Wirral

SHMA Update – Demographic Evidence

December 2020

edge analytics

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Acknowledgements

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Contents

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 POPGROUP technology has been used to configure growth scenarios for Wirral. The 2014-based ONS *Principal* projection, plus the full suite of variants that make up the 2018-based ONS projections are compared directly to Employment-led scenarios, which evaluate the impact of a total employment growth of 1,392 over the 2020-2037 plan period, under both 2014-based and 2018-based demographic assumptions.

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).

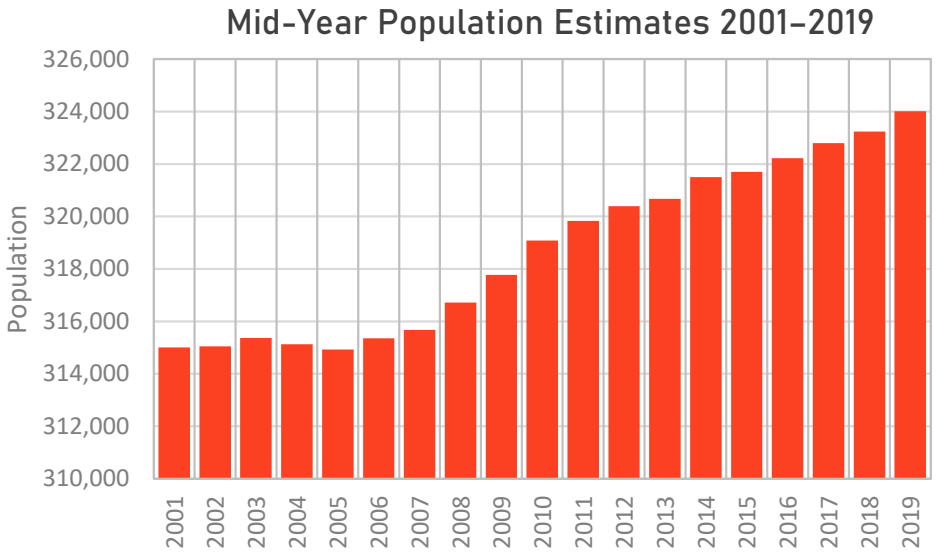


Figure 1: Mid-Year Population Estimates, 2001-2019 (Source: ONS)

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

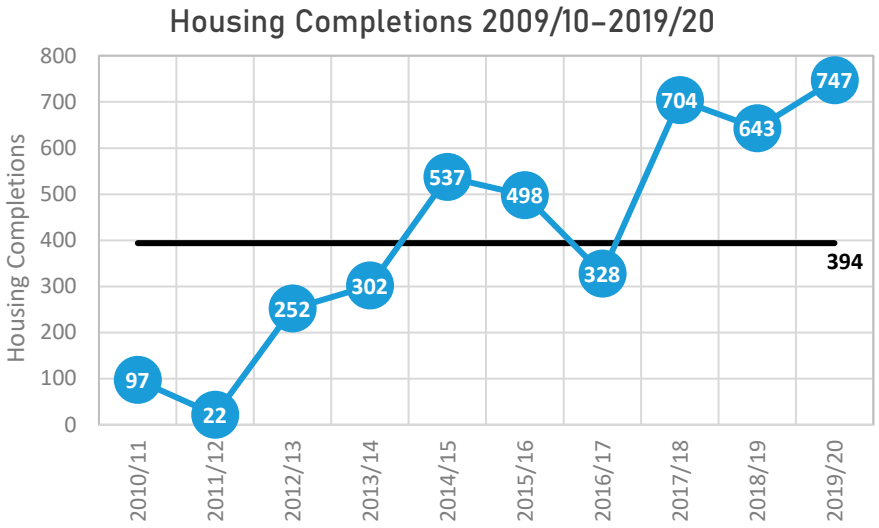


Figure 2: Housing Completions, 2009/10–2019/20 (Source: AMR 2015/16, 2016/17, 2017/18[1] and MHCLG[2])

[1] Wirral Council - Annual Monitoring Reports
[2] 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).

