

# Wirral

## SHMA Update – Demographic Evidence

December 2020



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## Acknowledgements

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*The authors of this report do not accept liability for any costs or consequential loss involved following the use of the data and analysis referred to here; this is entirely the responsibility of the users of the information presented in this report.*

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# 1 Introduction

- 1.1 Wirral Council has commissioned an update of its Strategic Market Housing Assessment (SHMA), to inform the Local Plan. To support this process, the Council has requested an extension to the analysis, to evaluate the potential impact of a specific employment growth scenario upon housing need over a 2020–2037 plan period. The employment growth scenario is informed by an economic forecast produced by Oxford Economics (OE).
- 1.2 Edge Analytics is a specialist in Data Science, with a particular expertise in demographic modelling and forecasting and has worked with local planning authorities across the UK in the development and presentation of evidence to support Local Plan formulation.
- 1.3 Edge Analytics has used POPGROUP technology to configure growth scenarios for Wirral. The full suite of 2018-based Office for National Statistics (ONS) projections are compared directly to an Employment-led scenario, which evaluates the impact of a total employment growth of 1,392 over the 2020-2037 plan period.
- 1.4 Section 2 illustrates Wirral’s area profile with the latest demographic statistics. Section 3 presents the suite of growth outcomes for Wirral, with a summary of the findings in Section 4. Appendix A and B provide supplementary detail on the methodology, data and assumptions used in the formulation of the analysis.

# 2 Area Profile

2.1 According to ONS mid-year estimates, the population of Wirral was estimated to be 324,011 in 2019, rising from 315,004 in 2001, a 2.9% increase (Figure 1).

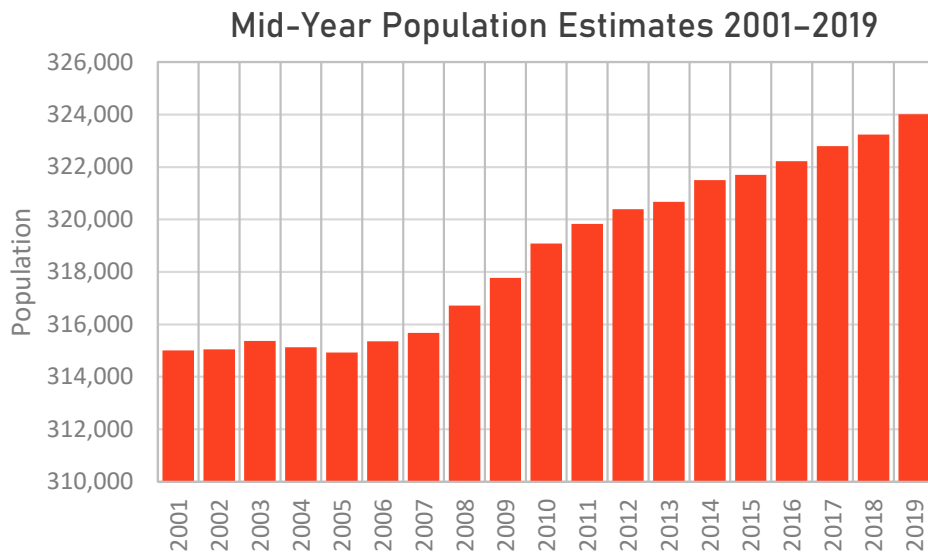


Figure 1: Mid-Year Population Estimates, 2001-2019 (Source: ONS)

2.2 Wirral’s housing completions have increased significantly in the last three years, peaking in 2019/20 at +747 (Figure 2).

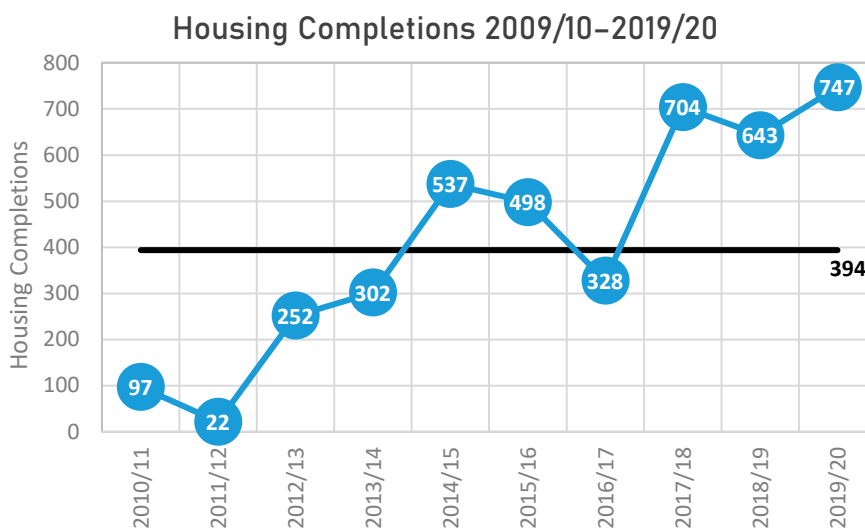


Figure 2: Housing Completions, 2009/10-2019/20 (Source: AMR 2015/16, 2016/17, 2017/18<sup>1</sup> and MHCLG<sup>2</sup>)

<sup>1</sup> Wirral Council - Annual Monitoring Reports

<sup>2</sup> MHCLG - Live tables on housing supply: net additional dwellings

2.3 Examination of the ‘components’ of population change for Wirral, reveals the factors that are estimated to have driven the change in population since 2001, including a significant upward adjustment (unattributable population change) to its population following the 2011 Census (Figure 3).

