WRSE

FORECAST COMPARISON

June 2023

EDGE ANALYTICS

Nexus | Discovery Way | University of Leeds | Leeds | LS2 3AA
0113 819 5087 | www.edgeanalytics.co.uk

ACKNOWLEDGEMENTS

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CONTENTS

1 INTRODUCTION

1.1 The Water Resources South East (WRSE) group is an alliance of the six water companies that cover the South East region of England: Affinity Water, Portsmouth Water, SES Water, South East Water, Southern Water, and Thames Water.

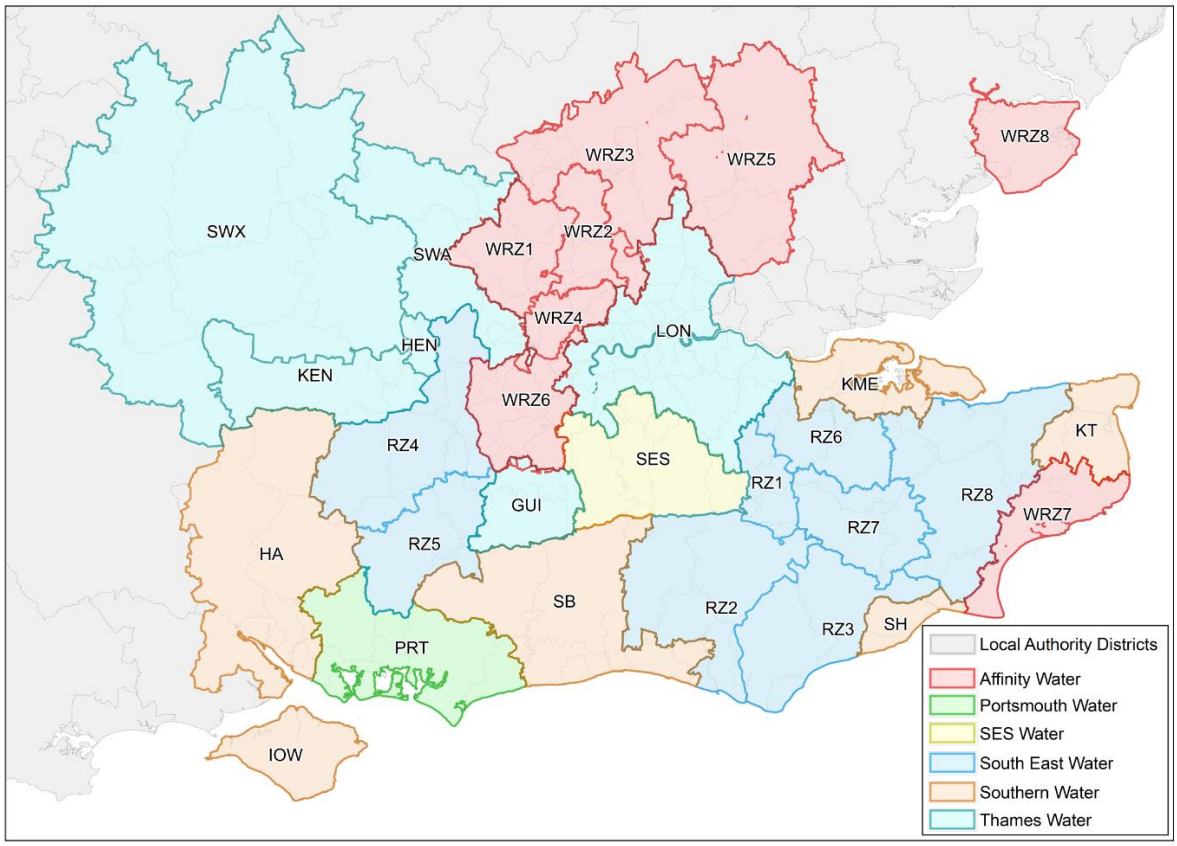


Figure 1: WRSE Area Definition

1.2 In spring and summer 2020, Edge Analytics delivered a suite of demographic and housing evidence to WRSE to inform the development of their Water Resource Management Plans (WRMP). The deliverables included (amongst other items):

- Local Plan Housing Growth information, from the Edge Analytics Consilium database
- Population and housing forecasts generated using Edge Analytics' VICUS forecasting technology (for a forecast period 2020–2100 and a range of trend-based, housing-led and employment-led scenarios)[1].

[1] *For the full list of scenarios refer to Appendix A.*

1.3 Since the 2020 delivery, there have been a number of important data releases (e.g., Census 2021 results, more up-to-date Local Plan Housing Growth information), which highlighted the need to revisit the forecasts and update them in light of this new information.

1.4 In February 2023, WRSE commissioned Edge Analytics to produce updated population and property forecasts, taking account of the latest demographic and housing statistics[2]. The outputs were produced for a 2021–2101 forecast period and for a sub-set of the 2020 scenarios, including:

- ONS-18-Rebased-P
- ONS-18-Rebased-L
- Housing-Plan-P
- Housing-Need-H
- OxCam-1a-r-P.

1.5 An additional scenario was also produced, which was not included in the 2020 forecasts:

- OxCam-1a-P.