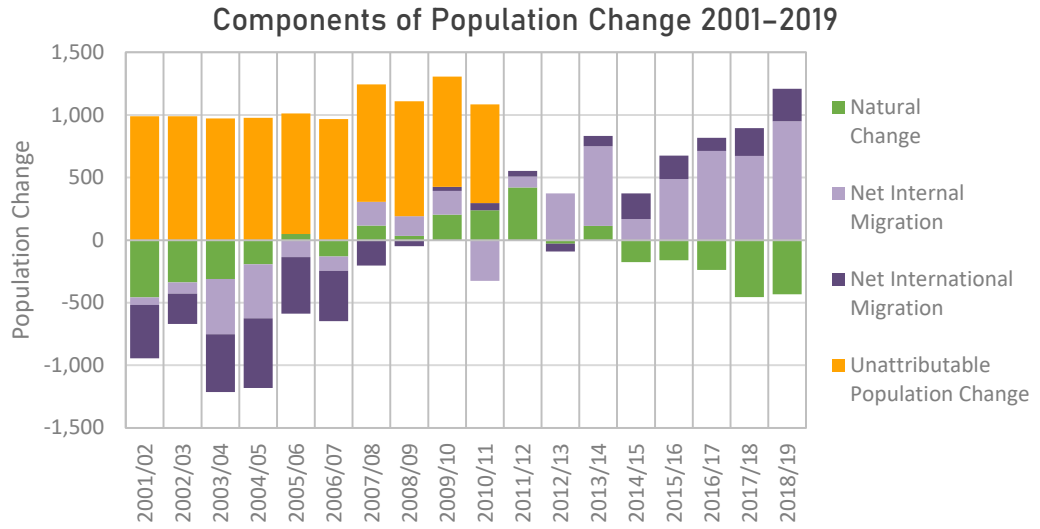


Figure 3: Components of Population Change, 2001/02-2018/19 (Source: ONS)

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).

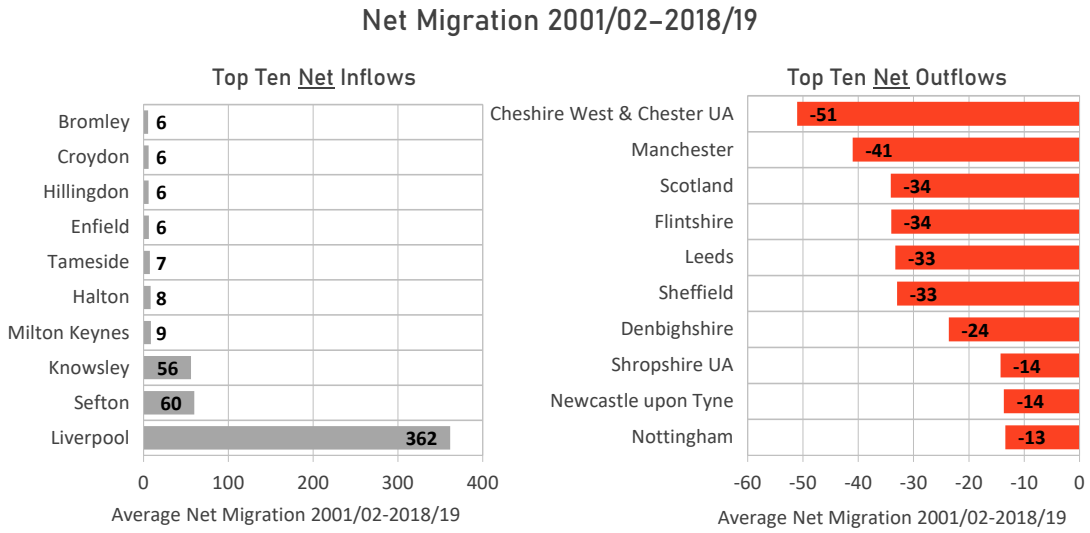


Figure 4: Top Ten Net Migration Inflows and Outflows, 2001/02–2018/19 (Source: ONS)

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).

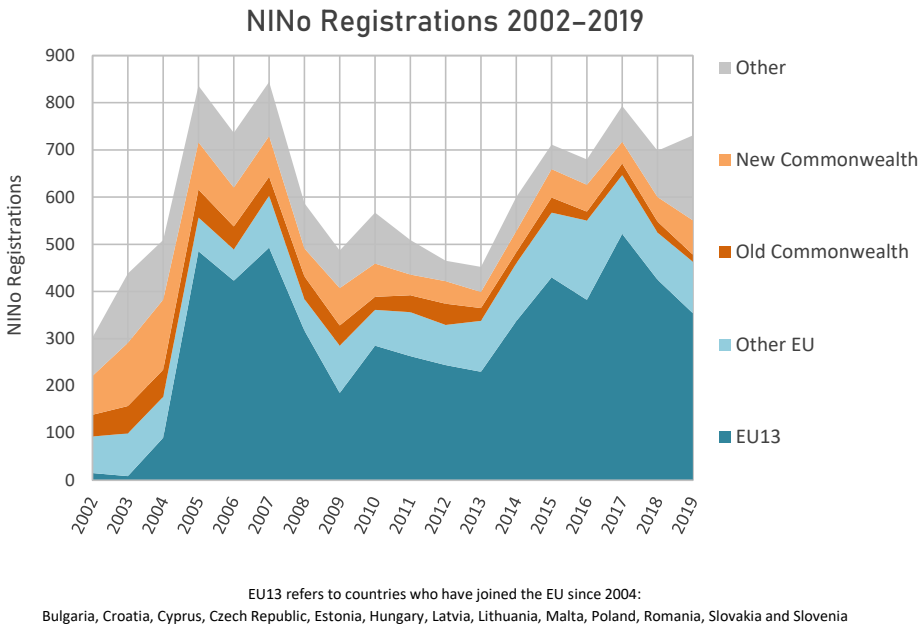


Figure 5: NINo registrations by Country of Origin, 2002-2019 (Source: DWP)

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

Scenario Definition

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 2014-based *Principal* projection, plus the full suite of variants that make up the 2018-based ONS projections (Table 1).