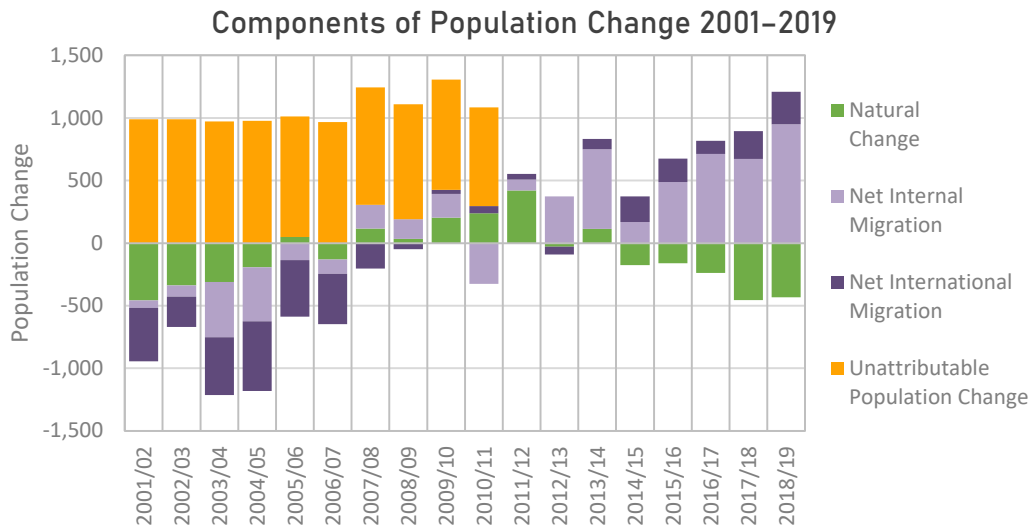


Figure 3: Components of Population Change, 2001/02-2018/19 (Source: ONS)

2.4 Natural change (the difference between births and deaths) has had a varying impact upon population change since 2001/02. In the last five years this impact has been negative, contributing an average of -293 per year to population growth.

2.5 Since 2012/13, a net inflow from internal migration has been the main driver of Wirral’s growing population, contributing an average of +571 people per year over that period. Wirral’s most significant net migration *inflow* exchange originates from Liverpool together with neighbouring Sefton and Knowsley. Its highest net migration *outflow* exchange has been with districts in northern England, northern Wales and Scotland (Figure 4).

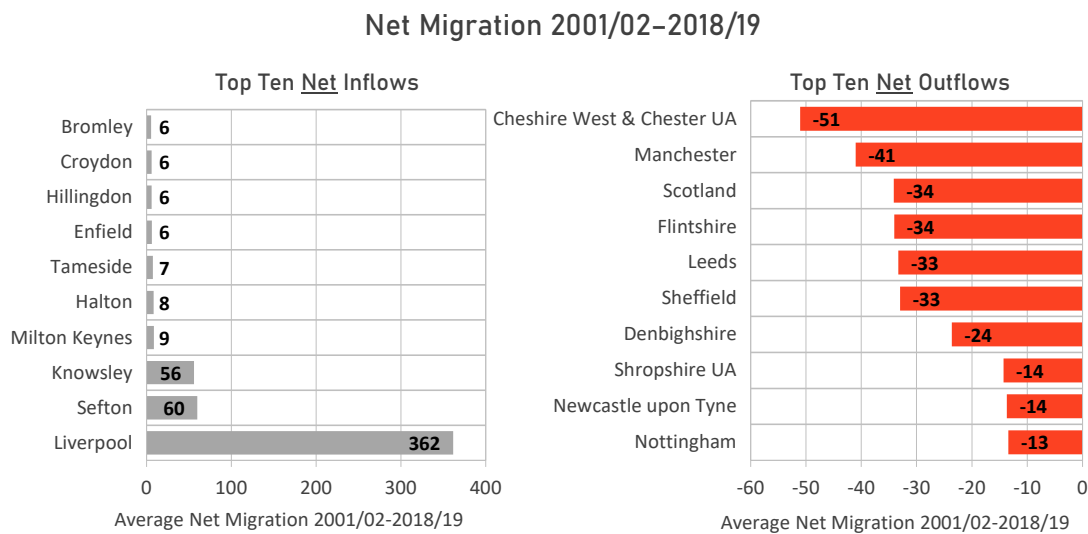
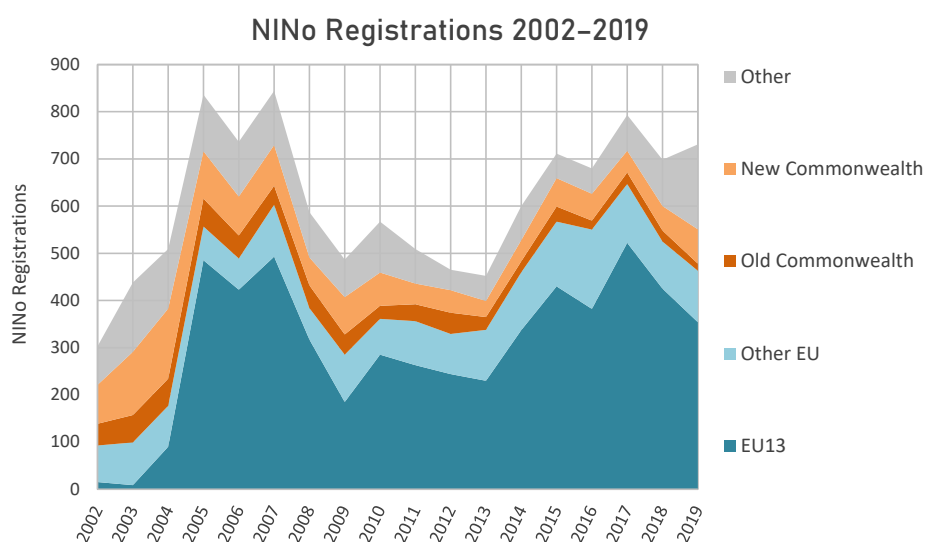


Figure 4: Top Ten Net Migration Inflows and Outflows, 2001/02-2018/19 (Source: ONS)

- 2.6 International migration has had a more limited impact on Wirral’s population change, but its contribution has been positive since 2013/14. National Insurance Number (NINo) statistics provide a complementary illustration of international migration inflow to Wirral; different to the ONS mid-year population estimates in that they refer only to work-based in-migration and include migrants whose stay may be shorter than 12 months (Figure 5).