1.6 A detailed description of each of the scenarios is provided in Section 3 of this document.

1.7 This concise report aims to help in understanding how the 2023 forecasts compare to those produced in 2020, summarising the key differences in terms of methods, data inputs and assumptions (Section 2). A side-by-side comparison of the forecast outcomes is also presented at regional and company level in Section 3. Section 4 of the document provides a timeline of expected future data releases which will provide additional intelligence which can feed into future updated population and housing forecasts.

[2] Note that the latest Local Plan Housing Growth data was used to inform the scenario forecast development in February 2023, but it did not form part of the 2023 deliverable to WRSE.

2 METHODS, DATA INPUTS & ASSUMPTIONS

2.1 The overall approach for the development of the 2023 forecasts remains the same as in 2020. A detailed description of the forecasting framework can be found in the earlier Edge Analytics' report: VICUS - Methodology - Final - 31.07.2020.

2.2 This section focuses on the key changes to the methods, data inputs and assumptions that were required for the 2023 update.

2.3 The main drivers of the differences between the 2020 and 2023 forecasts are different **base years** and changes to the **housing growth evidence** informing the Housing-Need and Housing-Plan scenarios. Other methodological/data changes have also had an impact on the forecast outcomes but to a lesser extent. All are discussed in more detail below.

Base Year

2.4 In the 2020 forecasts, the **2018** mid-year population estimates (MYE) provided the forecast base year. In the 2023 forecasts, the base year was updated to the **2021** MYEs, which were published by the Office for National Statistics (ONS) in December 2022. Importantly, the 2021 MYEs are the first MYEs to be underpinned by the Census 2021.

2.5 In the years in between the decennial Census, the population is estimated via an annual ONS MYE. This estimate takes account of registered births and deaths and estimates of domestic and international migration.

2.6 The output from the Census 2021 and the subsequent 2021 MYEs derived from it have shown differences in both the *population total* and the underlying *structure of the population* (its composition by age and sex) when compared to the MYEs that preceded it.

Local Plan Housing Growth Data

2.7 Local Plan Housing Growth data provides the housing growth trajectories that drive population growth under the Housing-Need and Housing-Plan scenarios. In addition, it is the source of the housing development site information that further enhances the Housing-Plan scenario, ensuring that the growth forecasts are distributed in line with the location and phasing of future housing developments.

2.8 In both sets of the forecasts (2020 and 2023), the 'Need' and 'Plan' housing trajectories were drawn from the Edge Analytics Consilium Local Plan Housing Growth database. However, the information used in the 2020 forecasts was last updated in **March–April 2020**, whereas in the 2023 forecasts this data was last updated in **January–February 2023**.

Other Changes

2.9 A number of other methodological/data changes were required for the 2023 update, including:

- Coercion of historical demographic inputs (population, households, population not-in-households, etc.) to a Census 2021 Output Area (OA21) geography.
- Alignment of the Census 2021 population, households and population not-in-households at district and small area level.
- Use of the Census/2021 MYE data to devise population by single year of age and sex constraints at OA21 level (not available from official releases).
- Modelling of population not-in-households data by age groups and sex from available partial Census 2021 data, aligning it with 2021 MYE.
- Updating/estimating other model inputs, such as household, vacancy, and properties to an OA21 basis, utilising Census 2021 where available.
- Rescaling Sub-National Population Projection (SNPP) trajectories to a 2021 MYE starting point and extending them to 2050.
- Rescaling of household headship rates to a rebased Census 2021 value.
- Reformulation of all models to accept the new Census/2021 MYE data.

3 SCENARIO OUTCOMES

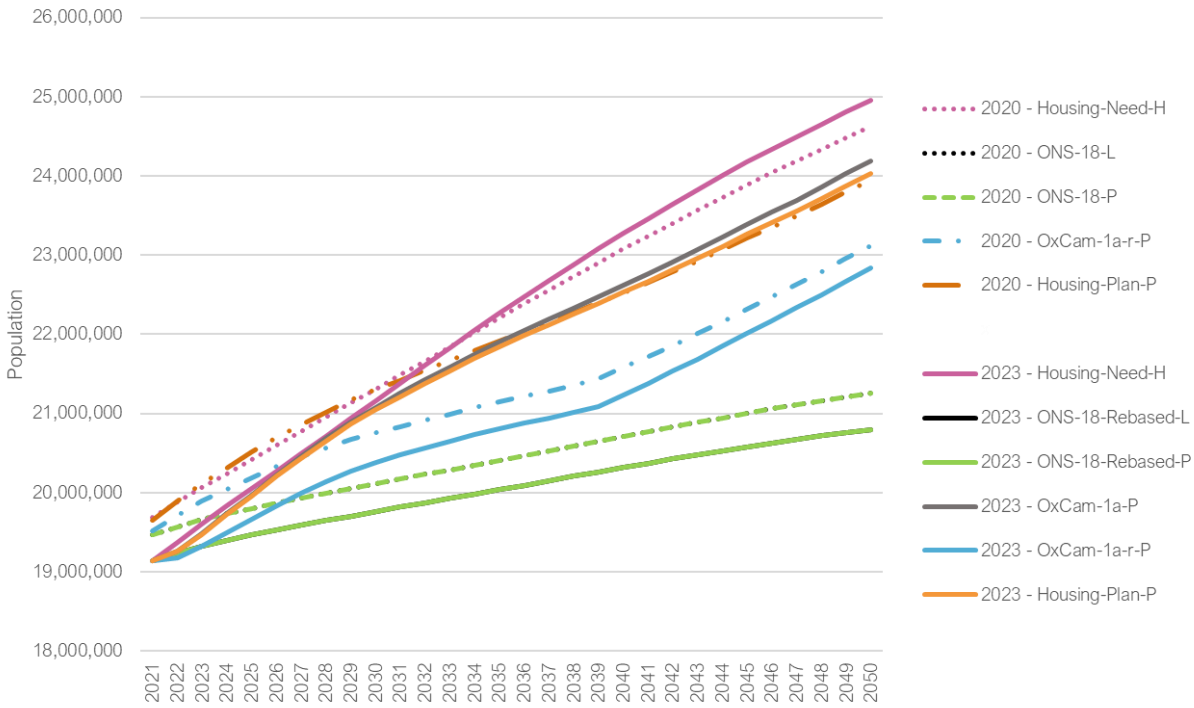
3.1 The 2023 forecasts were produced for the following scenarios:

ID	SCENARIO	DESCRIPTION
1a	ONS-18-Rebased-P	ONS 2018-based *Principal* sub-national population projection (SNPP), using a five-year history (2013–2018) to derive local fertility & mortality assumptions and a long-term UK net international migration assumption of +190k. Unlike earlier rounds of SNPP, the 2018-based Principal projection uses a two-year history (2016–2018) of internal migration assumptions, following recent changes to the methodology used for its estimation, which have only covered the latest 2 years. **This scenario has been rebased to the 2021 MYE.** From 2050 to 2101, growth under this scenario is trended in line with the *Principal* (-P) 2018-based national population projection (NPP) from ONS.
1b	ONS-18-Rebased-L	ONS 2018-based *Principal* SNPP using a five-year history (2013–2018) to derive local fertility & mortality assumptions and a long-term UK net international migration assumption of +190k. Unlike earlier rounds of SNPP, the 2018-based Principal projection uses a two-year history (2016–2018) of internal migration assumptions, following recent changes to the methodology used for its estimation, which have only covered the latest 2 years. **This scenario has been rebased to the 2021 MYE.** From 2050 to 2101, growth under this scenario is trended in line with the *Low migration* (-L) variant of the ONS 2018-based NPP.
2	Housing-Need-H	A Housing-led scenario, with population growth underpinned by the trajectory of housing growth associated with each local authority's Local Housing Need (LHN) or Objectively Assessed Housing Need (OAHN). Following the final year of data, projected housing growth in non-London areas returns to the average of ONS-14 & ONS-16 long-term annual growth average by 2050. For London Boroughs, housing growth returns to the GLA Central scenario long-term annual average by 2050. From 2050 to 2101, growth under this scenario is trended in line with the *High migration* (-H) variant of the ONS 2018-based NPP.
3	Housing-Plan-P	A Housing-led scenario, with population growth underpinned by each local authority's Local Plan housing growth trajectory. Following the final year of data, projected housing growth in non-London areas returns to the average of ONS-14 & ONS-16 long-term annual growth average by 2050. For London Boroughs, housing growth returns to the GLA Central scenario long-term annual average by 2050. From 2050 to 2101, growth under this scenario is trended in line with the *Principal* (-P) 2018-based NPP from ONS.
4	OxCam-1a-P	'New Settlement' 23k dpa scenario, with c.3.8k dpa above Housing-Plan distributed between Cherwell (20%), Aylesbury Vale (20%), Central Bedfordshire (40%), South Cambridgeshire (20%). From 2050 to 2101, growth under this scenario is trended in line with the *Principal* (-P) 2018-based NPP from ONS.
5	OxCam-1a-r-P	A Housing-led scenario, consistent with the OxCam-1a scenario, but with household representative rates for young adults returning to (higher) 2001 levels by 2039, remaining fixed thereafter. From 2050 to 2101, growth under this scenario is trended in line with the *Principal* (-P) 2018-based NPP from ONS.

3.2 Scenario outcomes for these scenarios, compared to the equivalent scenarios from the 2020 forecasts, are presented below. Note that an additional OxCam scenario was included in the 2023 projections (OxCam-1a-P) that was not delivered as part of the 2020 scenarios.

3.3 For WRSE in total and each constituent water company, the summaries include a chart showing population growth between 2021 and 2050 and two tables contrasting population change and average dwellings per annum for the medium- (2021–2050) and long-term (2021–2100) forecast periods.