3.3 The employment-led scenarios consider 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 but underpinned by both 2014-based and 2018-based demographic assumptions.

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).

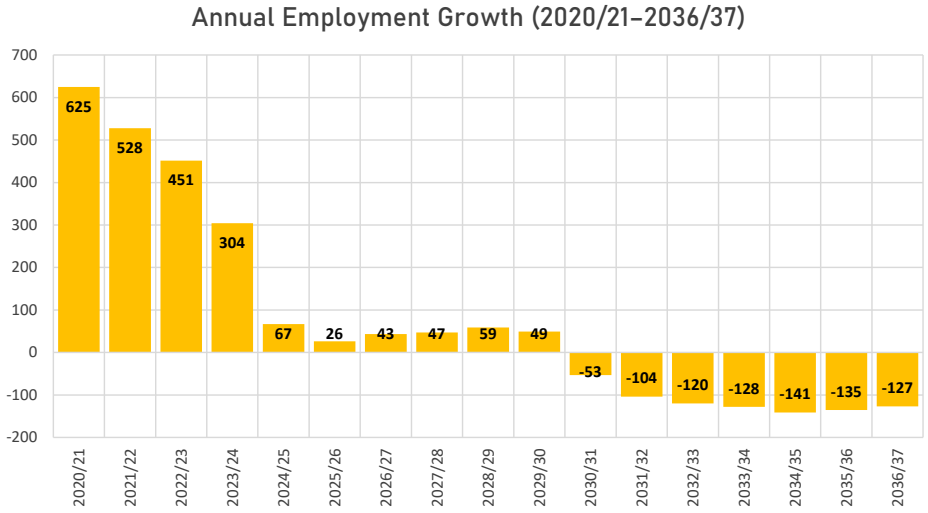


Figure 6: Wirral – Oxford Economics employment growth forecast

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.

Table 1: Scenario Definition

1.	SNPP-2014	Replicates the ONS 2014-based SNPP *Principal* population projection, using historical population evidence for 2001–2014.
2.	SNPP-2018	Replicates the ONS 2018-based SNPP *Principal* population projection, using historical population evidence for 2001–2018.
3.	SNPP-2018-HIGH	Replicates the ONS 2018-based SNPP *Higher Migration* population projection, using historical population evidence for 2001–2018. This variant assumes higher levels of net international migration.
4.	SNPP-2018-LOW	Replicates the ONS 2018-based SNPP *Lower Migration* population projection, using historical population evidence for 2001–2018. This variant assumes lower levels of net international migration.
5.	SNPP-2018-ALTERNATIVE	Replicates the ONS 2018-based SNPP *Alternative Internal Migration* 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.
6.	SNPP-2018-10YR	Replicates the ONS 2018-based SNPP *Alternative Internal Migration* population projection, using historical evidence for 2001–2018. This variant uses 10 years of all migration data to inform the projection.
7.	Employment-led_OE_SNPP2014	Models the impact of an average annual employment growth of +82 per year, detailed in an Oxford Economics forecast. The forecast is underpinned by demographic assumptions from the ONS 2014-based SNPP projection.
8.	Employment-led_OE_SNPP2018	Models the impact of an average annual employment growth of +82 per year, detailed in an Oxford Economics forecast. The forecast is underpinned by demographic assumptions from the ONS 2018-based SNPP projection.

Scenario Outcomes

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 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** and **Employment-led_OE_2014** scenarios. This range of population growth equates to an estimated housing requirement of +550 to +927 dwellings per annum (dpa).

3.10 The **SNPP-2014** and **SNPP-2018** scenarios estimate similar levels of population growth but with very different migration profiles. The higher migration effect associated with the **SNPP-2018** outcome is dampened by the lower fertility and higher mortality assumptions of the 2018-based round of ONS projections. Due to the different migration impacts, the dwelling growth differs between the scenarios, +804 dpa for the **SNPP-2018**, compared to +656 dpa for the **SNPP-2014**.

3.11 The **Employment-led_OE** scenarios model an average annual employment growth of +82 per year. The workplace-based employment forecast has been used to estimate likely population and dwelling 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 Two variants of the **Employment-led_OE** scenario have been produced, the first underpinned by 2014-based demographic assumptions, the second by 2018-based assumptions, in each case using a 2019 base year population. The use of these alternative demographic inputs results in a range of outcomes for the Employment-led_OE scenarios, driven by the very different fertility, mortality and migration assumptions associated with the 2014-based and 2018-based projections and the resulting age-structures associated with each.

3.13 The **Employment-led_OE_SNPP2018** scenario results in a 1.1% population growth over the 2020–2037 plan period, with a +1,023 net annual in-migration required to support the targeted employment growth and an annual dwelling growth requirement of +691 dpa.