EU13 refers to countries who have joined the EU since 2004:  
Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia

Figure 5: NINo registrations by Country of Origin, 2002–2019 (Source: DWP)

- 2.7 NINo registrations have predominantly been associated with migrant workers from countries that have joined the European Union since 2004. Following a decline in 2009, registrations have increase since 2014 and have fluctuated around 700 per year thereafter.

# 3 Growth Scenarios

- 3.1 POPGROUP technology (see Appendix A) has been used to configure a suite of growth scenarios for Wirral (Table 1). Additional detail on scenario data inputs and assumptions is provided in Appendix B.
- 3.2 The ONS scenarios include the full suite of variants that make up the 2018-based ONS projections (Table 1).
- 3.3 The employment-led scenario considers the relationship between future employment growth and demographic change, incorporating key assumptions on economic activity rates, an unemployment rate and a commuting ratio, with a **2019** base year.
- 3.4 The OE economic forecast projects an average annual employment growth of +82 per year over the plan period, with annual employment growth expected in each year up to 2029/30, with a decline in each year thereafter (Figure 6).

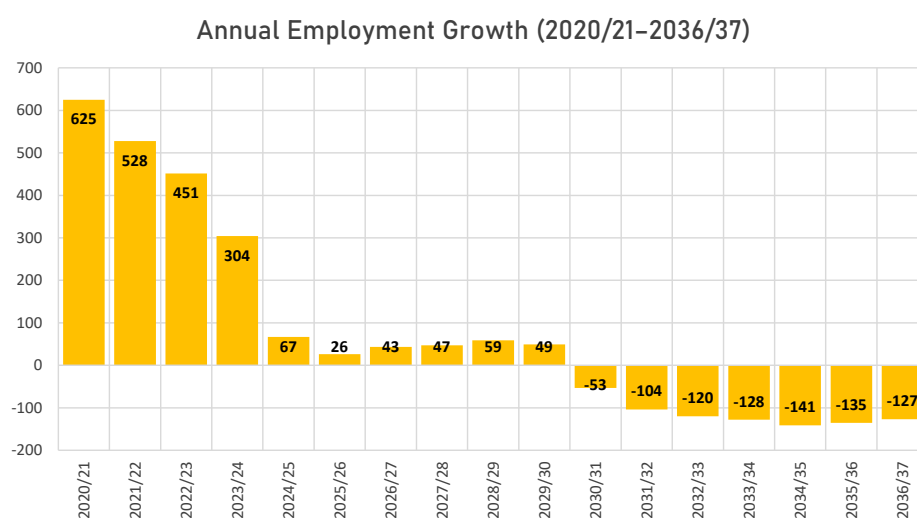


Figure 6: Wirral – Oxford Economics employment growth forecast

- 3.5 Under each scenario, population, household, migration and dwelling growth is presented over a 2020–2037 plan period.
- 3.6 For all scenarios, household and dwelling growth is estimated using assumptions from the MHCLG’s 2014-based household projection model. Each scenario has also been run using assumptions from the ONS’ 2018-based household projection model for comparison. In modelling the relationship between households and dwellings, a Wirral vacancy rate of 3.5% has been applied, derived from 2011 Census statistics.
- 3.7 The 2001–2037 population growth trajectories for all scenarios are presented in Figure 7.



- 3.8 In Table 2, each of the scenarios is summarised in terms of population and household growth for the 2020–2037 plan period, alongside the average annual net migration and dwelling growth outcomes.
- 3.9 A comparison of dwelling growth for each scenario, using the MHCLG’s 2014-based household projection model and the ONS 2018-based model, is presented in Table 3.

Table 1: Scenario Definition

1. <b>SNPP-2018</b>	Replicates the ONS 2018-based SNPP <i>Principal</i> population projection, using historical population evidence for 2001–2018.
2. <b>SNPP-2018-HIGH</b>	Replicates the ONS 2018-based SNPP <i>Higher Migration</i> population projection, using historical population evidence for 2001–2018. This variant assumes higher levels of net international migration.
3. <b>SNPP-2018-LOW</b>	Replicates the ONS 2018-based SNPP <i>Lower Migration</i> population projection, using historical population evidence for 2001–2018. This variant assumes lower levels of net international migration.
4. <b>SNPP-2018-ALTERNATIVE</b>	Replicates the ONS 2018-based SNPP <i>Alternative Internal Migration</i> population projection, using historical population evidence for 2001–2018. This variant uses five years of internal migration data to inform the projection, two years using ONS’ new estimation methodology and three years using its previous methodology.
5. <b>SNPP-2018-10YR</b>	Replicates the ONS 2018-based SNPP <i>Alternative Internal Migration</i> population projection, using historical evidence for 2001–2018. This variant uses 10 years of all migration data to inform the projection.
6. <b>Employment-led_OE</b>	Models the impact of an average annual employment growth of +82 per year, detailed in an Oxford Economics forecast.