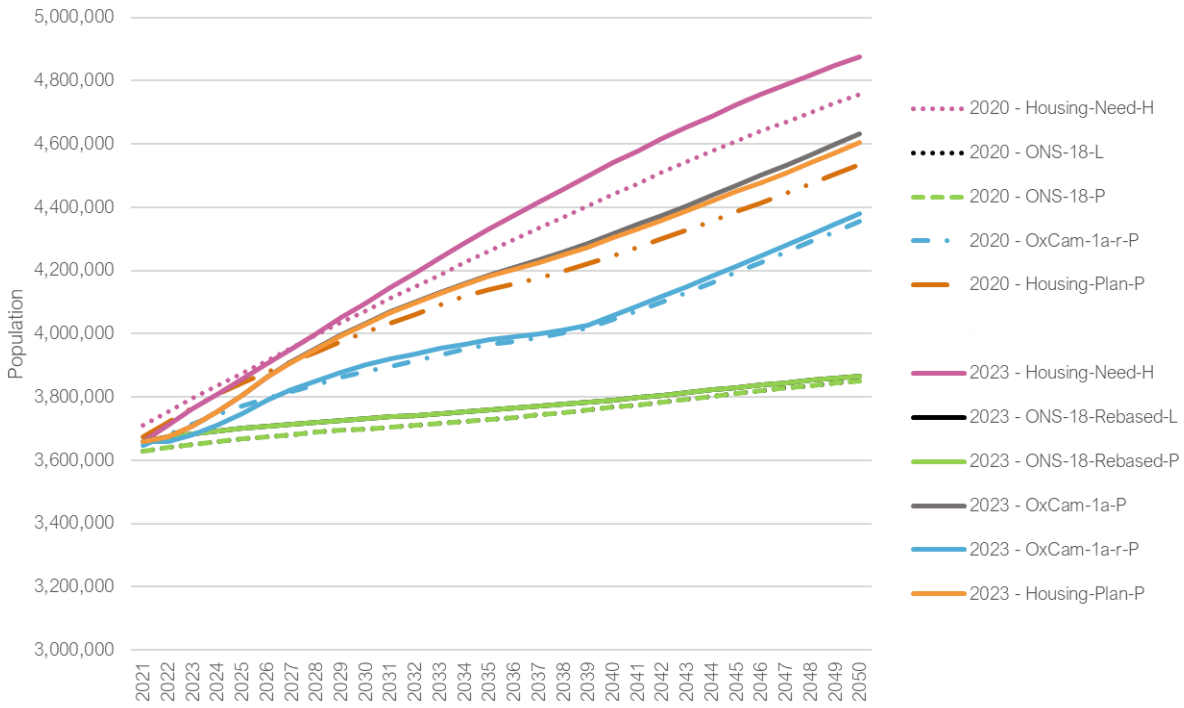
WRSE



2020 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	19,692,433	24,628,751	4,936,318	25.1%	99,131	19,692,433	29,805,795	10,113,361	51.4%	75,819
Housing-Plan-P	19,648,395	23,945,684	4,297,290	21.9%	89,688	19,648,395	27,011,856	7,363,461	37.5%	58,558
ONS-18-L	19,473,684	21,251,483	1,777,798	9.1%	51,770	19,473,684	22,074,570	2,600,886	13.4%	29,409
ONS-18-P	19,473,684	21,251,483	1,777,798	9.1%	51,770	19,473,684	24,031,005	4,557,320	23.4%	42,021
OxCam-1a-r-P	19,514,665	23,117,138	3,602,473	18.5%	91,761	19,514,665	26,092,542	6,577,877	33.7%	59,484

2023 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	19,136,248	24,959,131	5,822,883	30.4%	105,433	19,136,248	29,243,867	10,107,619	52.8%	69,438
Housing-Plan-P	19,136,298	24,028,276	4,891,978	25.6%	91,840	19,136,298	25,884,596	6,748,298	35.3%	49,432
ONS-18-Rebased-L	19,136,248	20,799,731	1,663,482	8.7%	46,074	19,136,248	20,231,861	1,095,613	5.7%	17,364
ONS-18-Rebased-P	19,136,248	20,799,731	1,663,482	8.7%	46,074	19,136,248	22,442,699	3,306,451	17.3%	30,832
OxCam-1a-P	19,136,248	24,193,687	5,057,439	26.4%	94,542	19,136,248	26,060,611	6,924,363	36.2%	50,562
OxCam-1a-r-P	19,136,248	22,842,472	3,706,224	19.4%	94,469	19,136,248	24,629,081	5,492,833	28.7%	50,533