3.14 Primarily as a result of higher fertility and lower mortality assumptions, the **Employment-led_OE_SNPP2014** scenario results in higher population growth of 4.0% over the 2020–2037 plan period, with a +823 net annual in-migration required to support the targeted employment growth and an annual dwelling growth requirement of +785 dpa.

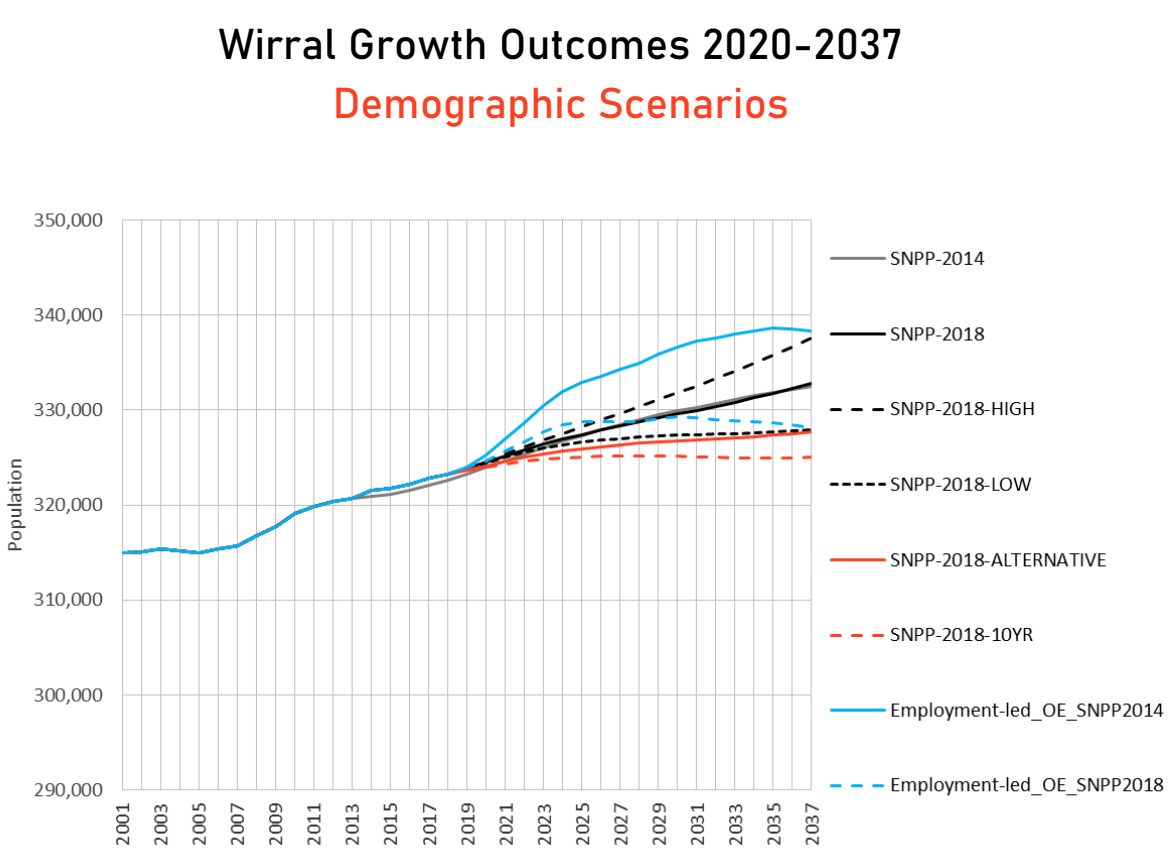


Figure 7: Wirral Population Growth Scenarios, 2001–2037

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
Employment-led_OE_SNPP2014	13,070	4.0%	12,870	8.7%	823	785
SNPP-2018-HIGH	12,991	4.0%	15,204	10.3%	1,536	927
SNPP-2014	8,543	2.6%	10,757	7.3%	626	656
SNPP-2018	8,215	2.5%	13,186	8.9%	1,300	804
SNPP-2018-ALTERNATIVE	3,572	1.1%	10,927	7.4%	1,107	666
Employment-led_OE_SNPP2018	3,474	1.1%	11,332	7.7%	1,023	691
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

In this table, all scenarios have used 2014-based household representative rates (HRR)

HRR Alternatives

3.15 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 3: Wirral Annual Dwelling Requirement, 2020–2037

Scenario	Average Dwellings Per Year	
	HH-14	HH-18
Employment-led_OE_SNPP2014	785	588
SNPP-2018-HIGH	927	722
SNPP-2014	656	473
SNPP-2018	804	608
SNPP-2018-ALTERNATIVE	666	477
Employment-led_OE_SNPP2018	691	498
SNPP-2018-LOW	681	493
SNPP-2018-10YR	550	364

3.16 The 2018-based rates have been formulated differently to the 2014-based (see Appendix B) and remain fixed from 2021, unlike the 2014-based rates which are projected over a 25-year horizon.