- 3.10 Population change for the 2020–2037 period ranges from 0.3% under the **SNPP-2018-10YR** scenario to 4.0% growth under the **SNPP-2018-HIGH** scenario. This range of population growth equates to an estimated housing requirement of +550 to +927 dpa.
- 3.11 The **Employment-led\_OE** scenario presents a different proposition in terms of population, household, and dwelling growth, underpinned by an average annual employment growth of +82 per year. The workplace-based employment forecast has been used to estimate likely population growth, using economic activity rates adjusted for OBR uplifts, a fixed commuting ratio, plus an unemployment rate that varies over the forecast period in line with the employment forecasts.
- 3.12 The **Employment-led\_OE** scenario results in a 1.2% population growth over the 2020–2037 plan period, with a +1,086 net annual in-migration required to support the targeted employment growth. This population growth results in an annual dwelling growth requirement of +690 dwellings per year.

## Wirral Growth Outcomes 2020-2037 Demographic Scenarios

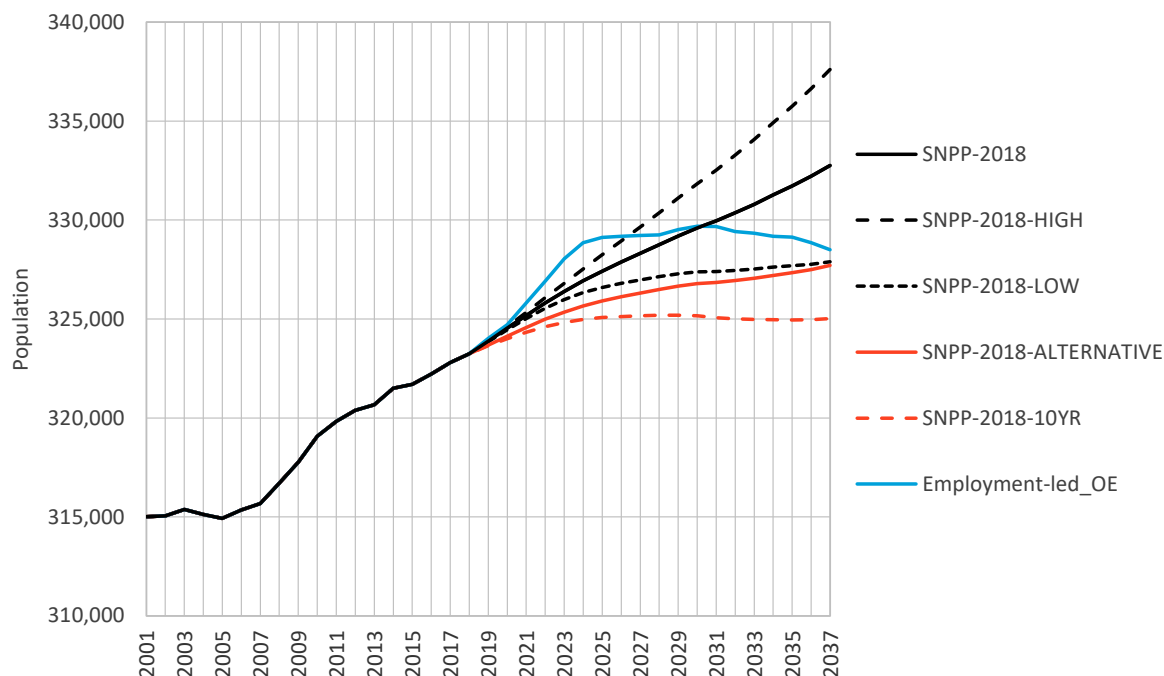


Figure 7: Wirral Population Growth Scenarios, 2001–2037

Table 2: Wirral Scenario Outcomes, 2020–2037

Scenario	Change 2020–2037				Average per year	
	Population Change	Population Change %	Households Change	Households Change %	Net Migration	Dwellings
SNPP-2018-HIGH	12,991	4.0%	15,204	10.3%	1,536	927
SNPP-2018	8,215	2.5%	13,186	8.9%	1,300	804
Employment-led_OE	3,785	1.2%	11,324	7.7%	1,086	690
SNPP-2018-ALTERNATIVE	3,572	1.1%	10,927	7.4%	1,107	666
SNPP-2018-LOW	3,433	1.1%	11,164	7.6%	1,064	681
SNPP-2018-10YR	1,016	0.3%	9,025	6.1%	907	550

- 3.13 All scenarios have been run using both the 2014-based and 2018-based household representative rates. The 2018-based rates have been formulated differently to the 2018-based (see Appendix B) and remain fixed from 2021, unlike the 2014-based rates which are projected over a 25-year horizon.
- 3.14 For each scenario, the average annual dwelling requirement is higher using the 2014-based household projection model, ranging from +550 to +927 dpa using the 2014-based household projection model and +364 to +722 dpa using the 2018-based model (Table 3). The dwelling growth requirement for the **Employment-led\_OE** scenario is +690 dpa using the 2014-based household projection model and +497 dpa using the 2018-based model.

