considered in a study by Peter Brett Associates (PBA) who have been commissioned by the Birmingham and Solihull LEP[17]. They are considering a series of options to accommodate this growth, ranging from increasing Urban Capacity, to urban extensions, corridor development and new garden cities. This study suggests that Birmingham needs to 'export' some of this shortfall to surrounding authorities. Meanwhile work by Barton Wilmore Associates is suggesting that the growth of Birmingham means that the need is 108,000 homes rather than 84,000[18]. This would increase the growth rate to 13% per decade which would be more in line with Manchester and Leeds.

London

The London Plan Update 2015[19] provides for 42,000 homes a year or 882,000 over the plan period 2015-2036 (21 years). This represents an increase in the dwelling stock of 26% over the plan period (12% per decade). Like Birmingham however, this figure is below the assessed housing need which was estimated in the Strategic Housing Assessment (2013)[20] as 49,000 homes a year. On this basis London will need to export almost 150,000 homes to surrounding districts over the plan period. The Manifesto for the London City Region published by Aecom in 2015[21] goes much further. It suggests that the city region will grow from 20-30 Million by 2065 and that within this wider region there is a need for of 50,000 homes a year over and above that already included in Local Plans.

These brief case studies raise a series of issues relevant to Sheffield. Manchester and Leeds are planning for housebuilding targets ahead of their population projections as part of a bid to grow their cities. Birmingham and London by contrast are struggling to accommodate their projected growth but in both cases they are being urged to increase their figures. The Birmingham and London figures are capacity led, given their assessment that they cannot accommodate their housing growth within their urban area. This is leading to wider discussions under the 'duty to cooperate' to allow them to export growth to surrounding districts. Their need to do this is based on an assumption that they don't build on the Green Belt within their administrative area. Both Manchester and Leeds have indicated that their targets may result in Green Belt releases within their areas, something that has already led to controversy in Leeds, but not yet in Manchester. Leeds and Manchester, together with Sheffield and Liverpool are also part of the Northern Powerhouse. This seeks to unite the power of these cities which have a combined population of more than 10 Million. The plan below shows the area involved and suggests that there may be a wider agenda to address the question raised by the Zipf graph.



Part 2

The Growth of Sheffield

2a. The Opportunity

Accommodating housing growth may be a headache for many planning authorities but it is also a potential opportunity. We have suggested that the Sheffield conurbation could grow my as much as 100,000 homes over the next 20 years. This would be an increase of 28.5% on the current 351,000 households in the conurbation and is at the upper end of the economic growth scenarios that have been considered for the City Region. For clarity this figure includes current allocations in the Rotherham Local Plan.

The question that we address in Part 2 of this report is how we might accommodate this growth? At first sight it seems an impossible task, Sheffield and Rotherham have identified through their SHLAA sites for just over 21,000 homes on brownfield land within their urban areas. The response to this of many planning authorities (like Birmingham) has been to assume that the balance of their housing requirement will need to be built outside their urban area. This would be done partly by nibbling around the edges of the Green Belt and partly by exporting growth beyond the Green Belt, which often means building in surrounding districts. This is similar to the discussions that took place in the 1950s to the 1970s when we were planning to export urban populations to new towns.

Like Abercrombie after the war, we can decide how we want our cities to be in 40 years and put in place policies to work towards that vision.

In our view there needs to be an alternative to this type of planning which is based on the line of least resistance. The fields that are being allocated for development are those where the housing will have the least impact rather than where it can be developed most sustainably. The housing exported to surrounding districts will end up accommodating commuters who have to travel back through the Green Belt, probably by car, into the city. The key message from URBED's Wolfson essay was that, in places without the Urban Capacity to accommodate their housing growth, it is likely that the sacred land of the Green Belt will be the most sustainable place to expand. Green Belts are important and we do not argue for their removal. However if they are applied too rigidly they create unsustainable settlement patterns and risk undermining economic growth by pushing up land values within the city and squeezing growth out to unsustainable locations.

We have been criticised by fellow urbanists for promoting greenfield development. This may be justified, our critics argue, in places like Uxcester, but the cities of the north are a different proposition. These cities have 'huge capacity' to build within their urban area and can accommodate housing growth without needing to release green fields. Indeed if these cities were tempted to make allocations for a significant amount of greenfield development they would risk undermining the market for brownfield land – why would housebuilders get entangled with the costs and complexity of brownfield development when they have the prospect of nice unconstrained, marketable greenfield sites?

The purpose of this report is to try and address these issues based on the belief that Sheffield's growth in the coming decades is a huge opportunity to plan the city, to decide its shape and extent, structure and density. Rather than allowing growth to happen as an unplanned consequence of other policies, this report is based on the idea that, like Abercrombie, we can decide how we want our cities to be in 20 or even 40 years and put in place policies to realise that vision. The homes that we must build and the jobs that we must create are the raw materials that we have available to us to achieve this.

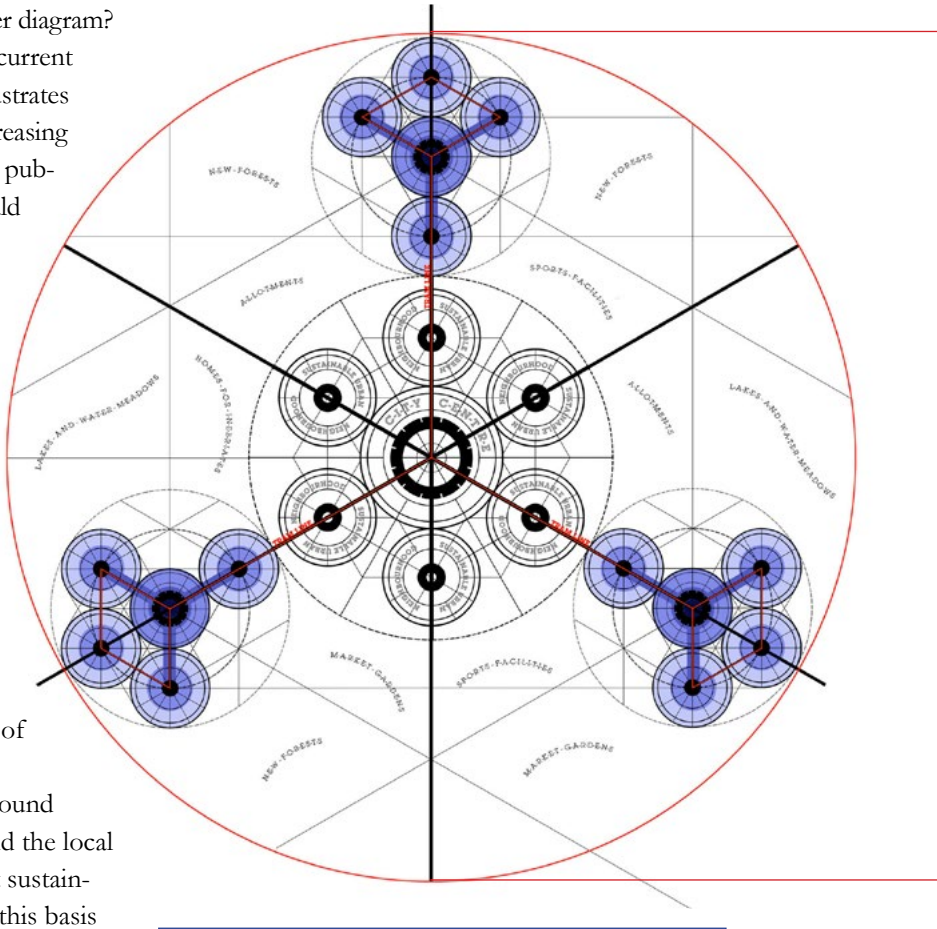
2b. The Shape of the City

The 'snowflake' diagram for Uxcester (below) was based on a simple set of geometries. The red circle was drawn 10km from the city centre, the distance that could be reached on a 20 minute tram ride. The blue circles have a 800m radius, representing a 10 minute walk. The aim was to create a sustainable settlement that could be served efficiently by public transport, by walking and cycling. The Uxcester diagram shows scope for 70,000 new homes in the blue areas, built at four densities of 20, 30, 45 and 65 units/ha.

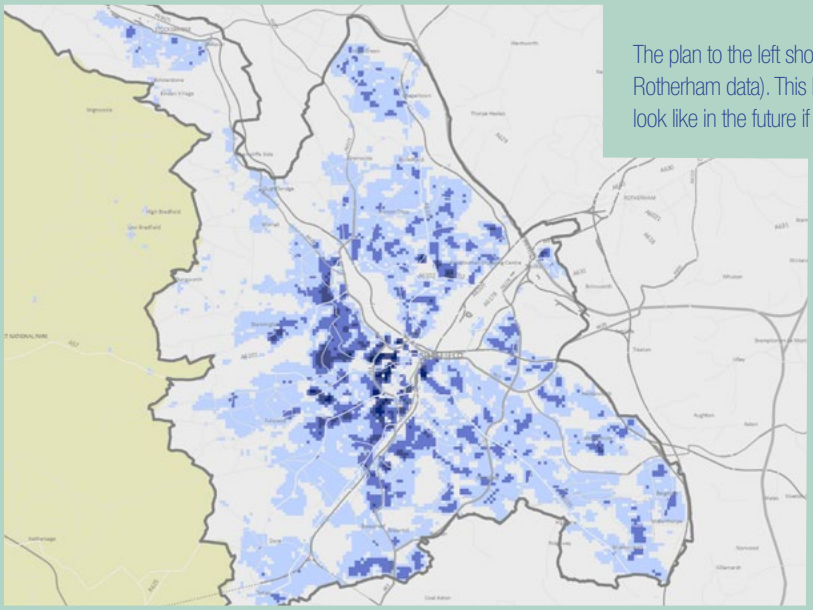
The plan of Sheffield/Rotherham opposite is drawn at the same scale. We have added a 15km circle because its a much larger place and it is this wider area that has been the main focus for our work. The question is how do we create a structure for the conurbation based on the Uxcester diagram? The smaller plan at the top of the page shows the current housing density of Sheffield and the lower plan illustrates a possible future density plan. This is based on increasing density around local shopping centres and hubs of public transport. As we describe in Section 2E this could guide a strategy of urban infill and intensification.

The other element of the Uxcester model is the clustering of development around tram stops. Sheffield benefits from an existing tram system (shown on the plan as the solid yellow line) as well as the possibility of new tram services (shown as dotted yellow lines). The tram/train to Rotherham town centre is well-advanced as a proposal and we have suggested a further route up to Stocksbridge using the existing goods line. There is also a proposal for a Bus Rapid Transport system (BRT) serving the Advanced Manufacturing Park, shown as the pink line on the plan. There is also the possibility of a new train station on the Worksop line.

The blue lines show 800m 'ped sheds' around each of these existing and potential tram stops and the local centres. These 10 minute walk zones are the most sustainable locations for new housing development. On this basis the plan opposite starts to show what a future conurbation might look like. In Sections 2d to 2h we assess how much of the growth over the next 20 years could be accommodated within these zones to estimate the capacity of the urban area. The strategy needs to make significant inroads into this Urban Capacity before considering other options. However once significant work has been done to use this capacity (it will never be exhausted) those other options may need to be considered. As we argued in our Uxcester work, we believe that the Green Belt is the most sustainable place for expansion beyond the urban area and that, where this is necessary, it should be done by taking a 'confident bite' rather than nibbling around the edge. This confident bite is likely to be an urban extension rather than a Garden City but, either way, would ideally be sufficiently large to fund the extension of the tram system to serve the new housing. This is explored in sections 2I-K.

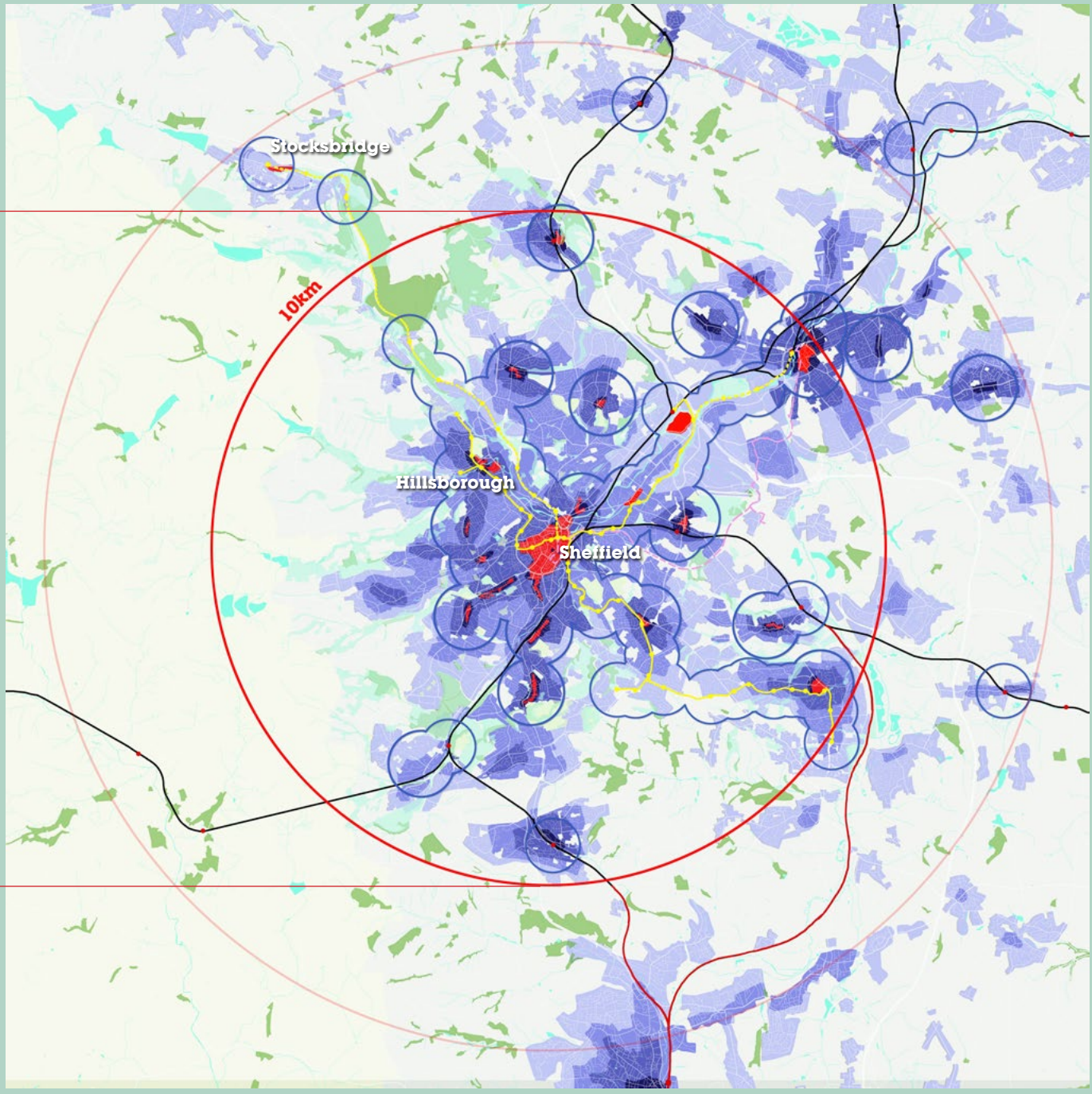


The strategy needs to make significant inroads into this Urban Capacity before considering other options



The plan to the left shows the existing housing density of Sheffield (we don't have the Rotherham data). This has been evolved into the plan below that shows what this might look like in the future if we increased density around local centres and transport nodes.