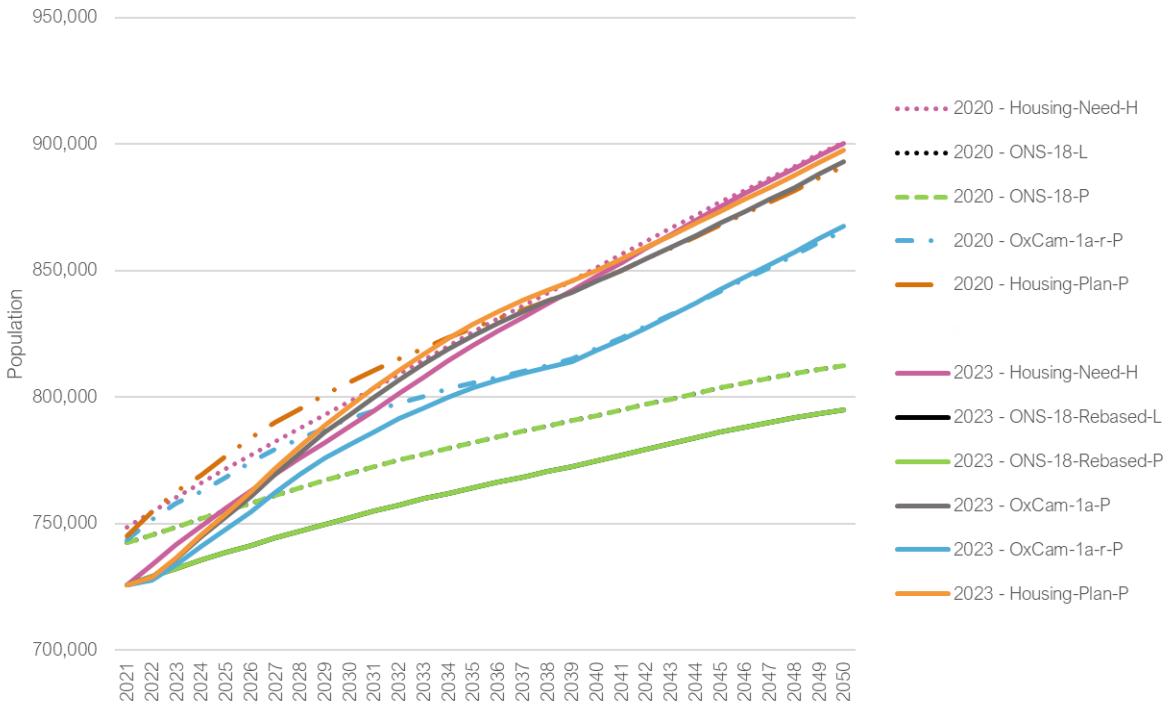
Affinity Water (WRZ 1–7)



2020 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	3,712,322	4,756,450	1,044,128	28.1%	20,185	3,712,322	5,757,125	2,044,803	55.1%	14,996
Housing-Plan-P	3,675,735	4,534,814	859,079	23.4%	21,776	3,675,735	5,108,527	1,432,793	39.0%	13,576
ONS-18-L	3,627,846	3,851,581	223,735	6.2%	7,979	3,627,846	3,988,751	360,905	9.9%	4,814
ONS-18-P	3,627,846	3,851,581	223,735	6.2%	7,979	3,627,846	4,352,547	724,701	20.0%	7,087
OxCam-1a-r-P	3,645,711	4,356,258	710,547	19.5%	17,418	3,645,711	4,912,389	1,266,677	34.7%	11,232

2023 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	3,659,990	4,876,354	1,216,364	33.2%	21,484	3,659,990	5,675,305	2,015,315	55.1%	13,517
Housing-Plan-P	3,659,509	4,603,991	944,483	25.8%	17,540	3,659,509	4,923,200	1,263,692	34.5%	9,113
ONS-18-Rebased-L	3,659,990	3,867,145	207,156	5.7%	7,115	3,659,990	3,730,791	70,801	1.9%	2,478
ONS-18-Rebased-P	3,659,990	3,867,145	207,156	5.7%	7,115	3,659,990	4,140,910	480,920	13.1%	4,914
OxCam-1a-P	3,659,990	4,633,982	973,992	26.6%	18,169	3,659,990	4,955,098	1,295,109	35.4%	9,389
OxCam-1a-r-P	3,659,990	4,381,606	721,617	19.7%	18,108	3,659,990	4,689,747	1,029,757	28.1%	9,365