3.17 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.

Labour Force and Employment

3.18 The key assumptions on rates of economic activity, unemployment and commuting (see Appendix B) have been applied to each of the SNPP scenarios across the 2020–2037 period, to enable comparison with the employment growth outputs of the **Employment-led_OE** scenarios (Figure 8).

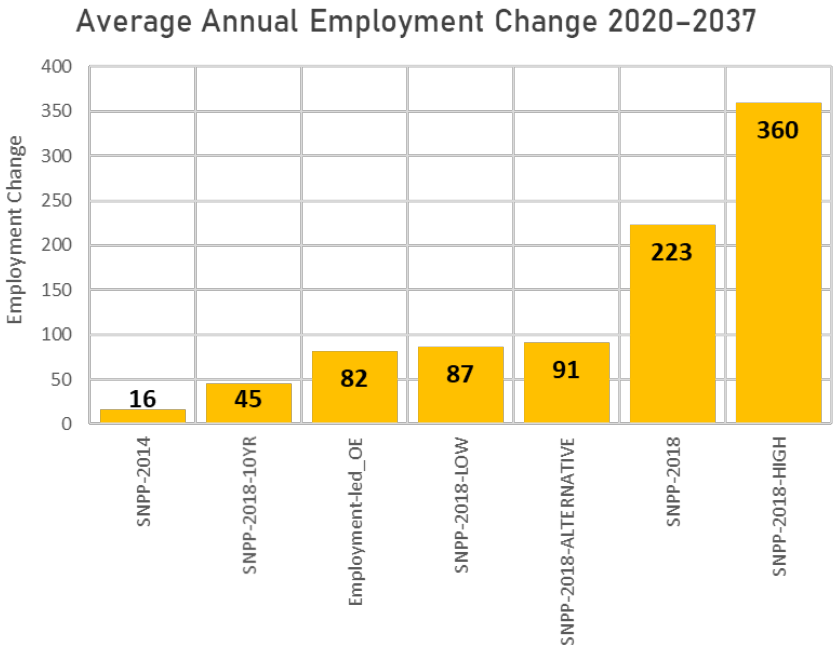


Figure 8: Average Annual Employment Growth Scenarios, 2020–2037

3.19 Estimated employment growth varies from +16 per year under the **SNPP-2014** scenario, to +360 under the **SNPP-2018-High** scenario.

3.20 The changing age profile associated with each scenario is an important determinant of estimated employment growth. The profile of change for the **Employment-led_OE_SNPP2014** and **Employment-led_OE_SNPP2018** scenarios is presented (Figure 9).

3.21 The age-group profiles differ in two key areas. The **Employment-led_OE_SNPP2014** is underpinned by higher fertility and lower mortality assumptions. This results in higher growth in the younger age-groups and, most importantly, in the older age-groups, the key driver of higher dwelling growth requirements under this scenario.