- Railways and Stations
- Existing Tram and Stops
- Potential Tram/Train Routes
- Proposed BRT Route
- 800m Ped Sheds
- Housing Density <30d/ha
- Housing Density 30-50d/ha
- Housing Density 50-70d/ha
- Housing Density 70+d/ha
- Local Centres



2c. Scope for change

In looking to accommodate up to 100,000 new homes in Sheffield over 20 years we clearly need to take account of the constraints on development. The plan to the right shows various designations and constraints each of which requires further study but is summarised below:

National Park: Sheffield has the great benefit of including within its administrative boundary the Peak District National Park. This severely limits the scope for the extension of the city to the west (a point reinforced by the topography of this part of the city).

There are no large tracts of unconstrained countryside around the conurbation waiting for development

Green Belt: The Sheffield Green Belt was the first to be designated in the country. It was created in 1938 by the local authority, the same year as an act of Parliament was passed to create the London Green Belt. National Green Belt policy as set out in the National Planning Policy Framework (NPPF)[22], paragraph 80 has five aims:

- To check the unrestricted sprawl of large built-up areas,
- To prevent towns merging into one another,
- To safeguard the countryside from encroachment,
- To preserve the setting of historic towns,
- To aid in the regeneration of urban areas by promoting brownfield development.

The Sheffield City Region set out a joint approach to the review of its Green Belt in August 2014[23], although the responsibility for this lies with each of the Local Authorities. The review sets out a three stage process, starting with the identification of general areas for review around existing settlements, overlaying a set of technical and policy constraints and then exploring individual sites for potential release from the Green Belt based on the above five tests.

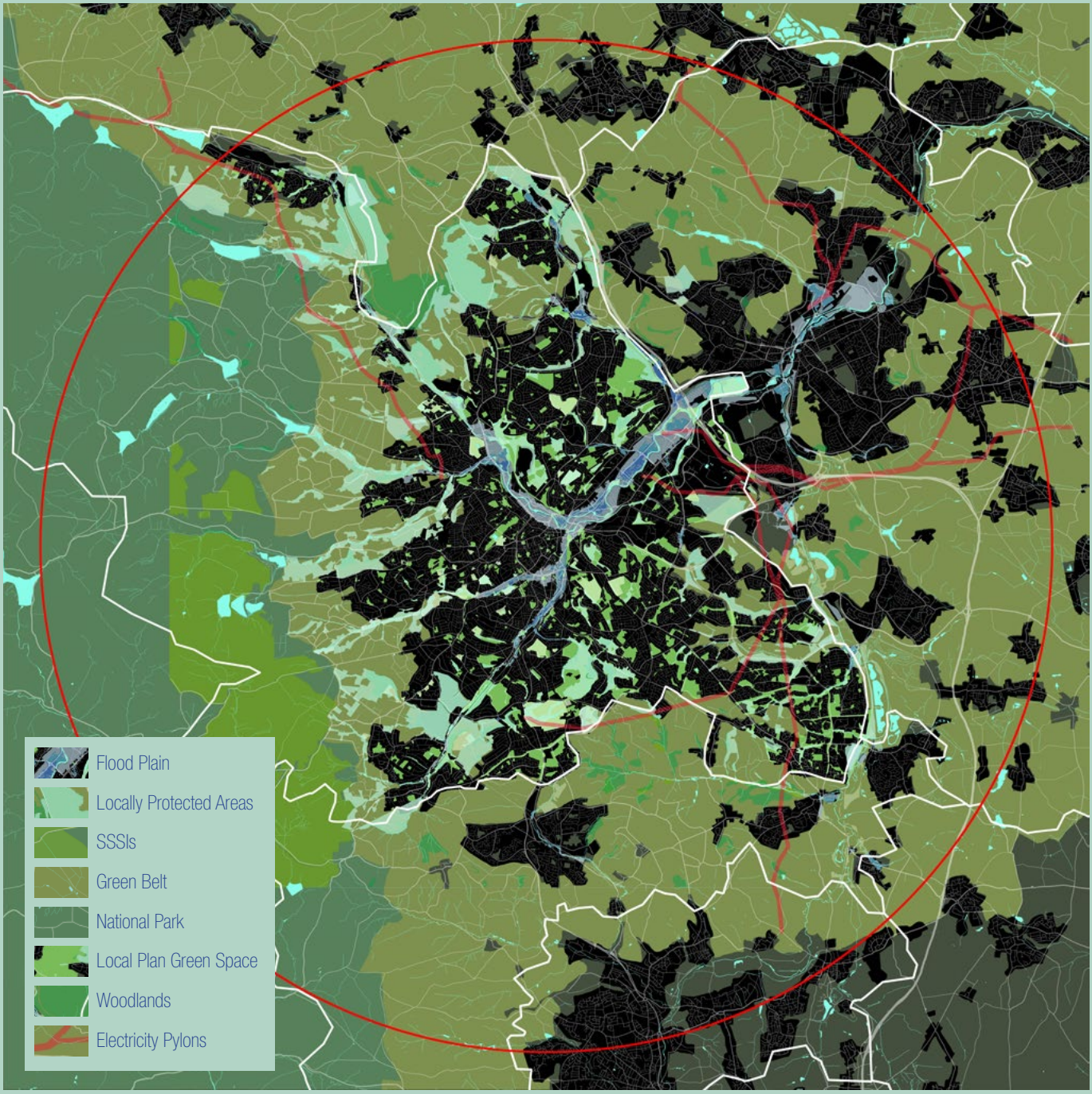
Technical constraints: We have mapped a series of constraints on the plan opposite (this has been mapped on a GIS base with Sheffield officers and the plan opposite is just a summary). In addition to the National Park and Green Belt this shows:

- Ecological designations – SSSI and RAMSAR sites
- Landscape Designations – Historic Parks and Gardens, AONB and forests.
- Flood Risk Areas.

Urban Green Space: The plan also shows green space designated in the Local Plan within the urban area of Sheffield. Much of this will be valuable parks and sports facilities and contribute to Sheffield being a very green city. However some of this space is poorly used and unsafe and is something of a maintenance burden on the Council. The use and management of green space has changed in recent years. The release of parts of the city's estate could form part of a comprehensive reassessment of open space provision.

The plan opposite summarises these constraints. Many of the designations overlap each other so that it gives only an impressionistic view of these constraints (they are mapped in much greater detail on the Council's GIS system). However even from this level of work it is quite clear that there are limited opportunities for green field development around the conurbation. There are however quite significant areas of Green Belt that have been largely 'engulfed' by settlement. In many places this may perform a useful role in separating parts of the conurbation but elsewhere it might be questioned with regard to the Green Belt criteria listed above.

Contour plan



2d. Urban Capacity

Our first step in exploring the scope for new housing in Sheffield should be the capacity of the urban area. There is a perception that northern cities like Sheffield have a significant amount of brownfield land given the population and economic activity that the city lost in the latter part of the 20th century. It is however notoriously difficult to measure this Urban Capacity because the land vacated by this activity has generally not remained empty but has been turned into open space, filled with low value uses such as surface parking, or been redeveloped with lower density residential or commercial development.

In November 2014 CPRE published a report entitled *From Wasted Spaces to Living Spaces*[24] that estimated that there was land for a million homes on brownfield land in England. Sheffield and Rotherham have undertaken Strategic Housing Land Availability Assessments[25] to identify this capacity. The SHLAAs include sites with planning consent and other potential housing sites and applies a development ratio and housing density to produce a housing yield. The Sheffield study identified land for 23,000 homes within the urban area (90% on brownfield land) although 13% of this had policy constraints causing the capacity figure to be reduced to 21,000 homes. This figure includes over 2,000 homes from 'windfall' sites. Rotherham's SHLAA identified land for just under 29,000 new homes but less than 7,000 of this was on brownfield land and only 1,741 of this is within the Rotherham urban area.

Housing capacity is not a finite resource but one which is renewed through the process of urban change over time

Work done by the University of Sheffield and Sheffield City Region[26] has estimated that there is capacity for 58,533 homes on priority brownfield sites across the City Region (this is not the total number of brownfield sites). However they estimated that only 23% of these homes are currently viable and just under half are likely to come forward in the plan period without significant support. Furthermore only 5,200 of the homes deliverable in the next five years are in Sheffield, (presumably part of those counted in the Sheffield SHLAA). This is the problem with brownfield capacity; much of it is not viable and it is often not in the right place. Across the region some of the biggest opportunities may well be large former industrial sites outside urban areas.

In the late 1990s URBED wrote the Government's Good Practice Guide on Urban Capacity Assessments[27]. At the time the planning policy required that all authorities undertook these assessments which went much further that the current SHLAAs. As part of the research we reviewed ten capacity studies across the country, comparing the capacity they measured with the actual amount of housing built within the urban area. Our conclusion was that all of the studies were significantly underestimating capacity. We concluded that capacity assessments should include the following categories:

- Subdivision of existing housing
- Flats over shops
- Empty homes
- Previously-developed vacant and derelict land and buildings
- Intensification of existing areas
- Redevelopment of existing housing
- Redevelopment of car parks
- Conversion of commercial buildings
- Review of the density of housing allocations
- Review of other allocations in plans
- Vacant land not previously developed

It has not been possible to undertake a full capacity assessment along these lines. However two of the key findings of the research are relevant to our task here:

- The first was that the measured capacity at the end of the case study plan periods was similar to that at the beginning despite much of it being used up. In other words housing capacity is not a finite resource but one which is renewed through the process of urban change over time.
- The second is that the level of non-site-based capacity is at least twice that to be found on brownfield land.

We therefore explore on the following page some of the opportunities for intensification in the conurbation.

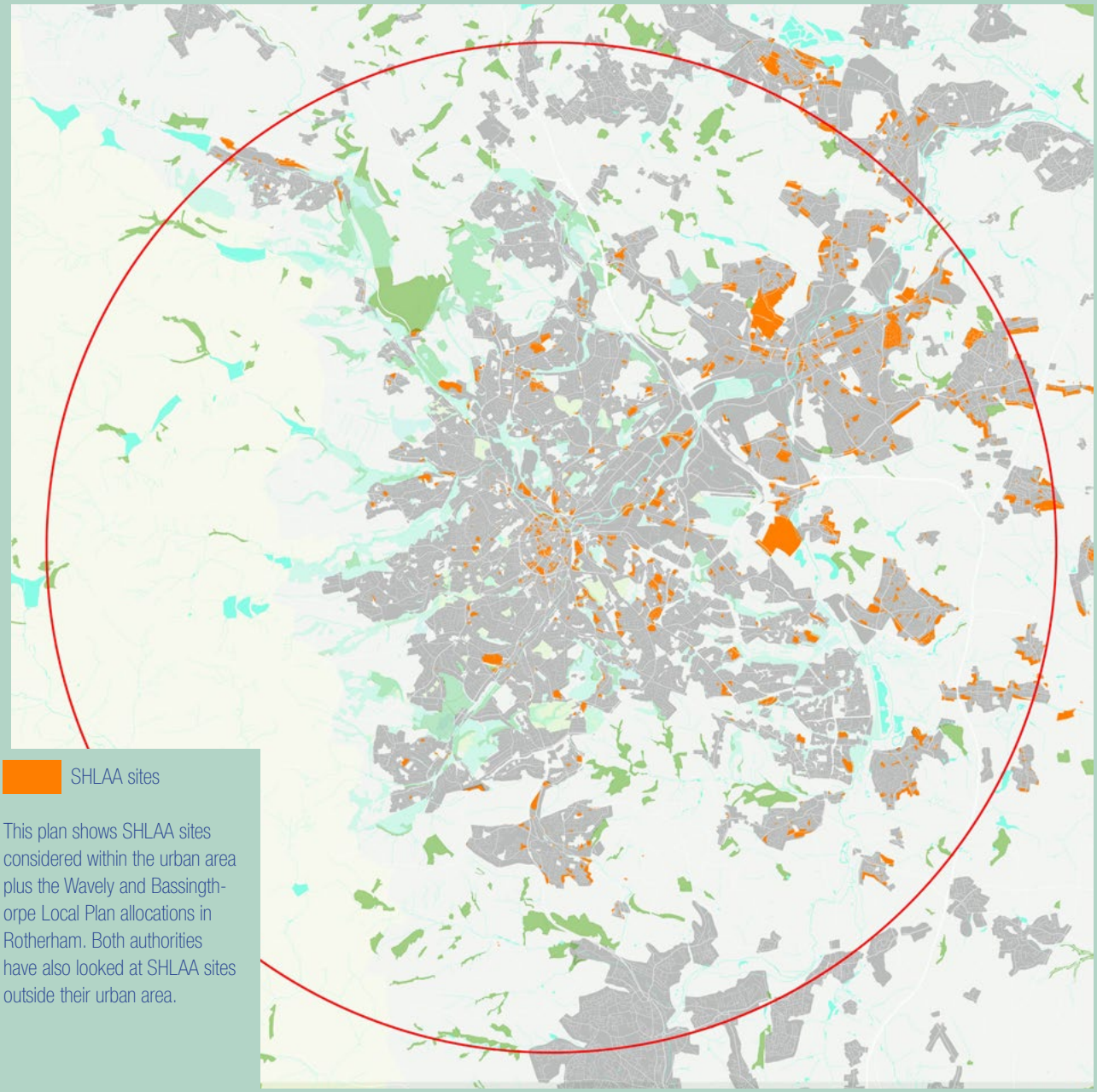
Summary of Potential Housing Capacity England (1000 of units)	Uncon-strained Capacity	Policy Target	Adjusted capacity
Current and Reclaimed Derelict Land	457	60%	274
Previously Developed Vacant Land	194	80%	155
Vacant Land not Previously Developed	293	70%	205
Land Likely to Fall Vacant 1993-2016	693	60%	416
Redevelopment of Council Estates	22	100%	22
Redevelopment of Surface Car Parks	100	80%	80
Conversion of Commercial Buildings	100	80%	80
Living Over the Shop	1,000	40%	400
Subdivision of Houses	1,900	20%	380
Intensification	280	80%	221
Empty Homes	325	100%	325
TOTAL	**5,364**		**2,561**

Figures are based on net housing densities of 30d/ha

32,000 homes

We have assumed that the city's Urban Capacity based solely on brownfield land includes the homes identified in the SHLAA plus a further 10,000 or so homes that will be created during the 20 year plan period (Less the windfall figure to avoid double counting). This assumes a replenishment rate half that identified in our Friends of the Earth report.