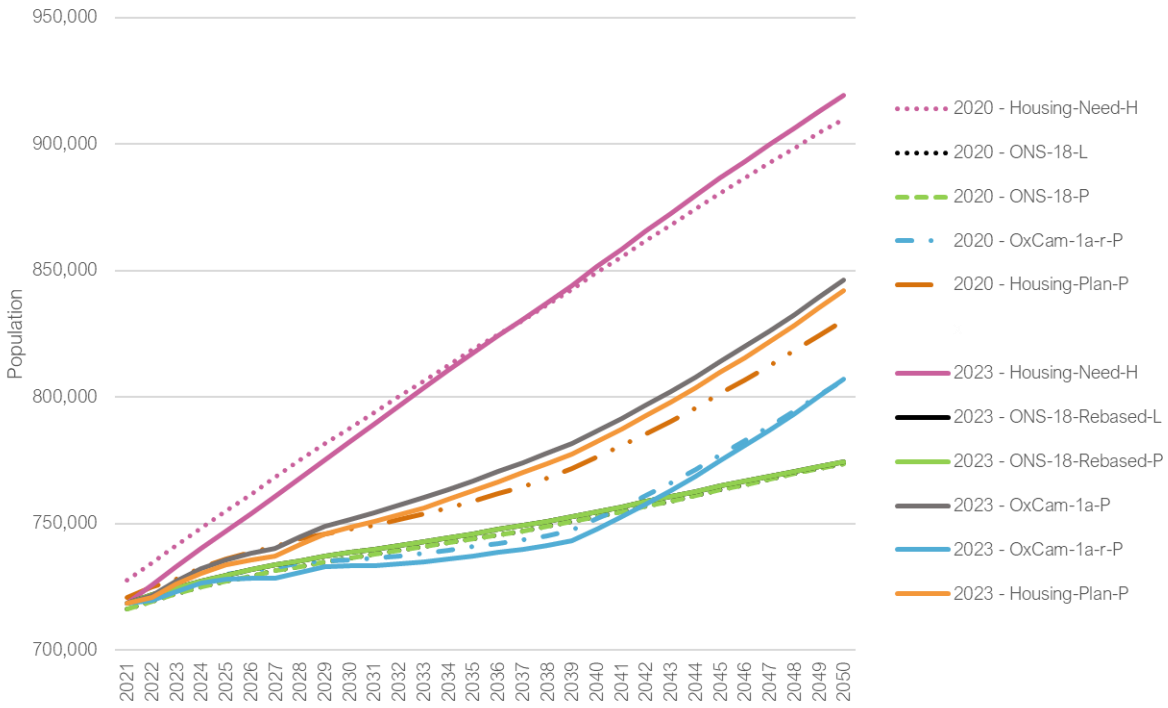
Portsmouth Water



2020 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	748,387	900,486	152,099	20.3%	3,066	748,387	1,085,645	337,258	45.1%	2,532
Housing-Plan-P	745,237	891,292	146,055	19.6%	3,880	745,237	1,008,361	263,124	35.3%	2,721
ONS-18-L	742,427	812,532	70,105	9.4%	1,794	742,427	853,492	111,065	15.0%	1,111
ONS-18-P	742,427	812,532	70,105	9.4%	1,794	742,427	920,393	177,966	24.0%	1,542
OxCam-1a-r-P	743,456	865,817	122,361	16.5%	2,881	743,456	979,714	236,258	31.8%	2,014

2023 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	725,553	900,343	174,789	24.1%	3,127	725,553	1,075,251	349,698	48.2%	2,406
Housing-Plan-P	725,539	897,778	172,239	23.7%	3,140	725,539	985,527	259,988	35.8%	1,872
ONS-18-Rebased-L	725,553	795,045	69,492	9.6%	1,704	725,553	790,037	64,484	8.9%	752
ONS-18-Rebased-P	725,553	795,045	69,492	9.6%	1,704	725,553	874,172	148,619	20.5%	1,276
OxCam-1a-P	725,553	892,887	167,333	23.1%	3,022	725,553	980,087	254,533	35.1%	1,824
OxCam-1a-r-P	725,553	867,562	142,009	19.6%	3,023	725,553	952,748	227,194	31.3%	1,825

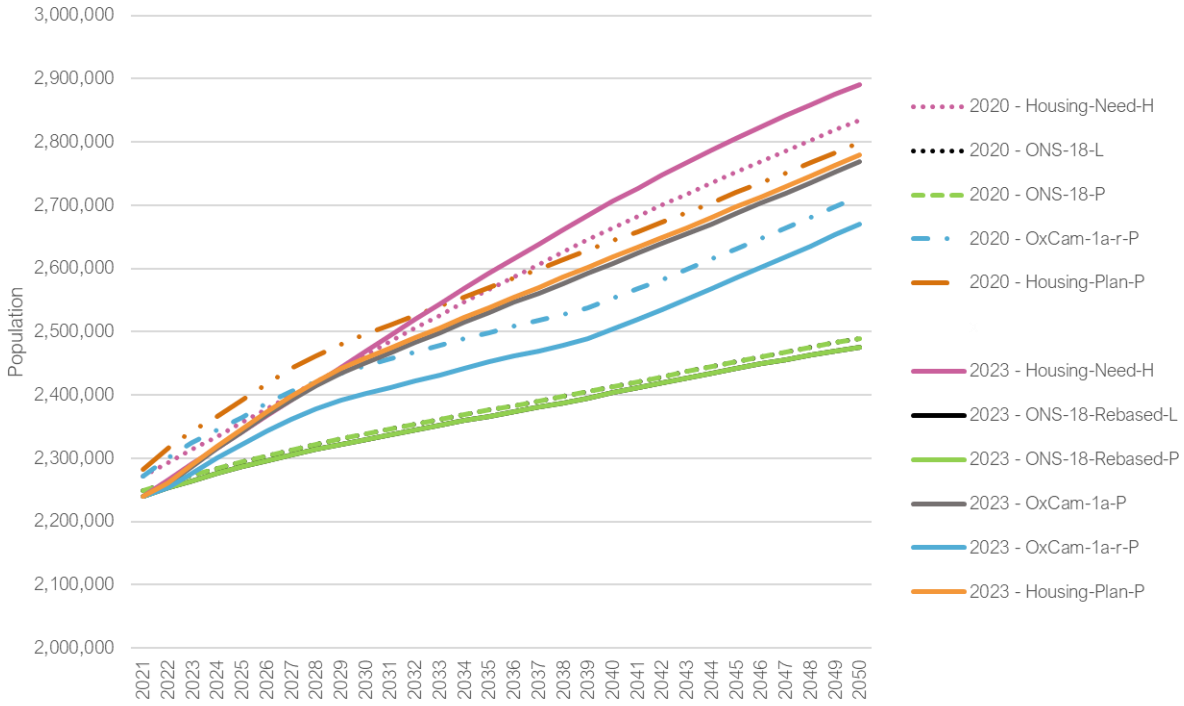
SES Water



2020 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	727,523	909,839	182,316	25.1%	3,682	727,523	1,113,103	385,581	53.0%	2,872
Housing-Plan-P	720,607	830,416	109,809	15.2%	2,432	720,607	943,989	223,382	31.0%	1,797
ONS-18-L	716,189	773,534	57,344	8.0%	1,772	716,189	805,858	89,669	12.5%	1,052
ONS-18-P	716,189	773,534	57,344	8.0%	1,772	716,189	880,331	164,142	22.9%	1,520
OxCam-1a-r-P	718,493	806,816	88,323	12.3%	2,564	718,493	917,366	198,873	27.7%	1,875