Table 3: Wirral Annual Dwelling Requirement, 2020–2037

Scenario	Average Dwellings Per Year	
	HH-14	HH-18
SNPP-2018-HIGH	927	722
SNPP-2018	804	608
Employment-led_OE	690	497
SNPP-2018-ALTERNATIVE	666	477
SNPP-2018-LOW	681	493
SNPP-2018-10YR	550	364

# 4 Summary

- 4.1 Wirral Council is in the process of updating its SHMA. As part of this process, the Council has sought to evaluate the impact of an employment growth scenario upon housing need. Wirral’s recent profile of population growth has been characterised by relatively high net in-migration from neighbouring districts, particularly Liverpool.
- 4.2 POPGROUP technology has been used to configure a suite of growth scenarios for Wirral. Under each scenario, population, household, migration, dwelling and employment growth is presented over a 2020–2037 plan period.
- 4.3 Under each scenario, household growth has been estimated using household representative rate assumptions from the MHCLG’s 2014-based and ONS’ 2018-based household projection models, in combination with a dwelling vacancy rate of 3.5% for Wirral. An employment-led scenario, underpinned by an Oxford Economics economic forecast has been presented alongside trend scenarios, incorporating key assumptions on economic activity, unemployment and commuting.
- 4.4 Over the 2020–2037 plan period, population growth of 0.3% to 4.0% is estimated under the range of scenarios, with a corresponding household growth of 6.1% to 10.3%. The associated average annual dwelling growth ranges from +550 to +927 using 2014-based headship rates and +364 to +722 using the 2018-based headship rates.

## Growth Scenarios Summary

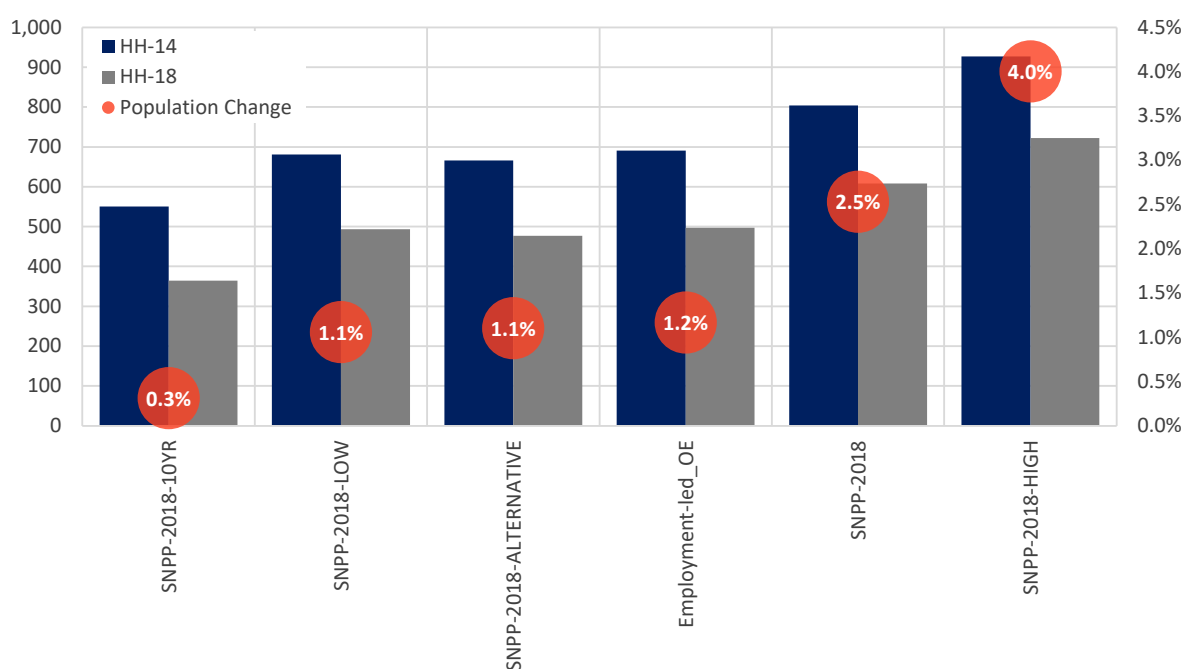


Figure 8: Wirral Growth Scenarios Summary, 2020–2037

## Appendix A POPGROUP Methodology

- A.1 Demographic forecasts have been developed using the POPGROUP suite of products. POPGROUP is a family of demographic models that enables forecasts to be derived for population, households and the labour force, for areas and social groups. The main POPGROUP model (Figure 9) is a cohort component model, which enables the development of population forecasts based on births, deaths and migration inputs and assumptions.
- A.2 The Derived Forecast (DF) model sits alongside the population model (Figure 10) providing a headship rate model for household projections.
- A.3 For further information on POPGROUP, please refer to the Edge Analytics website: [www.edgeanalytics.co.uk](http://www.edgeanalytics.co.uk)