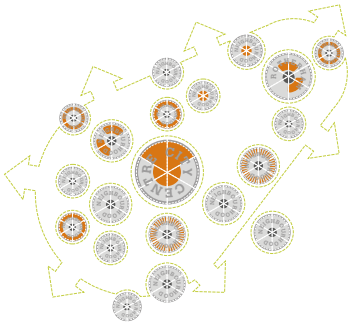
This table is from URBED's research in the late 1990s for Friends of the Earth and the Government. It is an attempt at a national urban housing capacity assessment drawing on data from a range of sources. The first column shows the total capacity available while the second column is a measure of how difficult the capacity is likely to be. The figures are historic but there has not been a comprehensive attempt to assess national Urban Capacity since that time.



SHLAA sites

This plan shows SHLAA sites considered within the urban area plus the Wavely and Bassingthorpe Local Plan allocations in Rotherham. Both authorities have also looked at SHLAA sites outside their urban area.

2e. Urban Intensification



David Cross of Coda Architects produced a report entitled Sheffield Big City[28] which argued for the growth of Sheffield within its existing boundaries through a process of intensification. He argues in particular for the intensification of the Lower Don Valley corridor between Sheffield and Rotherham. This is similar to what we suggest with the plan on Page 24 which shows an increase in the density of development around transport nodes and local centres. Much of this area is already developed so the means of achieving this plan must include intensification. This is likely to include the following:

Existing Neighbourhoods:

Where there is demand for development, neighbourhoods tend to intensify. Small vacant plots are developed, housing is converted to flats, vacant space is bought back into use, commercial space is turned over to housing, back gardens are built upon and houses are demolished to be replaced with apartments. Where there is demand, the main check on this type of activity is the planning system, either directly through policies against backland development, for example, or indirectly through parking standards privacy distances etc. There are of course political issues and we would acknowledge the need to protect amenity, however the city might consider adopting planning policies that are slightly more encouraging of this type of intensification within ped-sheds.

Housing capacity is not a finite resource but one which is renewed through the process of urban change over time

Council Estates:

The Northern Way Residential Futures report published by the HCA in 2009[29] included a review of the potential for the intensification of 'Garden City' Council estates. In the research's ten case studies there was scope for up to a third of the land area to be redeveloped to create up to 3,300 new homes. The report stated that 'The quantity, quality and utility of public open spaces in such localities needs to be aggressively reviewed, with a view to rationalising and revitalising the most important spaces. Simply put, quality is far more important than quantity.' The report identified 36 such estates in the Sheffield City Region, half of which were in Sheffield itself. The Sheffield Housing Company is already addressing these issues to an extent through infill schemes and redevelopment of the city's Council estates, however generally the opportunity is not being taken to increase densities.

City Centre:

Like many cities, Sheffield has a shatter zone around its city centre. This was formerly the location for industry and terraced housing that was subject to slum clearance. It is true that this shatter zone includes a significant number of SHLAA sites. However an intensification strategy might go further to see the urbanisation of these areas with the replacement of single storey employment uses with more intensive employment and residential uses. This process is well underway in Kelham Island and the CIQ and there is further potential in the Wicker and the St. Vincent Quarter.

The problem is that capacity from intensification cannot easily be measured and therefore cannot be included in Local Plan assumptions. A local authority that relied on this type of capacity for its housing supply would struggle to get through a public inquiry. Yet for the capacity to be realised there needs to be a high level of demand that cannot easily be satisfied elsewhere. This is the dilemma, the availability of easy greenfield sites is just the sort of thing that will make it less likely that intensification will take place. It is therefore worth thinking about mechanisms to promote this type of development. Sheffield already goo example of such a mechanism in the 'Stuck Sites Programme' which is using a range of council powers and a small amount of investment to unlock sites that have been vacant for some time. Something similar is being done in Antwerp [30] as we describe on page 50. Other measures might include a review of planning policy to remove impediments to infill development. A further tool would be tax incentives, which is what David Cross suggests using S106 contributions.

18,000 homes

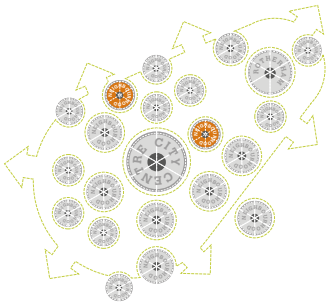
We have included a relatively modest provision for intensification. This assumed:
4,000 units through ped shed intensification
4,000 units on Council estates and,
10,000 units in the city centre.

Hillsborough

St. Vincent

The Manor Estate

2f. Remodelling



In addition to the potential to intensify existing neighbourhoods within Sheffield, there is the opportunity to create new neighbourhoods or to recreate neighbourhoods that have been lost. We call this 'urban remodelling' because it goes further than the intensification described in the last section. Intensification is largely a permissive policy, something that is encouraged and allowed by the Council, where as remodelling is a process where the Council would take the lead in initiating change.

It is anticipated that there will be an opportunity in the current parliament for Local Authorities to bid for powers to promote housing development. This could include new garden cities, urban extensions and hopefully an option for development within urban areas (for Sustainable Urban Neighbourhoods to quote our own work). This is likely to involve resources and borrowing powers along with special planning and CPO powers. If this were to happen we have identified two areas in Sheffield where these powers might be used to remodel parts of the city to create new neighbourhoods. These have been selected by assessing the areas that have lost the greatest amount of population in recent decades and which are connected (or connectable) to the tram system.

The reason for the clearance of the housing has therefore gone and there is no reason why this part of Sheffield should not be repopulated

Neepsend/Parkwood Springs:

This is illustrated on the following page. It runs up the Upper Don Valley from the edge of the City Centre, through Kelham Island and Neepsend and up the steep hillside to Parkwood Springs. As the historic aerial photo suggests the valley floor was heavily industrialised with a gas works and power station (closed 1976) and Parkwood Ganister and Coal Mine (closed 1963) , together with a large slag heap. The hillside was covered with rows of terraced housing that was cleared when the area was zoned for industry. The area's last school, Neepsend Hillfoot School closed in 1975. Subsequently the colliery site was used as a waste land fill which closed to all but inert waste in 2014 and will close completely by 2018. This is an area that was depopulated intentionally because of the incompatibility of housing with its heavy industry. All of that industry has now gone. The gas holder has been decommissioned and is likely to be part of the review that National Grid are undertaking of all their sites. The reason for the clearance of the housing has therefore gone and there is no reason why this part of Sheffield should not be repopulated.

The Council has recognised this potential by identifying a number of the sites in the valley bottom in the SHLAA (although these remain allocated for commercial use). The hillside that was once residential is now open space, which is also designated in the Local Plan, and there are proposals for leisure use. The suggestion is that we could go much further than the SHLAA by repopulating parts of the hillside. The former tip, which will cease operations in 2018, cannot be used for some time but the wider area could become a new park funded by a new housing neighbourhood built on part of the current open space. We have suggested that the goods line running through the area could become a tram/train line and the plan shows the location of a three new tram stops. This together with the existing tram route would mean that the new neighbourhood is incredibly well connected.

The proposal plan shows housing at three different densities covering 138ha and providing capacity for 8,714 new homes. The densities shown are 120, 75 and 45 units/ha. The higher density band would be a mix of housing with apartments, the middle would be mostly terraced housing while the lower band would include a mix of semi-detached and terraced units. In this way the neighbourhood would emerge as a mixed neighbourhood suitable for a range of households including families. The neighbourhood also includes provision for three new schools.

Attercliffe:

The Attercliffe area has a similar history to Neepsend. In the 1850s it was a freestanding village outside Sheffield (see engraving on page 11) which

over the latter part of the 19th century was engulfed by the expanding city. It retains its high street, which once boasted a range of high-class shops including Banner's Department store. While the high street is now very run-down, it is largely intact despite no longer having a catchment population. The Lower Don Valley became the main location for Sheffield's steel industry and the resultant poor air quality in the valley bottom prompted the Council to clear all of the housing in the area. With the exception of Sheffield Forgemasters, the large steelworks have disappeared from Attercliffe although there remain a large number of smaller steel fabricators. The area was under the control of the Sheffield Development Corporation from 1988 to 1997 which was responsible for promoting Meadowhall and Sheffield City Airport. At the same time the Don Valley Stadium was built for the World Student Games along with a range of sports facilities.

Much of Attercliffe remains allocated for industrial uses. These include high value manufacturing and office space along side a range of low density sheds, open storage and scrap yards. These are valuable uses in a city, and are currently protected by planning policy. The question is whether they are the best uses for an area like Attercliffe that is close to the centre of the conurbation with excellent transport links and facilities, including a new academy, as well as a long heritage as a historic neighbourhood?

20,000 homes

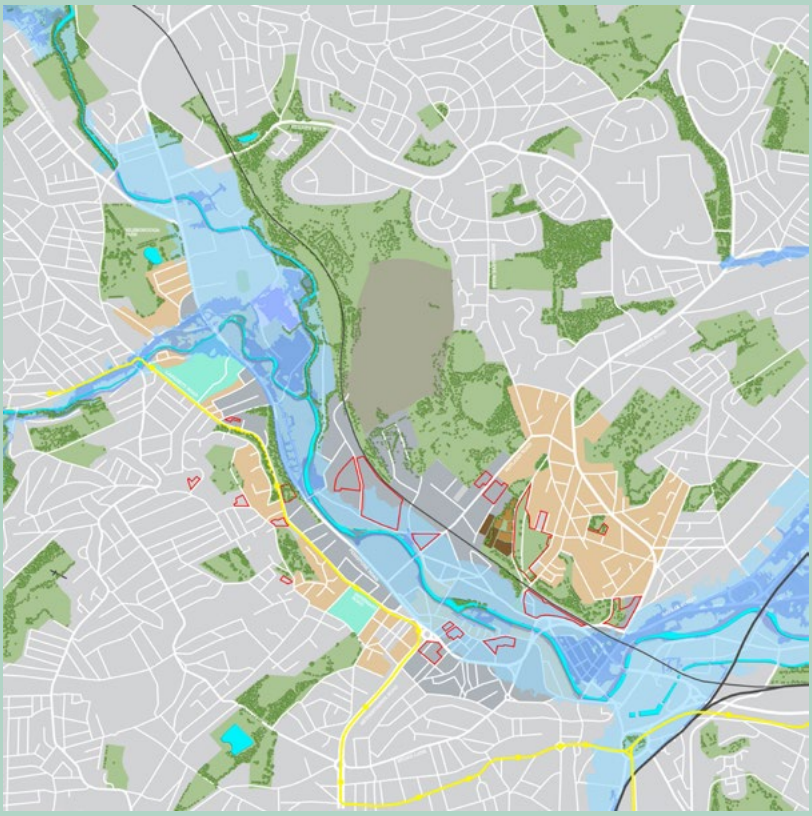
The capacity studies on the following pages suggests that there is scope for 23,637 in Neepsend and Attercliffe. We have rounded this down to 20,000 units to avoid double counting the sites already included in the SHLAA.

The plan on Page 36 shows what Attercliffe might look like if the policy for the area was changed and it was promoted as a new Sustainable Urban Neighbourhood. This releases just 250ha of housing land. We have assumed slightly lower densities than Neepsend to create a more family based neighbourhood with around 15,000 homes.

These proposals would require a change in planning policy and a programme to assist industry with relocation. In both cases we would imagine the urban remodelling areas being designated as 'housing growth zones' or something similar with powers given to a local agency to CPO the land required and to undertake the infrastructure works. This is described further in the final part of this report.

Below: URBED's masterplan for New Bolton Woods Urban Village, a joint venture between Bradford Council and a developer. This is about a mile from the city centre on a slope similar to Neepsend.