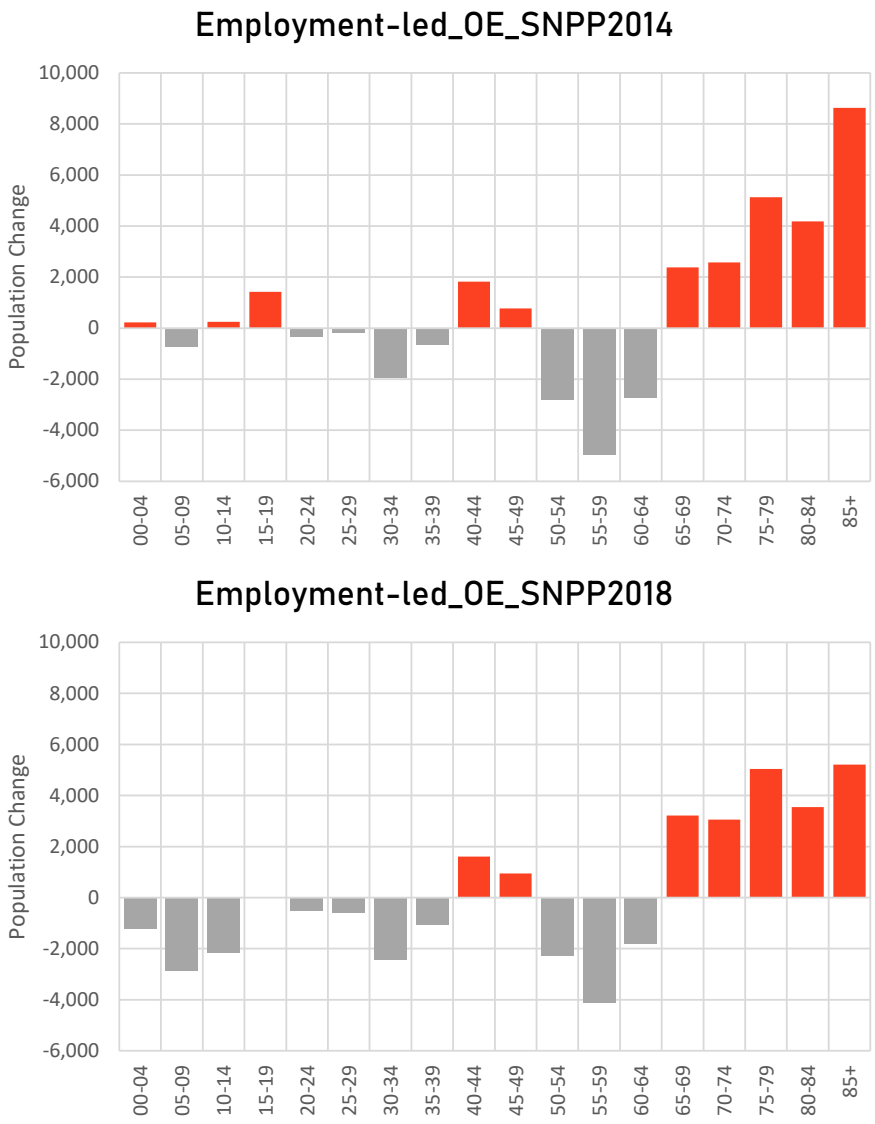


Figure 9: Estimated Population Change by Age-Group, 2020–2037

4 Summary

4.1 Wirral Council is in the process of updating its SHMA. The Council has sought to evaluate the impact of employment growth 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 scenarios for Wirral. Under each scenario, population, household, migration, dwelling and employment growth is presented over a 2020–2037 plan period. The 2014-based ONS *Principal* projection, plus the full suite of variants that make up the 2018-based ONS projections are compared directly to Employment-led scenarios, which evaluate the impact of a total employment growth of 1,392 over the 2020-2037 plan period, under both 2014-based and 2018-based demographic assumptions.

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.

4.4 Over the 2020–2037 plan period, population growth of 0.3% to 4.0% is estimated under the range of scenarios. The associated average annual dwelling growth ranges from +550 to +927 dpa using 2014-based headship rates and +364 to +722 using the 2018-based headship rates.

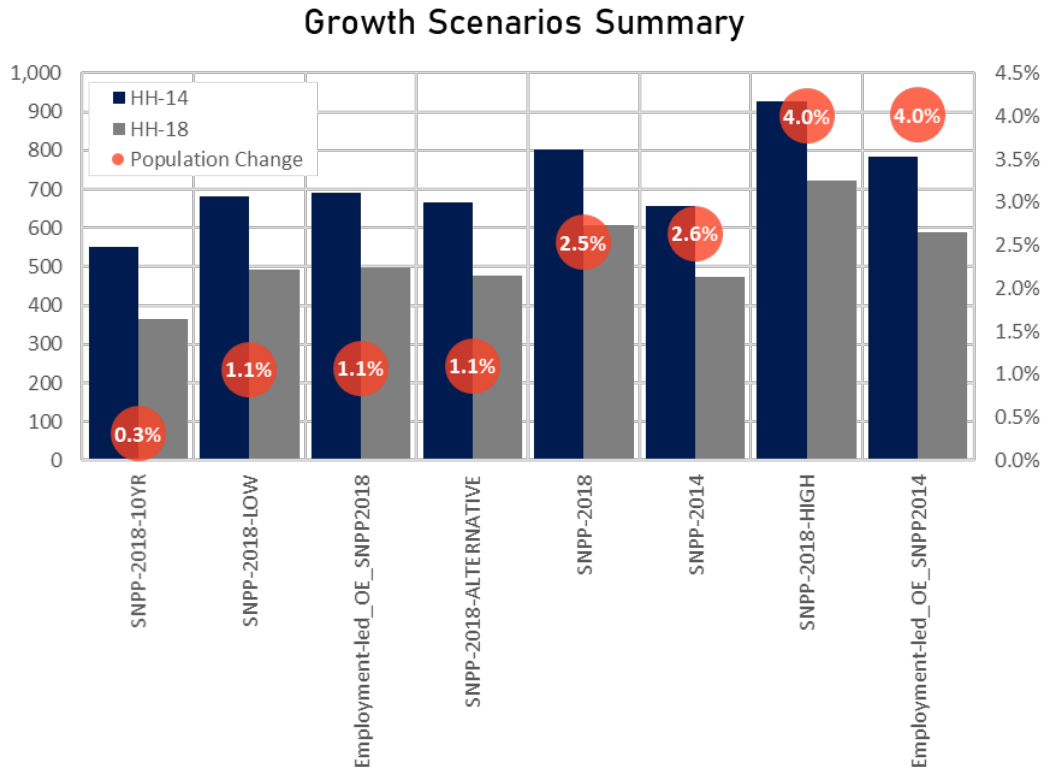


Figure 10: Wirral Growth Scenarios Summary, 2020–2037

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 11) 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 12) 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