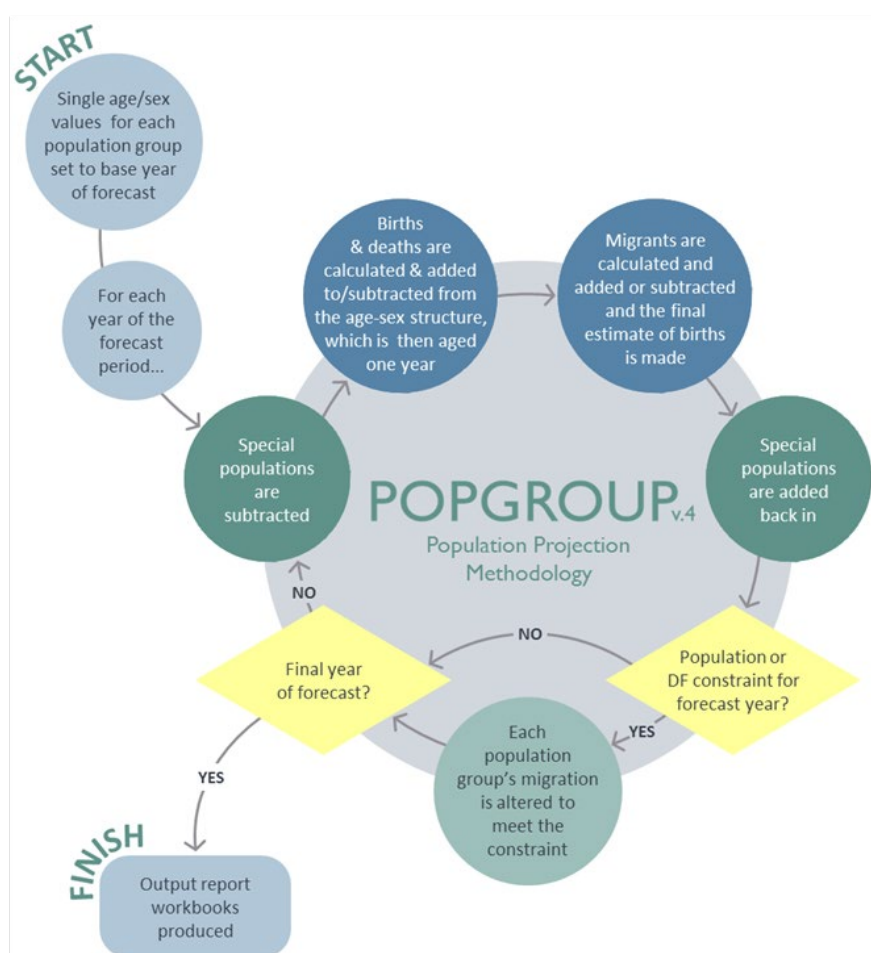
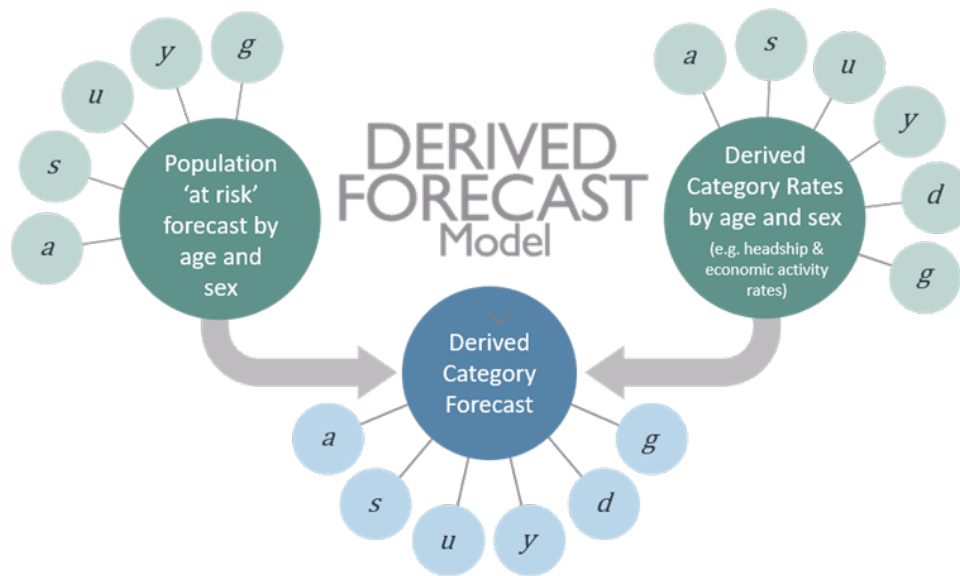


Figure 9: POPGROUP Population Projection Methodology



$$D_{a,s,u,y,d,g} = \frac{P_{a,s,u,y,g} R_{a,s,u,y,d,g}}{100}$$

<i>D</i>	Derived Category Forecast	<i>y</i>	Year
<i>P</i>	Population 'at risk' Forecast	<i>d</i>	Derived category
<i>R</i>	Derived Category Rates	<i>g</i>	Group (usually an area, but can be an ethnic group or social group)
<i>a</i>	Age-group		
<i>s</i>	Sex		
<i>u</i>	Sub-population		

Figure 10: Derived Forecast (DF) methodology

## Appendix B Data Inputs & Assumptions

### Population

- B.1 In each scenario, historical population statistics are provided by ONS mid-year population estimates (MYE), with all data recorded by single year of age and sex. The **SNPP** scenarios use MYE populations up until their 2018 base year. The **Employment-led** scenario uses an ONS 2019 MYE as its base year population.

### Births & Fertility

- B.2 In each scenario, historical mid-year to mid-year counts of births by sex have been sourced from the ONS MYEs. Under the **SNPP** scenarios, historical births counts have been used until each scenario's base year.
- B.3 For the **Employment-led** scenario, birth counts are used from 2001/02 to 2018/19. From 2019/20, an area-specific and age-specific fertility rate (ASFR) schedule is derived from the 2018-based National Population Projections (NPP).
- B.4 In combination with the 'population-at-risk' (i.e. all women between the ages of 15–49), these ASFR assumptions provide the basis for the calculation of births in each year of the forecast period.
- B.5 In each of the **SNPP** scenarios, the future *counts* of births are specified from their base year onwards to ensure consistency with the respective population growth outcomes.

### Deaths & Mortality

- B.6 In each scenario, historical mid-year to mid-year counts of deaths by sex and 5-year age group have been sourced from the ONS MYEs. Under the **SNPP** scenarios, historical deaths counts have been used until each scenario's base year.
- B.7 For the **Employment-led** scenario, death totals are used from 2001/02 to 2018/19. From 2019/20, an area-specific and age-specific mortality rate (ASMR) schedule is derived from the latest 2018-based NPP.
- B.8 In each of the **SNPP** scenarios, the future counts of deaths are specified from their base year onwards to ensure consistency with the respective population growth outcomes.