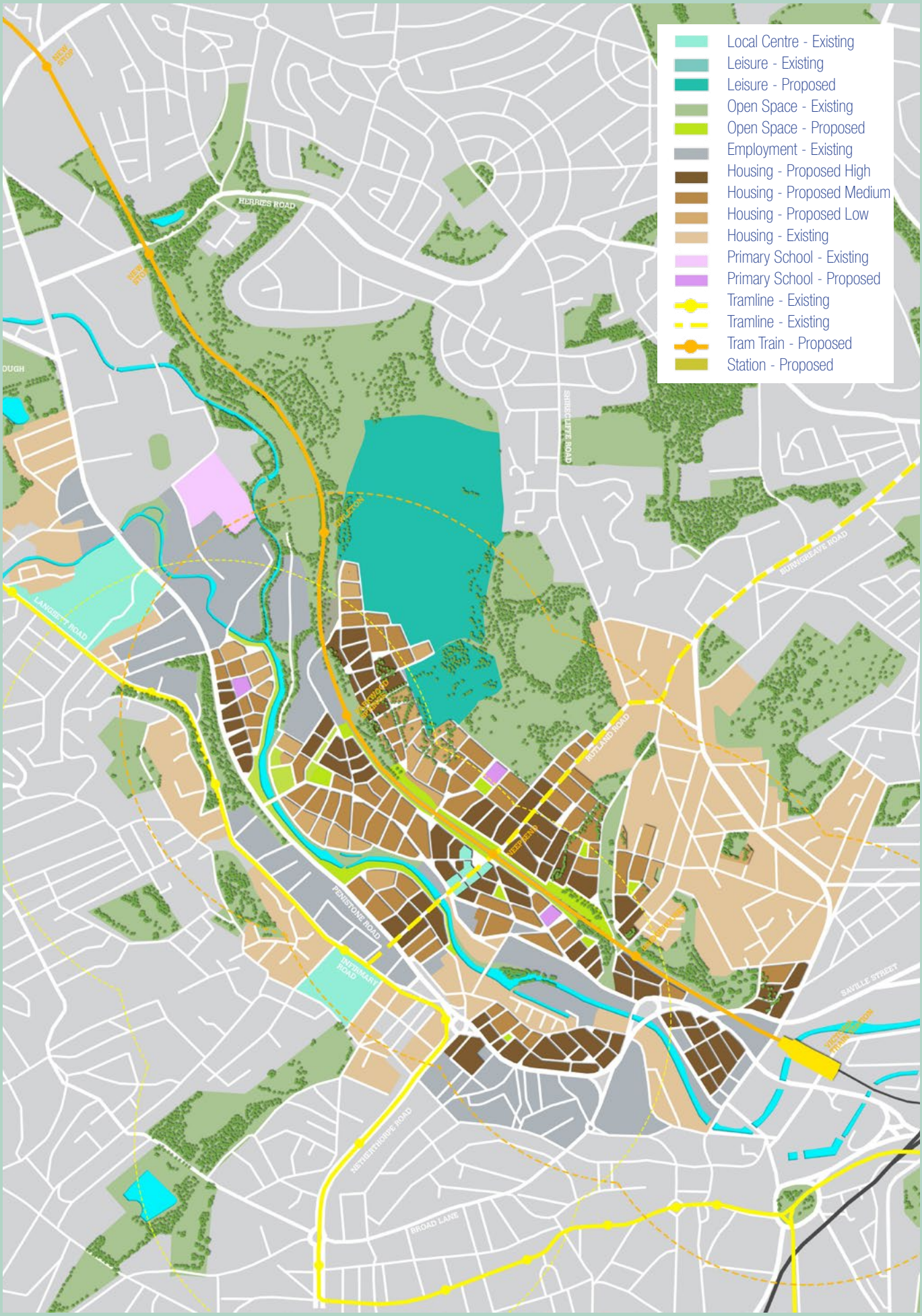
2g: Neepsend



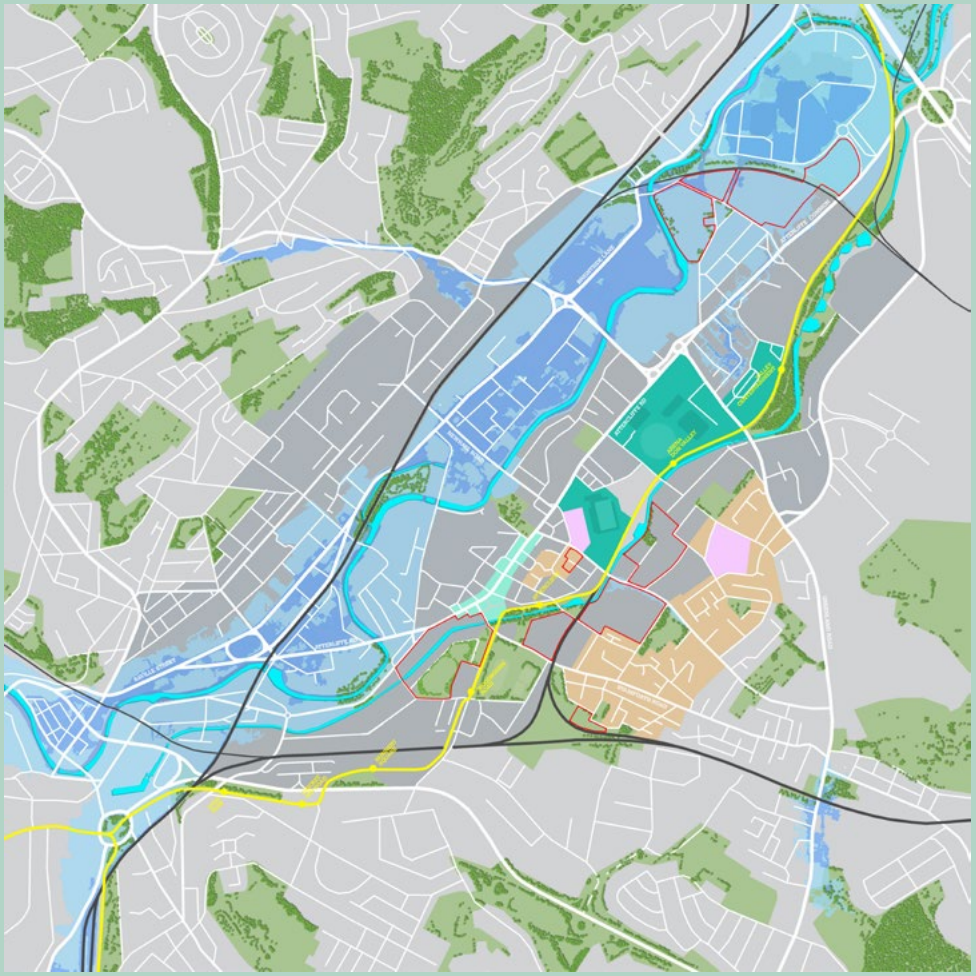
SHLAA Sites
Flood Zone 3A
Flood Zone 2
Local Centre - Existing
Leisure - Existing
Open Space - Existing
Employment - Existing
Housing - Existing
School - Existing

	Area (ha)	Density	No. of homes
Housing - High Density	43.9	120	5,268
Housing - Medium Density	37.9	75	2,843
Housing - Lower Density	13.4	45	603
Schools	1.4		
Local Centre	1.4		
New / Improved Open Space	39.9		
Total	**137.9**		**8,714**
Average Density		**63.2**	

This plan is for illustrative purposes and does not represent the views of the planning authority



2h: Attercliffe



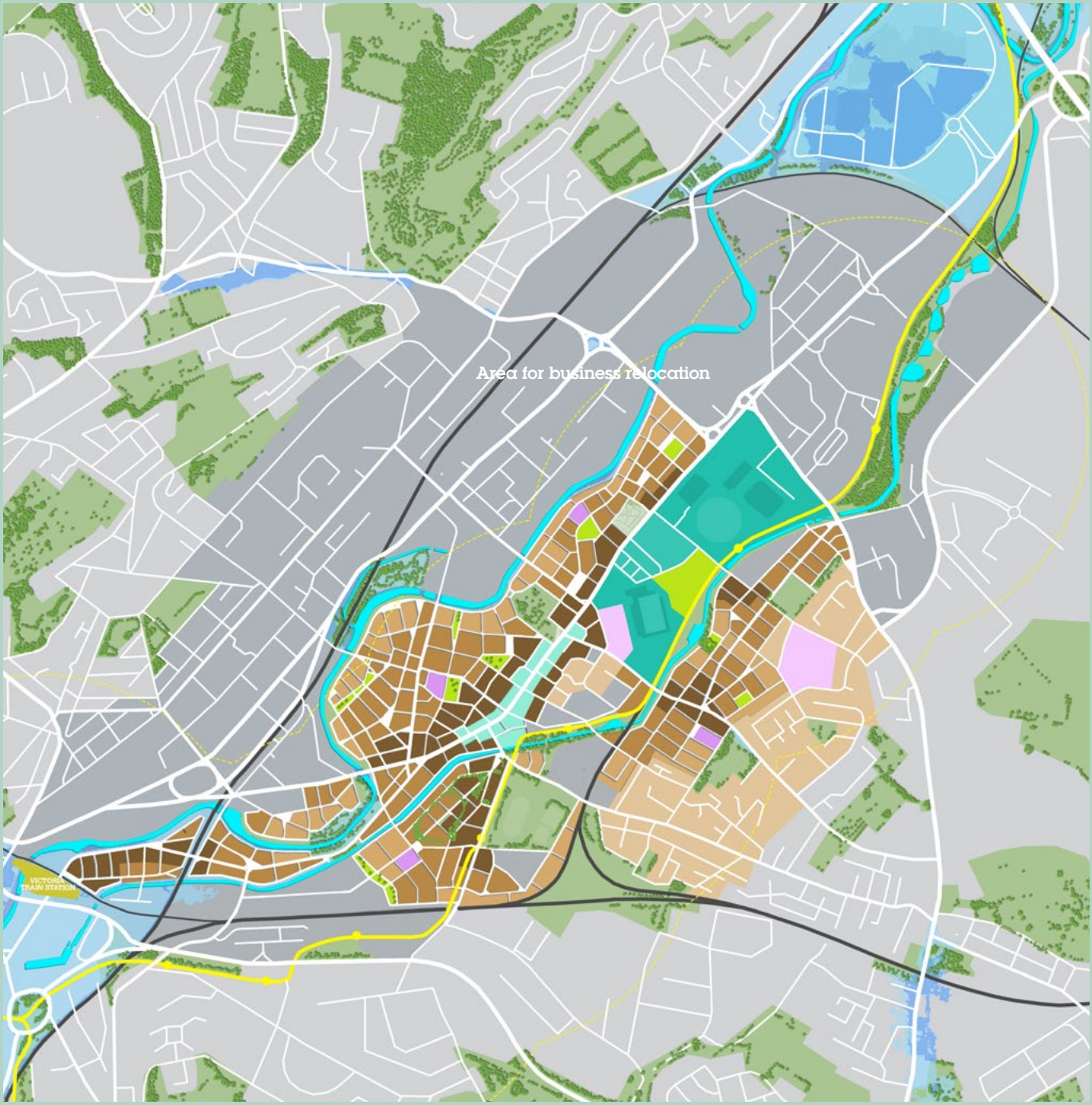
SHLAA Sites
Flood Zone 3A
Flood Zone 2

Local Centre - Existing
Leisure - Existing
Open Space - Existing
Employment - Existing
Housing - Existing
School - Existing

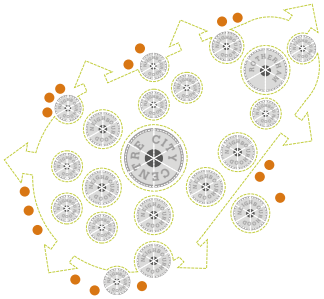
	Area (ha)	Density	No. of homes
Housing - High Density	94.3	100	9,430
Housing - Medium Density	62.5	65	4,063
Housing - Lower Density	31.8	45	1,431
Schools	3.9		
Local Centre	6		
New / Improved Open Space	47.9		
Total	**246.4**		**14,924**
Average Density		**60.6**	

- Local Centre - Existing
- Leisure - Existing
- Leisure - Proposed
- Open Space - Existing
- Open Space - Proposed
- Employment - Existing
- Housing - Proposed High
- Housing - Proposed Medium
- Housing - Proposed Low
- Housing - Existing
- School - Existing
- School - Proposed
- Tramline - Existing
- Tramline - Existing
- Tram Train - Proposed
- Station - Proposed

This plan is for illustrative purposes and does not represent the views of the planning authority



2i. Accretion



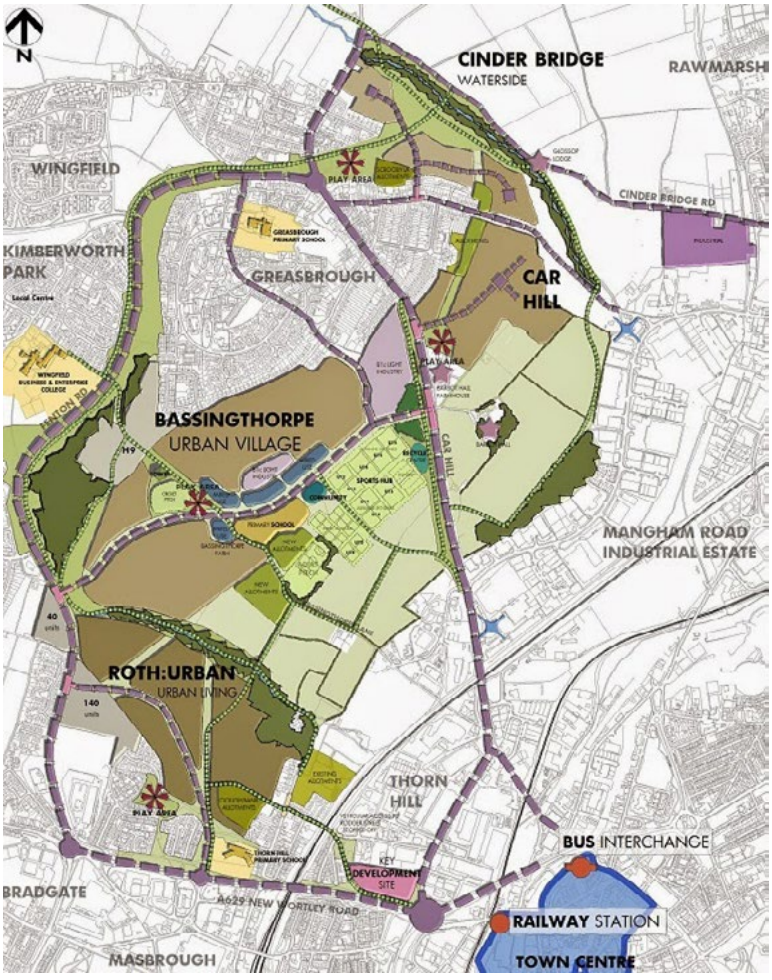
So far we have looked at Urban Capacity, urban intensification and remodelling all of which involve building housing within the urban area of the Sheffield conurbation. The task we have set ourselves is to accommodate 100,000 homes over 20 years and the total so far is 70,000 homes or 70% of that target. Until the adoption of the NPPF the national policy target was that 60% of housing should be built on brownfield and it seems reasonable that an industrial city like Sheffield should exceed this.