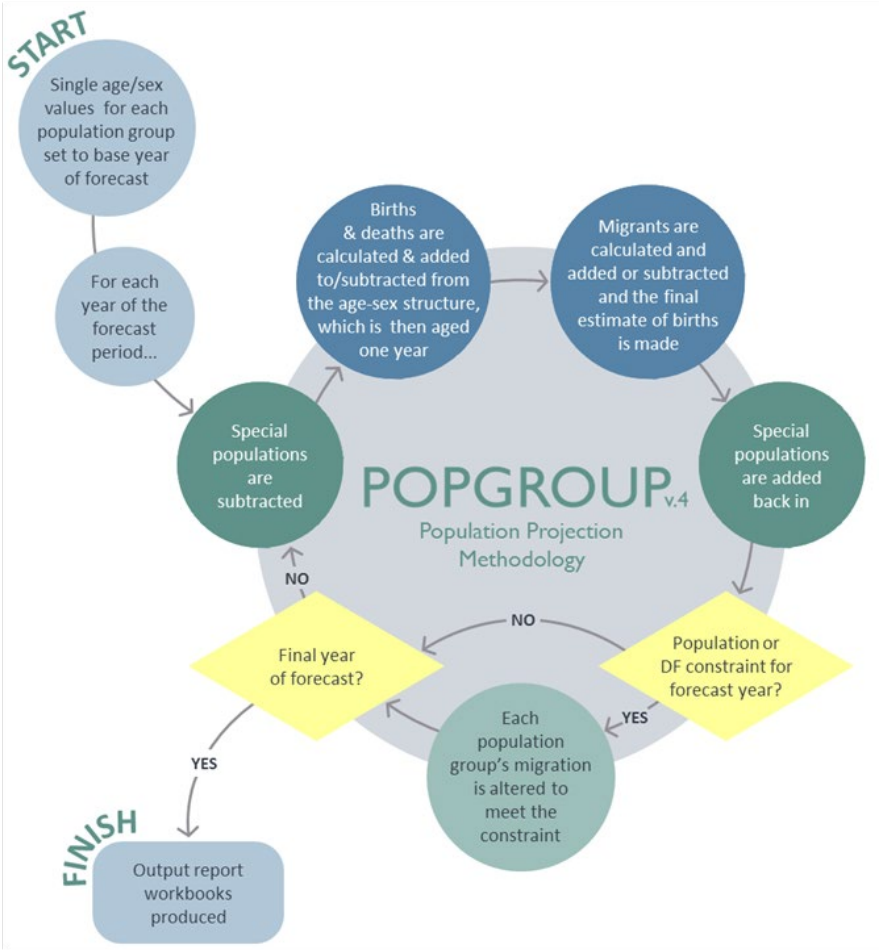
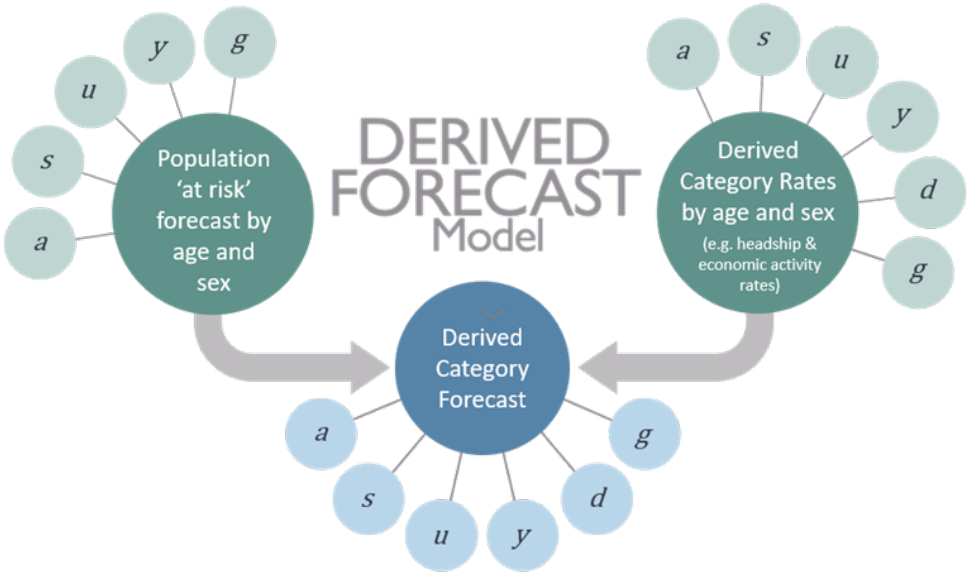


Figure 11: POPGROUP Population Projection Methodology



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

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

Figure 12: 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** scenarios use an ONS 2019 MYE as their 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** scenarios, 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** scenarios, 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** scenarios, 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** scenarios, 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[3] (Figure 13).