### Internal Migration

- B.9 In each scenario, historical mid-year to mid-year estimates of internal in- and out-migration by five-year age group and sex have been sourced from the 'components of change' files that underpin the ONS MYE statistics.
- B.10 In the **SNPP** scenarios, these historical estimates are used up to each respective base year, with future counts of migrants specified to remain consistent with the corresponding projection.

- B.11 Under the **Employment-led** scenario, future internal migration assumptions have been derived from a five-year historical period, with migration altered to meet annual employment growth requirements.

## International Migration

- B.12 Historical mid-year to mid-year counts of immigration and emigration by five-year age groups and sex have been sourced from the 'components of population change' files that underpin the ONS MYEs.
- B.13 In the **SNPP** scenarios, these counts are used up to each scenario's respective base year, with future counts of migrants specified directly from the projection statistics.
- B.14 For the **Employment-led** scenario, future international migration assumptions are derived from the five-year historical period.

## Households & Dwellings

- B.15 A household is defined as, "one person living alone, or a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining area". A dwelling is defined as a unit of accommodation which can either be occupied by one household or vacant.
- B.16 The household and dwelling implications of each population growth trajectory have been estimated through the application of household representative rates, communal population statistics and a dwelling vacancy rate. These assumptions have been sourced from the 2011 Census and the MHCLG's 2014- and 2018-based household projection models.

## Household Representative Rates

- B.17 A household representative rate is defined as the "probability of anyone in a particular demographic group being classified as being a household representative".
- B.18 The household representative rates used in the POPGROUP modelling have been taken from the MHCLG 2014-based and ONS 2018-based household projection models, which are underpinned by the ONS 2014- and 2018-based SNPPs. The household projections are derived through the application of projected headship rates to a projection of the private household population. The methodology used by MHCLG and ONS in its household projection model consists of two distinct stages:
- Stage One produces the national and local authority projections for the total number of households by sex, age-group and relationship-status group.
  - Stage Two provides the detailed 'household-type' projection by age-group, controlled to the previous Stage One totals.
- B.19 Under each scenario, Stage Two headship rates have been applied by age-group, sex and 'household type' (Table 4 & Table 5).



Table 4: MHCLG 2014-based Stage Two household type specification

MHCLG Category	Description
One person male	One person households: Male
One person female	One person: Female
Couple no child	One family and no others: Couple households: No dependent children
Cple+adlts no child	A couple and one or more other adults: No dependent children
One child	Households with one dependent child
Two children	Households with two dependent children
Three+ children	Households with three or more dependent children
Other households	Other households with two or more adults

Table 5: ONS 2018-based Stage Two household type specification

ONS Category	Description
One person male	One person households: Male
One person female	One person households: Female
One child	Households with one dependent child
Two children	Households with two dependent children
Three+ children	Households with three or more dependent children
Other households	Other households with two or more adults

## Communal Population Statistics

- B.20 Household projections in POPGROUP exclude the population 'not-in-households' (i.e. the communal/institutional population). These data are drawn from the MHCLG household projections, which use statistics from the 2011 Census. Examples of communal establishments include prisons, residential care homes, student halls of residence and certain armed forces accommodation.
- B.21 For ages 0–74, the number of people in each age group 'not-in-households' is fixed throughout the forecast period. For ages 75–85+, the population 'not-in-households' for ages 75–85+ varies across the forecast period depending on the size of the population.

## Vacancy Rate

- B.22 The relationship between households and dwellings is modelled using a 'vacancy rate', derived from the 2011 Census using statistics on households (occupied household spaces) and dwellings (shared and unshared). A vacancy rate of 3.5% has been applied and fixed throughout the forecast period. Using the vacancy rate, the 'dwelling requirement' of each household growth trajectory has been estimated.

## Labour Force & Jobs

- B.23 The labour force and jobs implications of each population growth trajectory have been estimated through the application of three key economic assumptions: economic activity rates, commuting ratio and an unemployment rate.

### Economic Activity Rates

- B.24 Economic activity rates measure the proportion of the population that are actively involved in the labour force, either employed or unemployed and looking for work.
- B.25 Economic activity rates by five-year age group (ages 16–89) and sex have been derived from Census statistics, with adjustments made in line with the Office for Budget Responsibility's (OBR) analysis of labour market trends in its 2018 Fiscal Sustainability Report<sup>3</sup> (Figure 11).

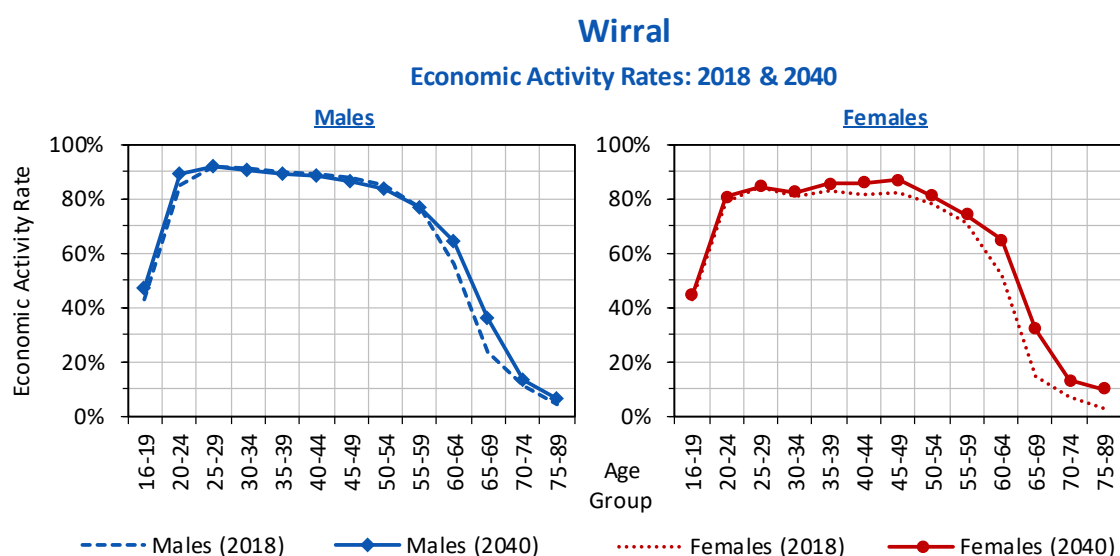


Figure 11: Economic activity rates for Wirral (2018-2040)