This leaves the question of the remaining 30,000 homes that will need to be accommodated outside the urban area. Like most Local Authorities, Sheffield and Rotherham through their SHLAA have been looking at the areas of greenbelt immediately around the built-up area for potential allocation for housing. This is done through a process of elimination as described in the *Green Belt Common Approach*[23] agreed by the Sheffield City Region authorities in August 2014. Within broad areas of search sites are eliminated based on their ecological or landscape constraints leaving a list of unconstrained sites for possible allocation. These sites are not yet in the public domain so cannot be shown here.

The problem is that these unconstrained sites might not be in the right place. They may not be possible to serve with public transport, be within reach of schools etc. The scale of them also means that typically they are developed in isolation as if they were the last field that would ever be developed around the settlement. In this way they create an accretion of disconnected estates, reliant on the car.

In our Wolfson essay we argued that rather than nibbling around the edge of the Green Belt in this way we should be taking confident bites and developing on a sufficient scale to create sustainable new and expanded neighbourhoods. The plan to the right shows the ped-shed boundaries from Page 24. The logic is that the most sustainable place for accretion to take place is within these ped-sheds so that the new housing is within easy reach of existing local centres and public transport.

However in order to take a confident bite out of the Green Belt it may be necessary to go a little further and to explore how these accretions might be combined into larger urban extensions. The blue dotted circles suggest where more significant extensions might take place as described on the following page.

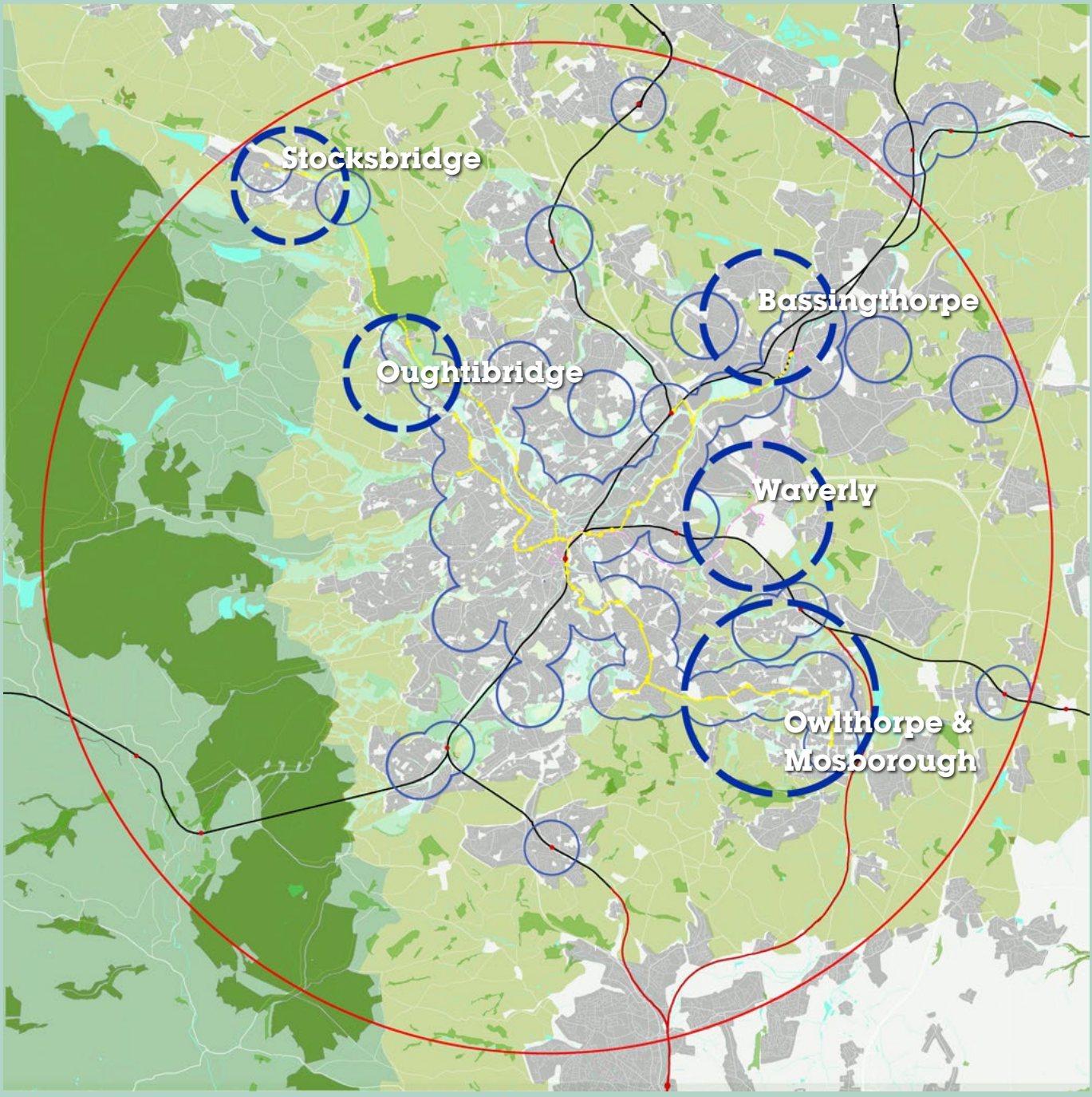


This leaves the question of the remaining 30,000 homes that will need to be accommodated outside the urban area

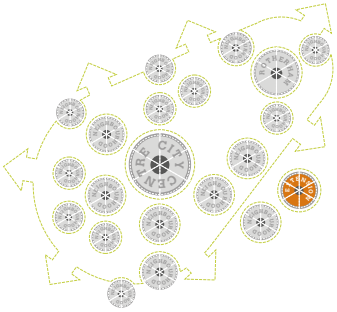
Rotherham in its Local Plan has taken a 'confident bite' out of its Green Belt by allocating the Bassingthorpe site. This was previously a section of Green Belt surrounded by development that is now proposed as a large urban extension. Image courtesy of Rotherham Council.

5,000 homes

Most of the scope for greenfield development lies in the extensions described in the following section.



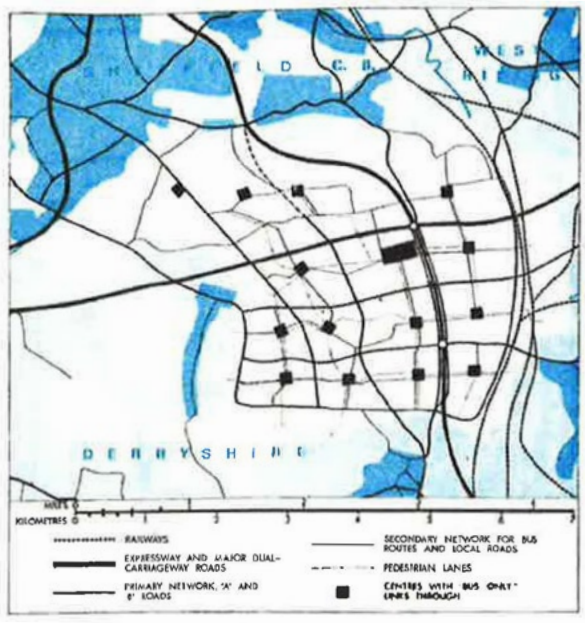
2j. Extension



The plan to the right shows a series of potential 'confident bites' out of the Green Belt around Sheffield. They are not, like Uxcester, urban extensions onto virgin agricultural land. Rather they exploit opportunities to 'complete' the urban form of the conurbation filling in gaps and repairing tears in the urban fabric.

Owlthorpe/Mosborough 7,000 homes:

This area lies at the southern end of the tram route to the south. The area was included in Sheffield's administrative area in 1967 and was developed as an urban extension in the mid 1970s. The initial scheme around Streetfields was intended as an exemplar development, but most of the subsequent housing has been low density and suburban, much built in the 1980s. It does however benefit from the tram and good local shopping facilities. Development has now largely run up against the Green Belt but there is an opportunity to turn it into the urban extension that it was always planned to be. Some of the fields are already being considered as part of the SHLAA. This should be done in a comprehensive way using the opportunity of development to provide new facilities, to encourage walking and cycling and to provide better quality and publicly accessible open space.



Extract from the original Mosborough Urban Extension Masterplan from the 1960s

Waverley (13,000 homes)

The Waverley site between Rotherham and Sheffield takes in the former Orgreave Colliery. It is already allocated by Rotherham for major development including the Advanced Manufacturing Park (AMP). Our suggestion is that we could expand this by including sites within Sheffield such as the land east of Handsworth and west of the railway line, which is owned by the Duke of Norfolk Estate, parts of the Tinsley Park Golf Course (which could be relocated) and the former Sheffield City Airport. We have also included sites within Rotherham that have been excluded to date because of constraints such as contamination. Development on this scale could overcome these constraints, fund a new railway station and ideally an extension to the tram system (failing that an extension to the planned BRT route). The extension would be for a mix of housing and employment uses. Indeed the AMP and the redevelopment of Sheffield City Airport provide an opportunity to develop high quality manufacturing jobs to replace those moved from Attercliffe.

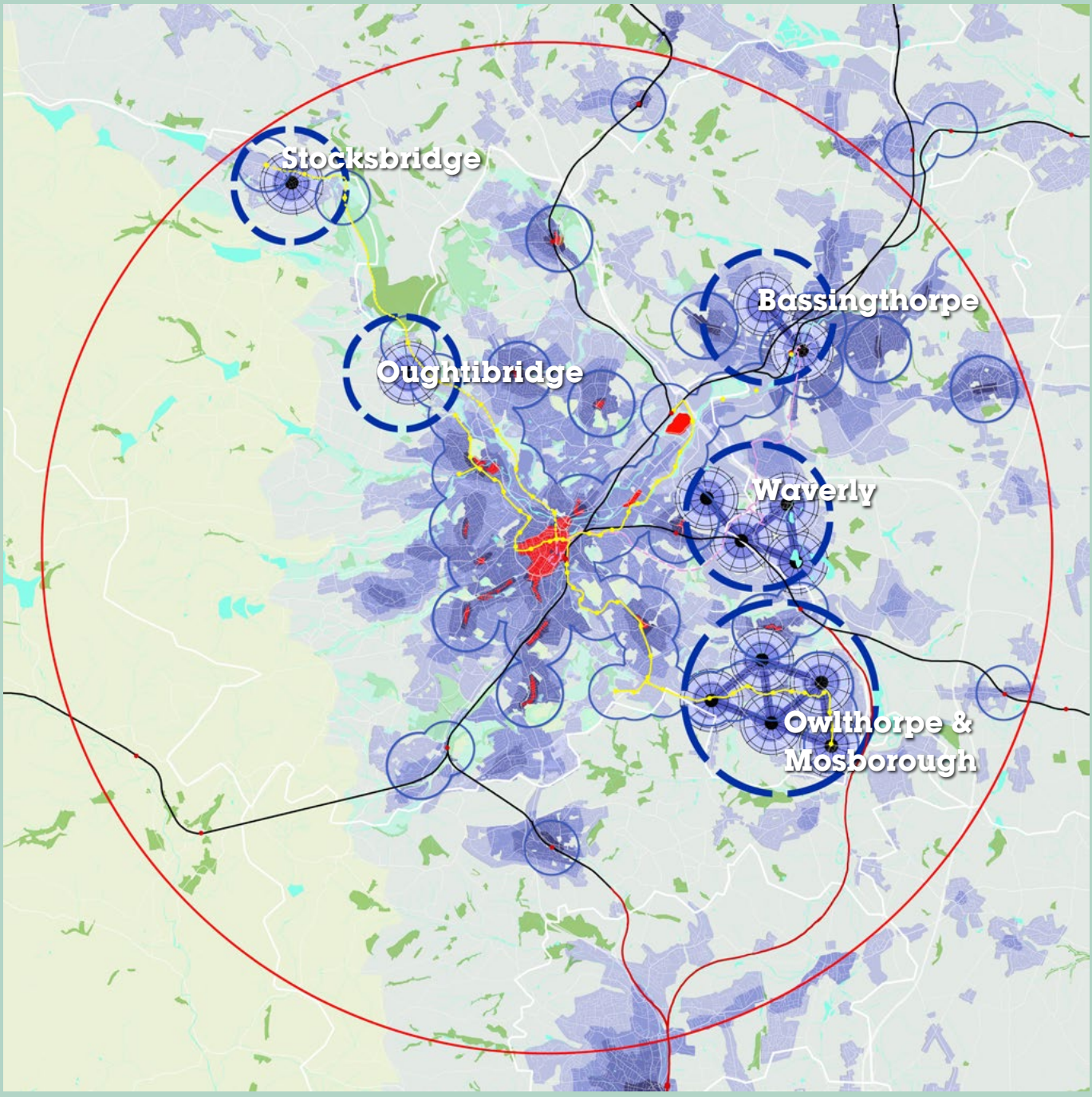
This area is very well placed for rail and road infrastructure. It is bisected by Sheffield Parkway, the main route into the city from the M1. This is also a problem because it slices-up the area and makes it feel isolated. In many cities the main route into the city is a great boulevard lined with commercial premises. If the HS2 station is located in this area, the urbanisation of the parkway and surrounding area would make the station feel part of the city. This we believe should be the long term vision for Parkway so that it becomes a gateway to the city.

The Bassingthorpe urban extension in Rotherham (3,000) has already been allocated in their Local Plan and plans are being developed as illustrated on the previous page. The other two smaller extensions at Oughtibridge (1,000 homes) and Stocksbridge (1,000 homes) are based on the proposed tram/train service on the existing goods line that runs through this area. Both areas are constrained by natural designations and topography which require further study. However they both have potential to accommodate additional housing.