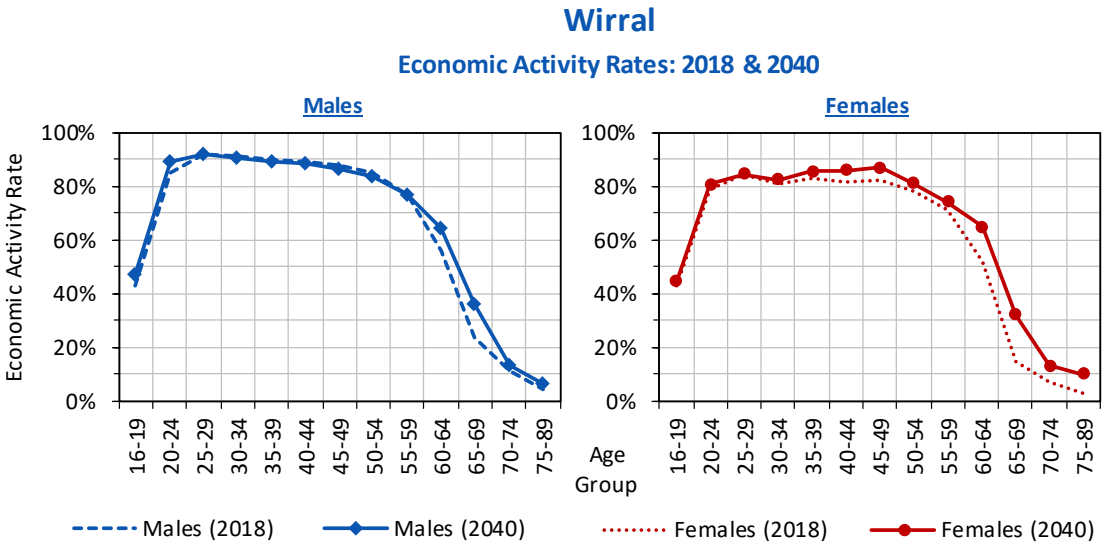


Figure 13: Economic activity rates for Wirral (2018-2040)

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.

[3] 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.

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** scenarios model 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 14).

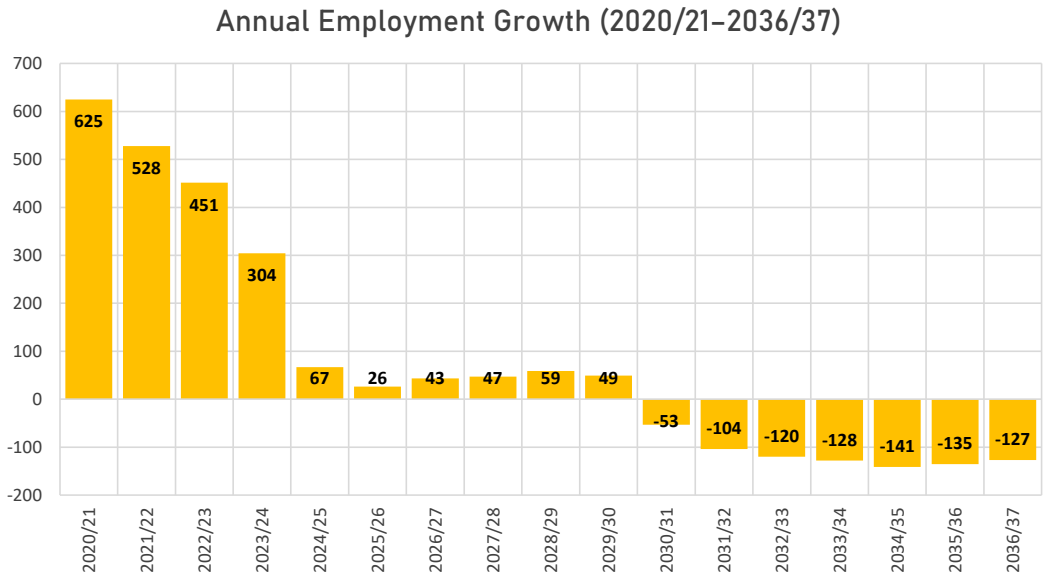
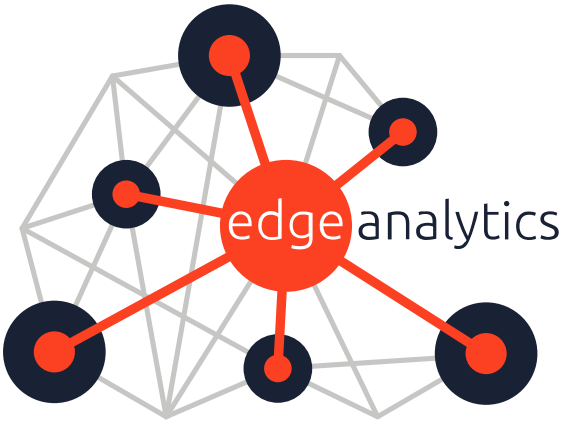


Figure 14: Wirral – Oxford Economics employment growth forecast

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.



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