### Commuting Ratio

- B.26 The commuting ratio indicates the balance between the level of employment and the number of resident workers. A commuting ratio greater than 1.00 indicates that the size of the resident workforce exceeds the level of employment available in the area, resulting in a net out-commute. A commuting ratio less than 1.00 indicates that employment in the area exceeds the size of the labour force, resulting in a net in-commute.
- B.27 The 2011 Census recorded 140,681 resident workers and a total of 112,947 people engaged in (workplace-based) employment in Wirral. This results in a commuting ratio of 1.25, a net out-commute, which is applied in all scenarios and fixed throughout the forecast period.

<sup>3</sup> OBR Fiscal Sustainability Report 2018

## Unemployment

- B.28 The unemployment rate is the proportion of unemployed people within the total economically active population. Unemployment rates for the 2001–2040 period have been sourced from the OE Liverpool City Region Forecasts<sup>4</sup>.

## Employment Forecasts

- B.29 An Employment-led scenario models the demographic impact of a projected level of annual employment growth, measured as *workplace-based employment*. Workplace-based employment is a ‘people-based’ measure, rather than a jobs-based measure of economic activity. The two measures are directly related, but the jobs-based measure is typically reported in employment forecasts, including both full-time and part-time positions. The workplace-based employment figure measures the number of people employed, linking directly to people-based measures of unemployment, commuting and economic activity.
- B.30 The **Employment-led\_OE** scenario models the demographic impact of the annual workplace-based employment growth outlined directly in the OE employment forecasts for Wirral. The annual change in employment applied under the scenarios is illustrated (Figure 12).

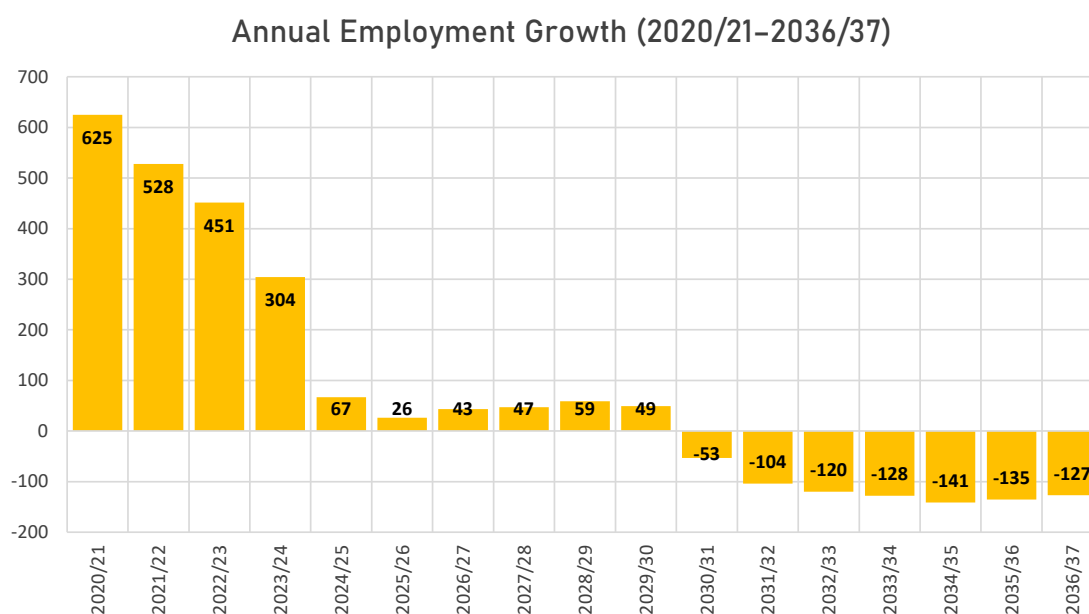
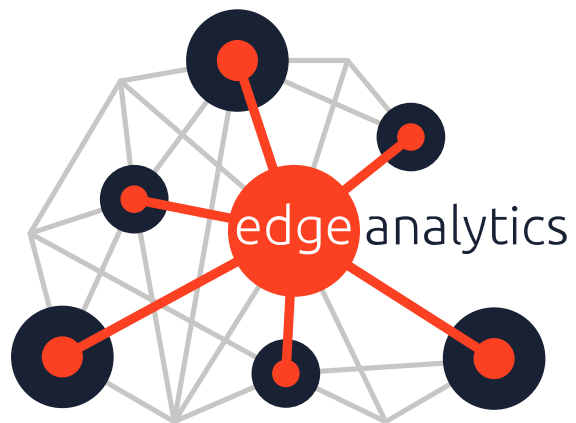


Figure 12: Wirral – Oxford Economics employment growth forecast

- B.31 The OE economic forecast projects an average annual employment growth of +82 per year over the plan period, with annual employment growth expected in each year up to 2029/30, with a decline in each year thereafter.
- B.32 In running the **Employment-led\_OE** scenario, economic activity rates and the commuting ratio are consistent with the trend scenarios, whilst the unemployment rate is consistent with that estimated in the OE employment forecast.

<sup>4</sup> Forecasts provided to edge by Arc4



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