25,000 homes

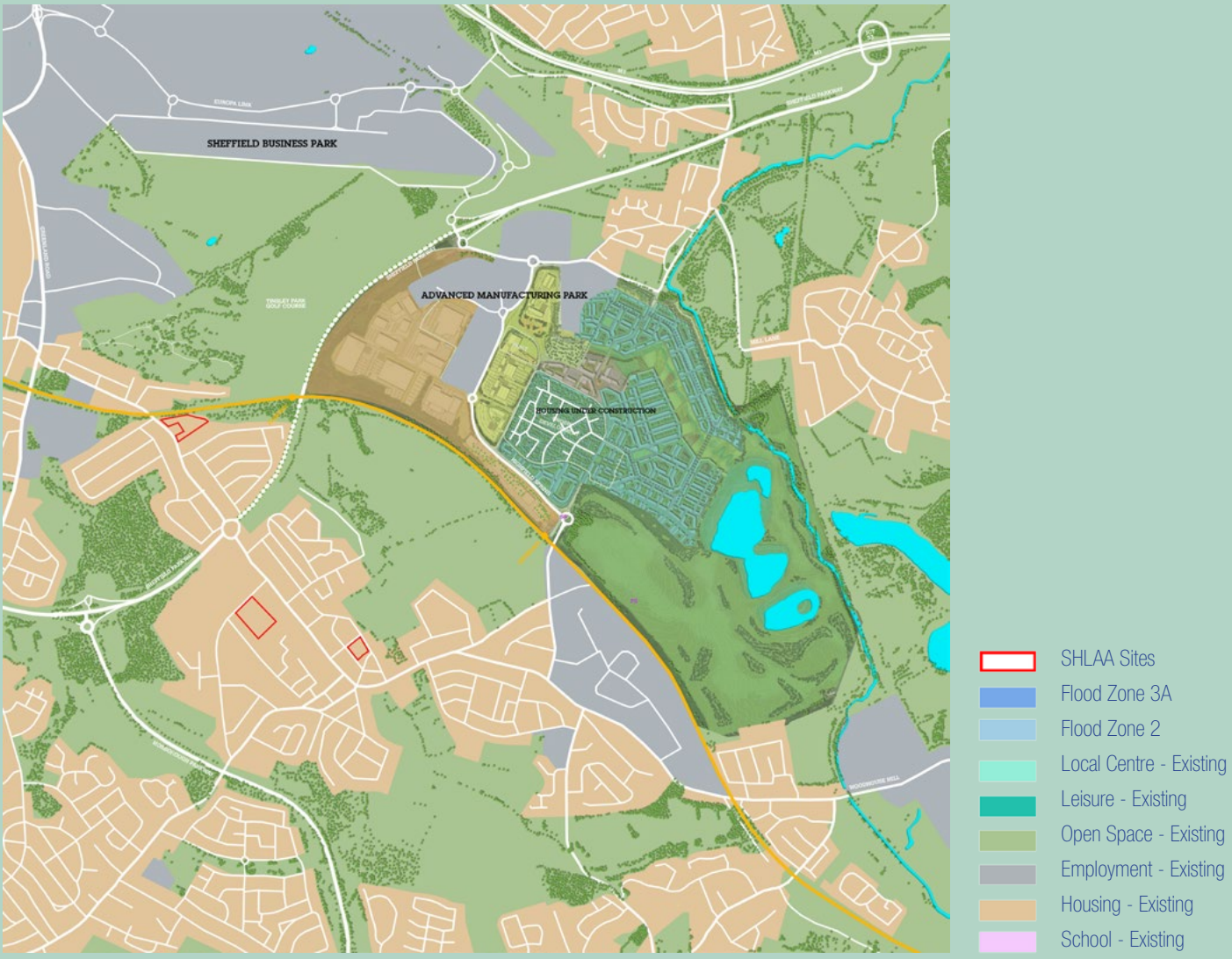
We have estimated the capacity of the Waverley Extension at 13,000 homes (although this could be increased). The Halfway extension could accommodate perhaps a further 7,000, Bassingthorpe 3,000 and the others 1,000 each.

- Railways and Stations
- Existing Tram and Stops
- Potential Tram/Train Routes
- Proposed BRT Route
- 800m Ped Sheds
- Housing Density <30d/ha
- Housing Density 30-50d/ha
- Housing Density 50-70d/ha
- Housing Density 70+d/ha
- Local Centres



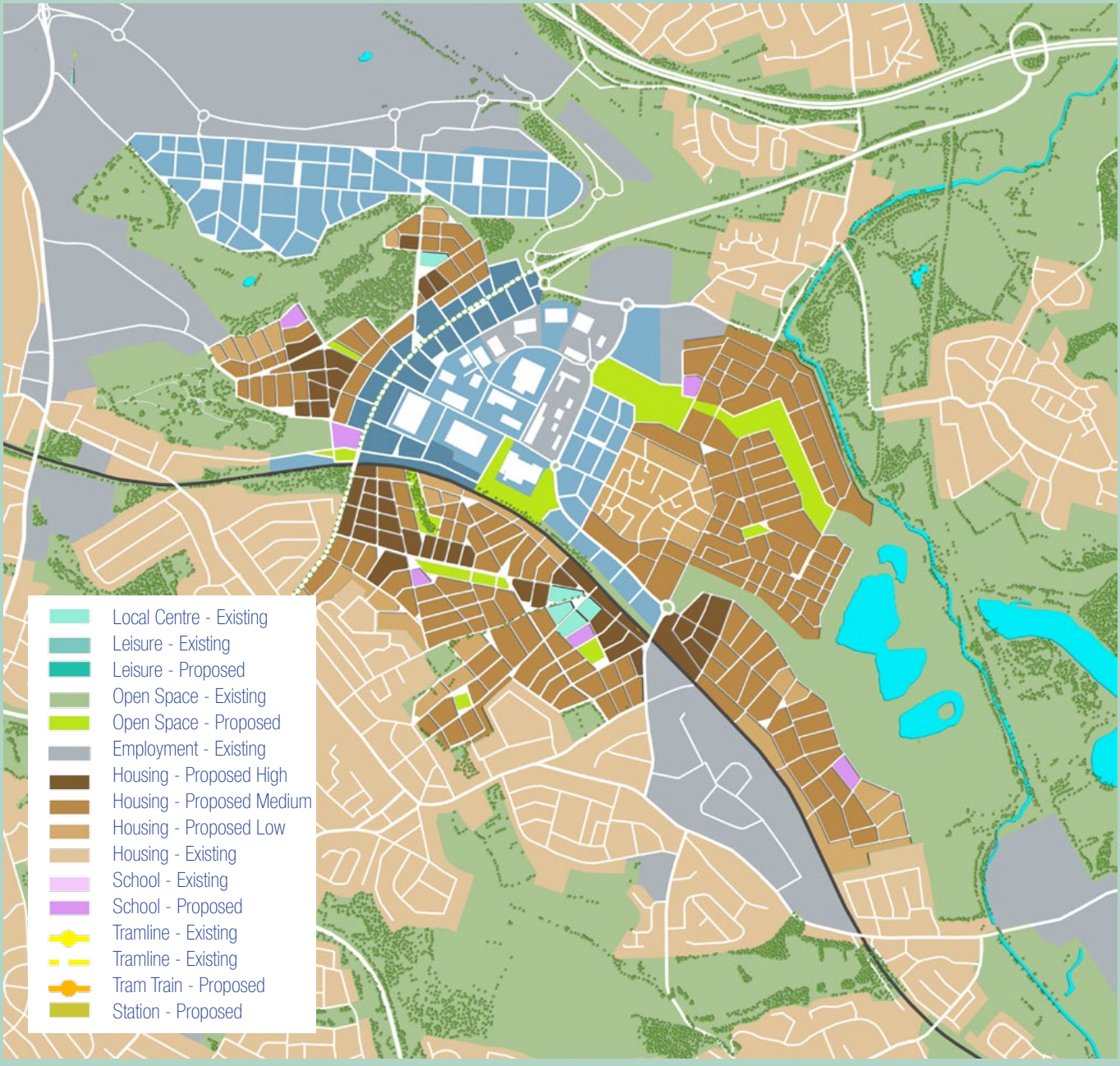
2k: Waverley

Existing Site Condition with Waverley Masterplan



	Area (ha)	Average Density	No. of Homes
Waverley	67.2	45	3,024
Duke of Norfolk	86.2	50	4,310
Tinsley Golf Club	73.6	50	3,690
Orgreave Spoil Heap	46.4	45	2,088
Total	**273.6**		**13,112**
Average Density		**60.6**	

This plan is for illustrative purposes and does not represent the views of the planning authority. We are aware that some of the land is constrained by contamination. However we believe that with a concerted strategy to create a significant urban extension in the area these constraints could be overcome.



Part 3

Making it Happen

3a. Housing & Jobs

In this report we have suggested a growth agenda for the Sheffield conurbation as part of the wider City region. This is based on a growth scenario of up to 200,000 homes and 140,000 jobs in the City Region over the next 20 years, half of which, we have assumed, will fall within our 15km circle drawn around the city. While we have concentrated mostly on the housing side of the equation we need to balance both housebuilding and employment growth:

Housing

The total capacity of the sources that we have identified in this report add up to 100,000 new homes over 20 years. As we described in the introduction this is at the higher end of the growth scenarios for the conurbation and above the current projections for growth. This is on the principle of 'build and they will come'. If the city targets high levels of housebuilding then given the wider housing shortage it will grow its population. It is always important, of course, not to build too far ahead of demand and risk oversupply. However the levels that we have suggested should avoid this.

Of course the figures that we have identified can't easily be measured. Urban Capacity does not work like that. Unfortunately in the current system, because this capacity cannot be measured it cannot be counted and because it can't be counted the planning system is forced to meet the demands for housing growth elsewhere. Once this happens there is a risk that the market will not have an incentive to eke out this Urban Capacity and the housing probably won't materialise. The levels of Urban Capacity that we have identified are far less than that developed in London year on year. Urban Capacity is not a matter of supply but rather of demand. If there is sufficient demand to build within the urban area, capacity will be sought out and the housing will be built. The figures on the table opposite are therefore more usefully seen as policy targets rather than objectively measured quantities. We are aware that this is not an approach that is particularly compatible with the planning system.

While we have concentrated mostly on the housing side of the equation we need to balance both housebuiling and employment growth

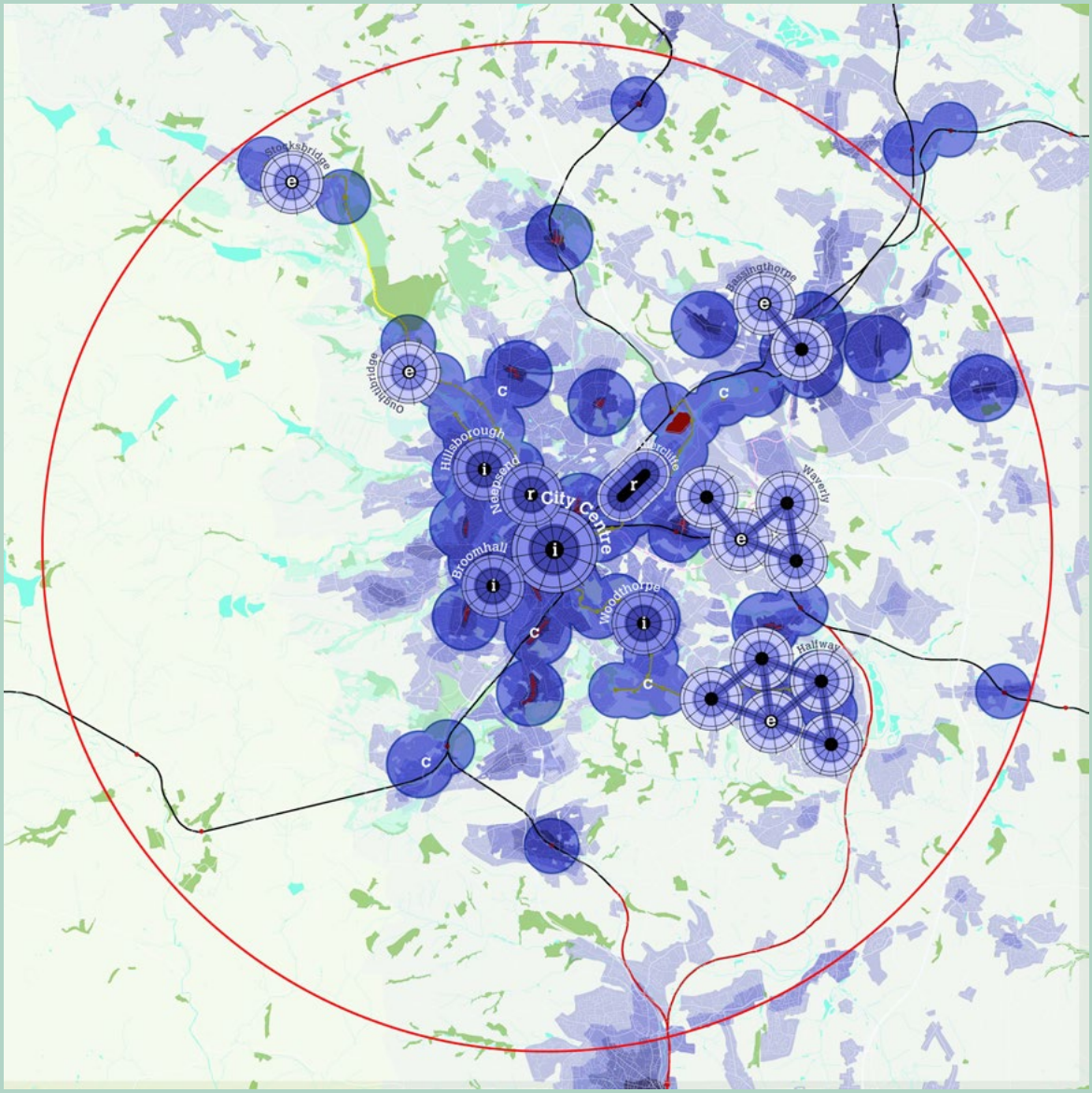
Employment

We also need to consider the LEP's Strategic Economic Plan (SEP)[3] that seeks to create 70,000 jobs and 6,000 new businesses in the City Region over 10 years and presumably beyond that. The space required by this business growth will clearly depend on the sectors that develop. Warehousing is the least intensive form of employment while manufacturing generates on average one job per 50m^2 and B1/office/workspace around one job per 25m^2. If we assume that one third of new employment is manufacturing then 70,000 jobs will require 2.3M m^2 of space which, depending on the form of development would require 200ha (whereas 70,000 homes would require more than 1,500ha). Modern employment (other than warehousing) is not particularly land hungry and accommodating the jobs target within the conurbation is not likely to be very difficult.