2023 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	718,414	919,290	200,876	28.0%	3,822	718,414	1,082,268	363,854	50.6%	2,569
Housing-Plan-P	718,411	841,948	123,537	17.2%	2,561	718,411	908,215	189,804	26.4%	1,490
ONS-18-Rebased-L	718,414	774,239	55,825	7.8%	1,647	718,414	750,752	32,338	4.5%	615
ONS-18-Rebased-P	718,414	774,239	55,825	7.8%	1,647	718,414	835,422	117,008	16.3%	1,122
OxCam-1a-P	718,414	846,313	127,899	17.8%	2,766	718,414	912,751	194,337	27.1%	1,582
OxCam-1a-r-P	718,414	807,012	88,598	12.3%	2,726	718,414	870,926	152,512	21.2%	1,566

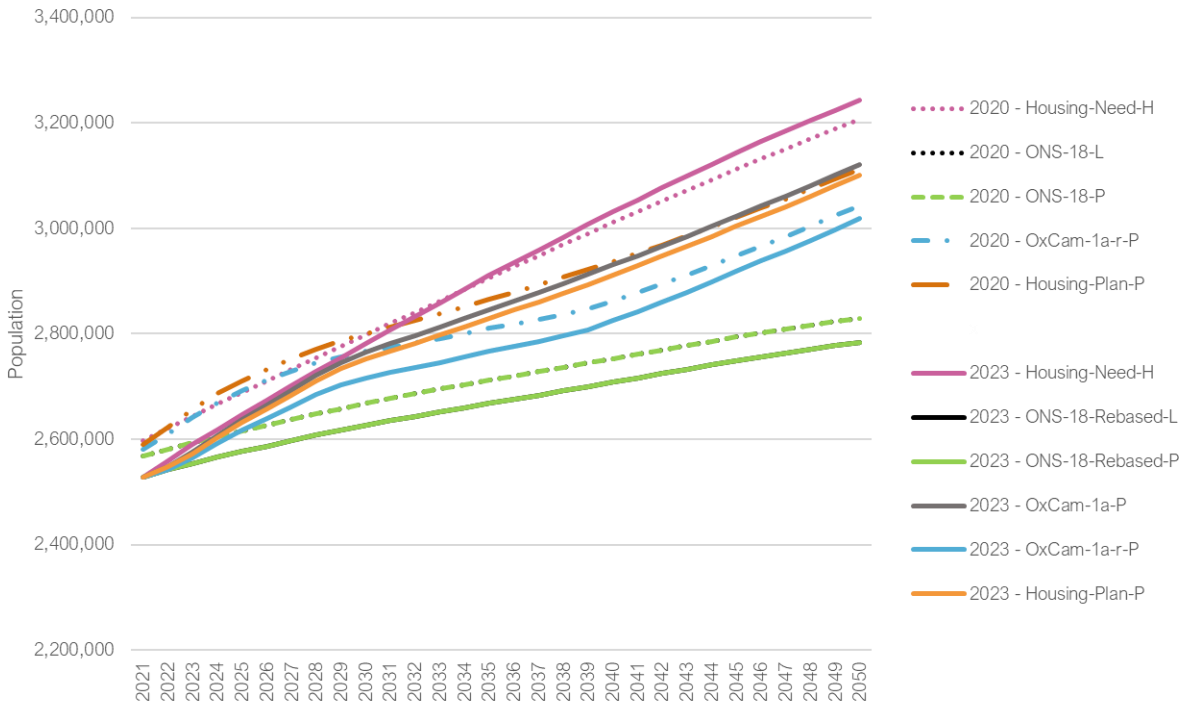
South East Water



2020 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	2,271,042	2,834,703	563,661	24.8%	10,703	2,271,042	3,456,943	1,185,901	52.2%	8,592
Housing-Plan-P	2,282,131	2,799,709	517,578	22.7%	9,479	2,282,131	3,192,214	910,083	39.9%	6,473
ONS-18-L	2,248,224	2,489,172	240,948	10.7%	5,863	2,248,224	2,629,952	381,728	17.0%	3,730
ONS-18-P	2,248,224	2,489,172	240,948	10.7%	5,863	2,248,224	2,845,650	597,426	26.6%	5,064
OxCam-1a-r-P	2,271,558	2,714,652	443,094	19.5%	10,041	2,271,558	3,097,239	825,681	36.3%	6,915