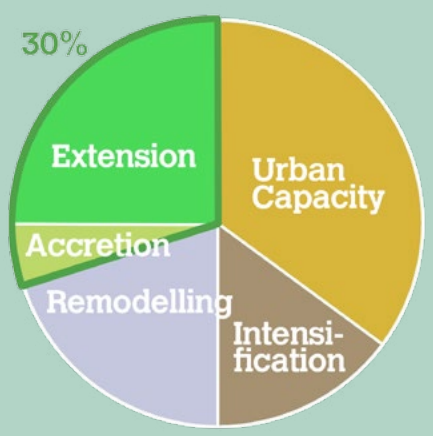
The SEP seeks to promote Creative and Digital Industries (CDI) alongside advanced manufacturing and engineering, healthcare technologies and business services. This development is likely to take place in the City Centre and around the Universities, in the Advanced Manufacturing Park and the business development of the former City Airport. It will also be accommodated within the mixed-use development of Attercliffe especially around its sports facilities and institutes of sports medicine.

Because of this we have felt able to recommend that parts of Attercliffe and Neepsend transfer from employment use to housing. The employment is only located in these areas because land is cheap and there is no other demand. We believe that it is not appropriate for this type of activity to occupy so much land so close to the city centre. Of course we should support and relocate the companies involved with compensation but also be aware that a mixed-use scheme will create as many jobs.

	Employment Performance			
	1998	2008	2009	2013
Employment	305,100	347,400	342,600	331,500
	Employment Change			
	1998-2008 No.	1998-2008 %	2009-2013 No.	2009-2013 %
Employment	42,300	16.65%	-9,100	-2.95%
	Employment Projections 2014-2024			
	2024	Change	%	%UK
Employment	365,850	34,350	10.20%	5.70%
Sources: ABI, BRES; UKCES Working Futures; ekosgen estimate				



		High Growth
c	Urban Capacity	32,000
i	Intensification	18,000
r	Urban Remodeling	20,000
a	Accretion	5,000
e	Urban Extension	25,000
	Total	100,000



3b. Growth Scenarios

The aim of this report has been to test the potential for the expansion of the Sheffield conurbation. We have explored a set of measures that, we believe, can accommodate 100,000 homes in the conurbation over 20 years. This however will not be easy and the question arises of how the city would apportion these capacity sources if a lower growth target was adopted? This relates to the three growth scenarios in the regional SEP that translate into 200,000, 170,000 and 140,000 homes for the City Region. These have been apportioned to the conurbation as 100,000, 85,000 and 70,000 homes. These figures may however be reduced by the most recent household projections.

A sequential approach to housing capacity, based on the brownfield first principle would suggest that the lower figures would be reached by removing the greenfield element of the equation. We have suggested that it is possible to accommodate 70,000 homes within the conurbation so that the lower growth scenario would simply mean removing the greenfield allocations.

By the end of 20 years Sheffield would have made up the population losses of the latter half of the 20th century and would be as big as it has ever been.

However there are factors that might mitigate against this approach. These may include the sustainability of the development – a greenfield site within easy reach of a tram stop may be a better option than an isolated brownfield site. There is also an argument that if the city is going to achieve its growth targets it needs a range of sites to attract developers and a range of housing to attract people to buy and rent that housing. There is also the matter of capacity. As we describe on the following page, some of the capacity, particularly the urban remodelling and larger extensions, will require considerable resources to unlock. There is a limit to what can be done at any one time, so there is value in phasing the work. We have therefore suggested opposite that each growth scenario picks from the options available rather than treat them as a sequential list in which each item needs to be used up before you move to the next.

After 20 years?

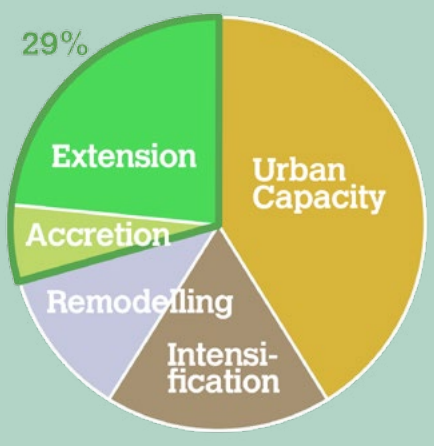
We started this piece of work planning to show how the conurbation could grow over 40 years as we had done with Uxcester. We naively thought that we could accommodate this level of growth largely within the urban area, however the figures that emerged lacked credibility. This is because city growth is a cumulative process, as a city grows, attitudes and markets change so that options that lack credibility today may be viewed very differently in 20 years time. If the Sheffield conurbation does establish a momentum for growth there is no reason to believe that it would not continue to grow beyond 20 years so that along with England's other cities it would fill the gap identified on the Zipf graph that we showed on Page 13.

If our projections are met, in 20 years Sheffield will have made up the population losses of the latter half of the 20th century and would be as big as it has ever been. To grow beyond this point will require decisions about whether to grow upwards or outwards. It is likely that some outward growth would be necessary and difficult decisions will need to be taken about which areas of countryside to be absorbed into the city. However there is likely to also be further opportunities for intensification. This is likely to take place in the Lower Don Valley between Sheffield and Rotherham. There has been talk of Meadowhall becoming an alternative town centre which we would not endorse. However Sheffield, like most British cities currently has a very small city centre surrounded by low density development. There is no reason why it should not become more continental in structure with a much larger centre encompassing different urban districts. This really would be a long term plan but it is one which would become relevant if the city were to continue to grow in 20 years time.

85,000 Homes

We have assumed in both of the lower growth scenarios that the Urban Capacity target would remain unchanged. This is based on the currently identified urban brownfield sites plus others that will become available during the plan period. For the 85,000 home target we have also maintained the intensification target. However on urban remodelling we have assumed that the city would not take on both Neepsend and Attercliffe simultaneously. One of them, probably Neepsend would be 'saved' for future expansion. We have also maintained the accretion figure of 5,000, because this is likely to be relatively easy to achieve but have reduced the urban extension by 5,000 by dropping one of the extensions to the west and reducing the ambition of the others.

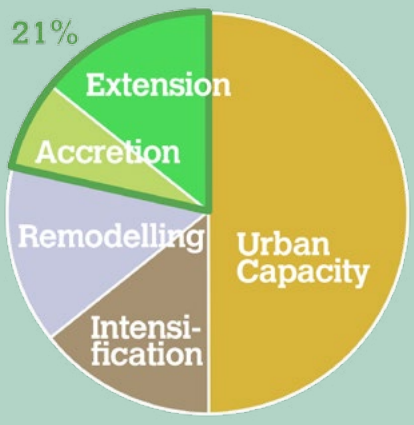
		Medium Growth
c	Urban Capacity	32,000
i	Intensification	18,000
r	Urban Remodeling	10,000
a	Accretion	5,000
e	Urban Extension	20,000
	Total	**85,000**



70,000 Homes

If the overall figure is to be reduced to 70,000 homes for the conurbation then we would reduce the target for intensification by 5,000 but retain the Urban Capacity figure which then make up half of the total. As with the middle option we would pursue just one of the urban remodelling scheme and would also drop one of the urban extensions (probably Mosborough) while maintaining the accretion sites. This would mean that the proportion of greenfield development dropped to 21%.

		Low Growth
c	Urban Capacity	32,000
i	Intensification	13,000
r	Urban Remodeling	10,000
a	Accretion	5,000
e	Urban Extension	10,000
	Total	**70,000**



3c. Policy Approach

In our proposals for Uxcester we suggested a mechanism by which places would bid for Garden City status. If successful they would gain the powers to compulsory acquire land, to take on planning powers and to gain access to borrowing and some limited public funds. The aim was to create Garden City Companies able to act decisively to overcome the barriers to implementation and to capture a significant part of the land value to invest in infrastructure and local facilities. The Government made some moves in this direction in the 2015 Budget and a wider initiative is expected in this parliament. We expect that these new powers will cover in-town brownfield sites as well as free standing Garden Cities and urban extensions.

It would therefore be reasonable for Sheffield and its neighbouring authorities to prepare for the opportunity to bid for such powers either for the urban remodelling schemes that we have proposed or for the urban extension.

By the end of 20 years Sheffield would have made up the population losses of the latter half of the 20th century and would be as big as it has ever been.

This would allow the city to set up a body able to progress either one or a number of these opportunities. This however is only part of the strategy required to implement the policies that we have laid out in this report which has three parts; the development of the Local Plan, the encouragement of housing capacity take up and direct intervention by the Council (dealt with in the next section).

Local Plan Approach

Sheffield is publishing the Issues and Options Report for the city's Local Plan this Autumn. As part of its Local Plan it has an obligation to plan for the housing needs of the city over a twenty year period as well as to provide a five year supply of housing land.

If the city were to base its housing figures on those that we have suggested in this report then it would struggle to show that this ambitious level of growth is deliverable. At a Local Plan enquiry the inspector may well take the view that the housing growth targets are over-ambitious. On the other hand if the inspector accepted the growth targets he/she would probably conclude that the Council was not able to deliver land for this level of house building and so might insist on the release of more Green Belt or propose the export of housing growth to neighbouring districts.

Fortunately for the planning authority, the most recent growth projections are substantially lower than the figures suggested in this report, making it much easier to show that the plan can accommodate the city's housing needs. Using the SHLAA sites, windfall assumptions (to cover intensification), some urban remodelling and some greenfield releases (probably with allocations of the Sheffield land next to Waverley and Mosborough). In this way the plan can satisfy an inspector. The problem is that it would also represent a lost opportunity to grow the city in the way that we have proposed.

Our suggestion is therefore a two-level approach in which the Local Plan shows a baseline level of growth, based on the population projections and backed up with quantifiable, deliverable housing sites. Over and above this the plan also shows an aspirational level of growth derived from this report and based on the less tangible capacity sources that we have identified. These would become particularly important in the second half of the plan period. However if the growth did not materialise, or the capacity could not be unlocked, then the city would

still have met its identified housing need. We are aware that this is not the way that the planning system is designed to work. However it seems to be the only way that the growth aspirations of all of the large cities can be met without huge greenfield releases and the sprawl that this would unleash.

Promoting the Take Up of Capacity

Much of the capacity that we have identified in this report does not require the local authority to take the lead. For the development of Urban Capacity, intensification and accretion the market will seek out the capacity and deliver the housing provided that schemes are viable and planning policy allows it. There have been suggestions[28] that the Council should seek to encourage this type of infill development with financial incentives, linked to lower S106 requirements. We are not sure that this is appropriate. In many parts of the city this type of infill is already likely to be viable and where it is not S106 is unlikely to make a difference particularly since many of the schemes are small and would not attract S106 requirements.

The key issue relates to planning policy which, as we have said is likely to be the main impediment to many forms of urban intensification. We would suggest that the planning authority prepares a Supplementary Planning Document on this subject that states that the Council seeks to encourage the responsible intensification of its residential neighbourhoods as part of a sustainable city strategy. This would include guidance on issues like privacy, overshadowing, parking, heritage and space standards but would be broadly permissive. Part of it could relate to self-build as there are many people currently looking for plots in their neighbourhood to build their own home.

One of the difficulties of bringing forward this type of small-scale development is the loss of small builders and developers in recent years as the industry has rationalised. Sheffield already runs a successful 'Stuck Sites Programme' using various powers to serve notice on the owners of land and buildings that have been vacant for some time. Where the owner doesn't respond the sites are taken into council ownership and promoted for development. The initial programme has been very successful, tackling 17 sites in its first three years and being able to recycle part of its budget. Sheffield is now exploring a larger second phase of the programme which could be developed on similar lines to the Vespa housing programme in Antwerp described below. This is a very cost effective way to promote small scale infill development and has the potential to nurture a new generation of small architects developers and contractors who would go on to do wider work in the city.

Vespa Housing Programme in Antwerp – These are before and after shots of infill development promoted by the City Council in Antwerp. Seedcorn capital provided by the Council has been used to buy small vacant sites such as this. Each site is subject to an architectural competition and the schemes typically include ground floor commercial units with apartments above. These schemes are developed directly by the council and sold or leased. The proceeds are used to purchase further sites to go through the same process. Antwerp has now completed more than 50 such sites and in doing so has promoted a generation of small architecture practices in the city who often use the programme to get their first job. They have also helped establish a series of small scale contractors and developed schemes that have demonstrated a market in parts of the city and created examples for others to follow.

3d. Housing Development Corporation

Achieving the housing numbers proposed in this report will require more than changes to policy. To promote this level of growth the Council will need to take a much greater role in the promotion of housing development. This is not a new idea. In the past Councils brought about huge change in their areas through slum clearance, the promotion of urban extensions and overspill estates while Government built more than a million homes through the new town programme. These were the years when as a country we were building 3-400,000 homes a year. This level of public sector intervention came to an end in the early 1980s. Since then housing output has consistently been below 200,000 homes a year. Even during the strong markets of the early 2000s the combined output of private builders and housing associations was below 200,000 homes annually compared to the figure of 230-250,000 homes that the country needs. We believe that the gap in our national housing output will only be filled through the intervention of the public sector.

In our Wolfson essay we, like many others, suggested a mechanism similar to the New Town or Urban Development Corporations to promote large scale housing development. This is a proven mechanism for bringing about large-scale urban change. It was used to develop the site for the 2012 Olympics and a Development Corporation has recently been established for Old Oak and Park Royal in London. These are both Mayoral Development Corporations. Our essay argued that such Development Corporations should be promoted by Local Authorities (or combined authorities), but would be run as arm's length bodies in partnership with other organisations and the private sector. They would also be able to straddle the boundaries of local authority areas. We are proposing that this approach be adopted in Sheffield and that the Council, in discussion with the Government, promote itself as a pilot for this approach. We can envisage a situation where such a Development Corporation would be a joint venture between Sheffield and Rotherham covering the entire conurbation with teams dealing with each of the urban remodelling and urban extension areas that we have identified. Intervention on this scale will be required to bring about change that is required. However as a pilot it is sensible to start with one of the areas and we understand that the most likely candidate is Neepsend.

The financial equation

These Development Corporations would have the powers to purchase land, by compulsion if necessary, they would have planning powers and would be able to borrow money. The fundamental idea is that these powers would allow the Development Corporation to acquire land at existing use value, plus compensation. Through the promotion of the area's regeneration, infrastructure investment and planning powers the corporation would be able to increase values substantially for new housing and commercial development. The corporation would use this increase in value to repay its initial borrowing and to fund the infrastructure required. For greenfield development this creates a very viable development proposition. In our Wolfson Essay we based our viability assessment on a residential land value of £2.3M/ha (the average for England at the time). This compared to an average agricultural land value of just £15,000/ha. We assumed land purchase at £200,000/ha which still generated a huge value uplift sufficient to fund all development and infrastructure, as well as a new tram system.

In Sheffield the figures will be very different.

We believe that the gap in our national housing output will only be filled through the intervention of the public sector

At the time when the average residential land value for England was £2.3M/ha the figure for Yorkshire and the Humber was £1.25M/ha[31]. The Valuations Office no longer collates these figures and both will have risen substantially in recent years but it is likely that Yorkshire values are around £1M less per hectare than the national average. That said, values to the west of Sheffield near the Peak District will be substantially higher than this, as will those in the City Centre.

The existing use values in Sheffield will also be greater. The cost of acquiring land and compensating owners will be substantially higher than the £200,000/ha that we assumed in Uxcester. This means that in broad terms the value uplift in Sheffield is likely to be £500,000-£1M/ha compared to £2M/ha in Uxcester and this could be further reduced by abnormal site costs. There are however some mitigating factors:

- In Uxcester we assumed that half of the land would become open space. This effectively doubled the amount paid to acquire the land.
- The Uxcester proposal included costs of £400,000/ha for transport and £250,000/ha to create the country parks. Sheffield already has a tram system and would not need to create open space on this scale so that the costs would be substantially lower.
- The housing densities in Sheffield would be higher. This would not necessarily affect the value of the land if it was sold to a developer. However it does potentially increase the value of land sold through plot sales.

We are aware that a third of the housing requirement of the city is made up of social and affordable housing. In Uxcester we were able to provide 20% of the homes as social housing (not just affordable) by providing plots free to housing associations and using part of the value of the private plots to provide subsidy. The level of social housing that we provided in Uxcester is already below the requirement in Sheffield and the values in Sheffield are weaker. It is therefore unlikely that the social housing required can be funded from land value capture. It may be possible to use land receipts from the sale of Council land, but other than this public funding will be required.

This requires a much more detailed viability assessment. In Uxcester we were able to set out a financial model for the development because as a fictional city we were able to make assumptions about land values and infrastructure costs. Sheffield is much more complicated and values will vary with the type of use and the level of compensation required. The work we have set out here provides a starting point to assess long term viability and funding requirements but this will need much more detailed work that should probably be the next stage of the process. However in principle, the model of urban regeneration based on value uplift should work. It is a model that has been used by developers like Urban Splash for many years as well as lying behind large scale regeneration projects like Hulme in Manchester. With the backing of the public sector it could become a powerful tool to increase housing production and to regenerate parts of Sheffield.

Vathorst in the Netherlands - a major urban extension built using the same process that we describe here.

3e. Next steps

The amount of work implied by the proposals in this report is daunting, especially in the current climate of public sector spending cuts. We have described the steps to be taken in terms of the Local Plan and planning policy on Pages 49 and 50. We also believe that at some point in the near future a Government initiative will be launched allowing Local Authorities to bid for powers to create housing growth zones. This report could be a starting point for a bid to such an initiative when it appears. However we believe that there is also an opportunity to start work before then to develop Neepsend as a pilot project as set out below:

- The first step would be to commission a masterplan for the area that identifies the potential for development. This would look at constraints and land ownerships and confirm the total potential housing numbers, the infrastructure requirements and the land ownership.

- A business plan for Neepsend setting out the value of the development land created set against the infrastructure costs associated with the scheme – schools, open space, facilities, public transport and land remediation. This would be related to the land required and an estimate of acquisition and compensation costs. The aim would be to establish the viability of the scheme and the requirement for subsidy and finance.

It is a process that allows for the public sector to initiate large scale change within their area, or in cooperation with a neighbouring authority and private sector partner

- The masterplan and business plan would be the basis of an approach to Government for support for the scheme. It is likely that this will be in the form of access borrowing and investment rather than public subsidy. Additional subsidy could come from the inclusion of Council owned land.

- Government support would allow a dedicated team (Housing Development Corporation) to be appointed to progress the scheme. This could be done with a private sector partner. URBED are currently working with Siglion in Sunderland, a joint venture between the city Council and Carillion/igloo which is a similar model.

- The corporation would be given planning and CPO powers from the Council and would probably also be overseen by a Council subcommittee. A good model for this is Hulme in Manchester where the Hulme Committee included the leader and his two deputies alongside the local Councillors and took on planning and land acquisition/disposal powers.

- Ideally the corporation would promote an initial phase of development on Council owned land. This could either be through a custom-build route in which plots are sold to individuals and small scale builders, or could be a simple sale to a developer. The aim would be to generate an initial receipt to fund ongoing work.

- In parallel with the first phase a CPO would be prepared for the development land identified in the masterplan. There is precedent for this in the blanket CPO initiated by Yorkshire Forward on Holbeck in Leeds. This was designed to encourage development and land owners were able to to avoid CPO by promoting the development of their land in line with the plan.

Hulme in Manchester - The Hulme neighbourhood was redeveloped through City Challenge in the 1990s through a public/private partnership with Amec. Overall around 6,000 new homes have been built in Hulme so it is a comparable level of change to the proposals in this report.

- The process would include a mechanism for recovering the costs of the infrastructure from the value of the land. This can either happen through the CPO process or through a bespoke S106/CIL regime. The latter was also part of the Holbeck Urban Village plan to ensure that land owners who pursued their own scheme also contributed to infrastructure.

- Once the land has been acquired a phased programme of development would be set out probably over 10 years. Sites again would either be brought forward for custom/self-build or sold on to developers. In both cases the development would be controlled by design codes to ensure the quality of the development.

- In our view it is important that custom build and self build form a key part of the process. This is partly because it will create a very different type of development to the volume housebuilders, but also because it will tap into new markets attracting a broader range of people and increasing potential sales rates.

This is a truncated description of the process and more detail can be found in our Uxcester essay. It is a process that allows for the public sector to initiate large scale change within their area, or in cooperation with a neighbouring authority and private sector partner by taking on the powers of an Urban Development Corporation.

3f. Conclusion

We have argued that the great northern cities of the UK should grow, Sheffield amongst them. This will be good for the cities and also for the national economy. The cities of the North West and Yorkshire have a particular opportunity as part of the Northern Powerhouse, or Northern Way, an idea that has widespread political support, to create a connected city across the north to counterbalance London.

However this report has also shown that accommodating significant growth is not as simple as it may seem. The fact that the northern cities experienced population decline for much of the second half of the 20th century has led many people to suggest that they are swimming in brownfield land. The reality is that Sheffield did not lose that many people, and much of the land cleared of housing and vacated by its industry has been reused. While the region has significant amounts of brownfield land the majority of this is not within Sheffield and is not necessarily the most sustainable place to develop.

The measurable brownfield resource within Sheffield is sufficient to accommodate only between a quarter and a third of its housing growth. Yet we know that this is not the full picture

The measurable brownfield resource within Sheffield is sufficient to accommodate only a quarter to a third of its housing growth (depending on the growth figure that we use). Yet we know that this is not the full picture. London, with even less brownfield capacity than Sheffield, builds more homes within its urban area in a year that Sheffield does in a decade. The difference is the strength of demand in London that means that the market sniffs out capacity that could never be measured. The other problem is that, once vacated, urban land tends to get reused in all but the most depressed urban markets. In some cases sites will have been grassed and become protected open space. However in many cases they will be used for surface parking, scrap yards or single storey sheds. Even if these uses seem transient they create value and can be difficult to dislodge.

We argue that these uses should not be seen as a given in a city such as Sheffield. The companies involved should, of course, be relocated where possible, but land within a mile or so of the centre of a city like Sheffield should be too important to become crystallised in these low value uses. Mechanisms need to be in place to redevelop this land for higher density, higher value housing and economic uses.

This will allow a much greater amount of housing to be built within the urban area of the conurbation. We have estimated the Urban Capacity of the city to be around 70,000 homes alongside new employment uses. This consists of current brownfield sites and other sites that will inevitably become vacant over the next 20 years. It will also include intensification of popular neighbourhoods, if the planning system allows it. It should also include interventions by the Council to remodel Attercliffe and Neepsend to create new sustainable urban neighbourhoods.

If the city selects the lower of its growth scenarios this Urban Capacity could be sufficient to accommodate all of its housing needs within its urban area. We have however not recommended this for a number of reasons.

The first is that we believe that the city should pursue a growth agenda by targeting 100,000 rather than 70,000 homes over 20 years if it is to keep up with Leeds and Manchester. It will also be difficult to eke out all of the capacity from the urban area so relying on this alone risks putting a break on the growth of the city. We therefore suggest that the strategy to unlock Urban Capacity happens alongside limited green field releases for up to a third of the city's housing needs. A small part of this would happen on sites around the edge of the settlement where these are near to existing transport infrastructure and facilities. However most should take place in significant urban extensions that can be served with new infrastructure and facilities. These extensions should include a mechanism for land value capture to pay for this new infrastructure but also to ensure that these greenfield sites compete on equal terms with urban sites.

This package of measures shows how Sheffield could grow over the next twenty years. However it is not particularly compatible with the current planning system that will require more concrete proof of Urban Capacity before agreeing not to allocate green field sites. In the absence of such proof the planning authority and the City Region may well opt for the lower housing growth figures. These can be justified by the recent household projections that use the recession years as their starting point. If they were regarded as the totality of Sheffield's housing needs they would enshrine the sluggish growth rates of the recession in into future planning policy. However it may be possible to produce a sound plan based on these lower figure while also pursuing more aspirational growth figures. This two pronged approach is our main recommendation.

Notes and references

1. Uxcester Garden City: Second Stage Submission for the Wolfson Economics Prize 2014 - David Rudlin with Nicholas Falk URBED
2. Forget about greenfield sites, build in the city - Richard Rogers - The Guardian 15th July 2014
3. Strategic Economic Plan: A focused 10 Year Plan for Private Sector Growth 2015 - 2025 - Sheffield City Region LEP - 31/03/2014
4. Report commissioned from Edge Analytics by Sheffield City Region
5. Zipf's Law for Cities: An Explanation - Xavier Gabaix - The Quarterly Journal of Economics Vol. 114, No. 3 (Aug., 1999), pp. 739-767 - Oxford University Press
6. Zipf Plot for English Cities: England's "second tier" cities are undersized http://spatial-economics.blogspot.co.uk/2012/10/are-britains-second-tier-cities-too.html
7. The slow death of great cities?: Urban abandonment or urban renaissance - Anne Power and Karen Mumford - 1999 - York Publishing Services - Joseph Rowntree Foundation
8. Leeds Local Development Framework - Core Strategy. Adopted 12th November 2014, Leeds City Council
9. U-turn on Leeds 70,000 new houses target? - Yorkshire Post - 10th March 2015
10. Leeds Local Plan: Assessment of Housing Requirements to Inform Examination - NLP for Leeds House Builders Consortium, September 2013
11. Manchester's Local Development Framework - Core Strategy, Development Plan Document, Adopted 11th July 2012 - Manchester City Council
12. Greater Manchester Strategic Housing Market Assessment - December 2008, Deloitte MCS Ltd and GVA Grimley for AGMA
13. Greater Manchester Spatial Framework –Stage 1: Initial evidence on future growth - Consultation Document – 26th September 2014 - Greater Manchester Combined Authority and AGMA
14. GM plan 'lacks ambition', says survey - Place North West - 8 Jan 2015
15. Strategic Housing Needs Study Stage 2 report - Peter Brett Associates for Greater Birmingham and Solihull LEP and the Black Country Local Authorities November 2014
16. Birmingham Development Plan, Pre-submission version, Planning for sustainable growth - December 2013 - Birmingham City Council
17. Greater Birmingham and Solihull LEP Black Country Local Authorities - Strategic Housing Needs Study - Stage 3 Report - Peter Brett Associates - August 2015
18. Sub-Regional Housing Study - January 16, 2015 - Barton Wilmore Associates
19. The London Plan - The Spatial Strategy for London - Consolidated with Alterations since 2011 - March 2015 - Mayor of London
20. The 2013 London Strategic housing Market Assessment - Part of the evidence base for the Mayor's London Plan - 2013 Mayor of London
21. Big, Bold, Global, Connected, London 2065 - A Manifesto for Long Term Growth of the London City Region - 2015 Aecom
22. National Planning Policy Framework - 27 March 2012- Department for Communities and Local Government
23. Sheffield City Region Combined Green Belt Review – A Common Approach – August 2014
24. From wasted spaces to living spaces - November 2014 CPRE
25. Sheffield and Rotherham Strategic Housing Land Availability Assessment - Assessment of Potential Housing Land Supply in Sheffield July 2013
26. Spatial Priorities for Housing Growth - January 2015 - Michael Hellewell, SCR Ed Ferrari, University of Sheffield / SCR - SCR Joint Housing & Residential Offer Board
27. Tapping the Potential: Best practice in assessing urban housing capacity 1999 - URBED for The Department of the Environment Transport and the Regions
28. Sheffield 'Big City' 2014 Presentation by David Cross of Coda Architects to the LEP
29. The Northern Way Residential Futures Volume II: Research Report - May 2009 - Tribal's Urban Studio team, in association with ARUP and CURS
30. See http://www.agvespa.be/
31. Valuation Office Table 563 Housing Market - Average valuations of residential building land with outline planning permission for housing (this was discontinued in 2010)


Sheffield
City Council