2023 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	2,239,920	2,891,603	651,683	29.1%	11,689	2,239,920	3,436,782	1,196,862	53.4%	8,237
Housing-Plan-P	2,239,978	2,779,534	539,556	24.1%	10,040	2,239,978	3,034,274	794,296	35.5%	5,846
ONS-18-Rebased-L	2,239,920	2,475,501	235,580	10.5%	5,573	2,239,920	2,444,097	204,177	9.1%	2,429
ONS-18-Rebased-P	2,239,920	2,475,501	235,580	10.5%	5,573	2,239,920	2,706,523	466,603	20.8%	4,002
OxCam-1a-P	2,239,920	2,769,517	529,597	23.6%	9,852	2,239,920	3,023,315	783,394	35.0%	5,771
OxCam-1a-r-P	2,239,920	2,670,687	430,767	19.2%	9,858	2,239,920	2,917,194	677,274	30.2%	5,773

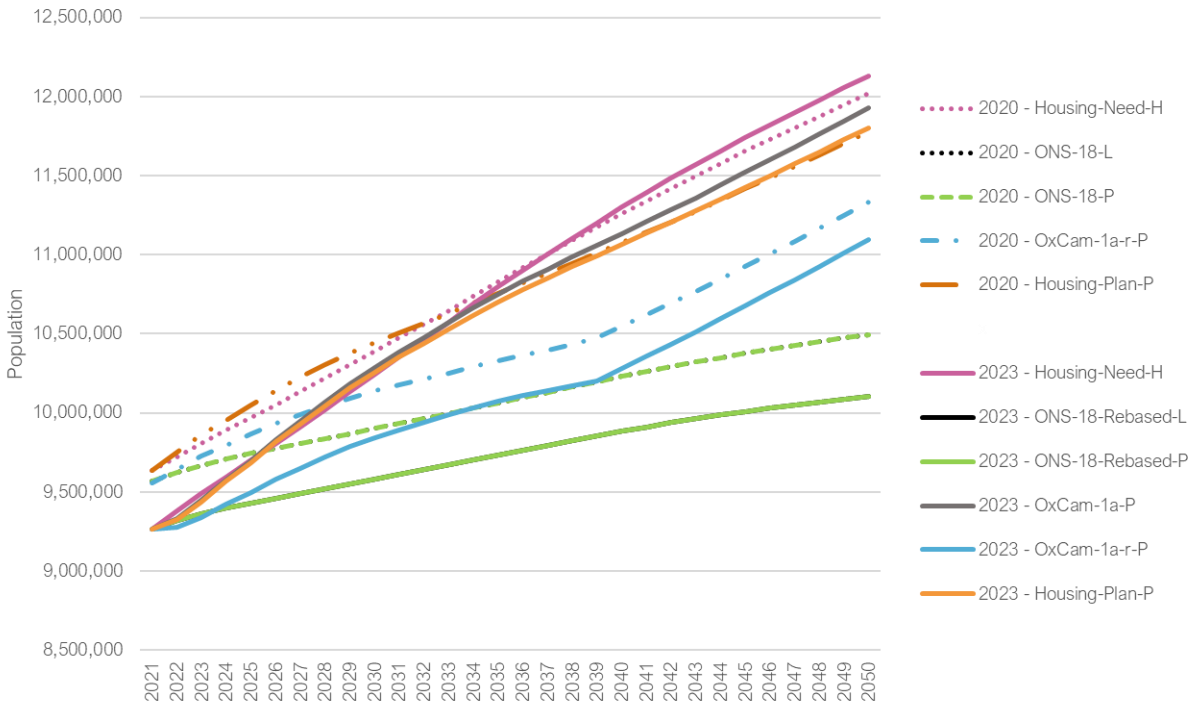
Southern Water



2020 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	2,596,809	3,207,317	610,509	23.5%	11,837	2,596,809	3,934,210	1,337,401	51.5%	9,825
Housing-Plan-P	2,589,291	3,112,693	523,402	20.2%	10,330	2,589,291	3,578,632	989,341	38.2%	7,477
ONS-18-L	2,568,914	2,829,776	260,862	10.2%	6,459	2,568,914	3,014,022	445,108	17.3%	4,265
ONS-18-P	2,568,914	2,829,776	260,862	10.2%	6,459	2,568,914	3,256,305	687,392	26.8%	5,817
OxCam-1a-r-P	2,580,275	3,043,213	462,938	17.9%	10,648	2,580,275	3,499,841	919,565	35.6%	7,699

2023 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	2,528,359	3,243,223	714,864	28.3%	12,541	2,528,359	3,851,253	1,322,894	52.3%	8,952
Housing-Plan-P	2,528,327	3,100,327	572,000	22.6%	10,358	2,528,327	3,385,798	857,471	33.9%	6,147
ONS-18-Rebased-L	2,528,359	2,783,869	255,511	10.1%	6,170	2,528,359	2,748,969	220,610	8.7%	2,588
ONS-18-Rebased-P	2,528,359	2,783,869	255,511	10.1%	6,170	2,528,359	3,044,246	515,888	20.4%	4,411
OxCam-1a-P	2,528,359	3,120,341	591,983	23.4%	10,746	2,528,359	3,407,774	879,416	34.8%	6,306
OxCam-1a-r-P	2,528,359	3,018,091	489,732	19.4%	10,741	2,528,359	3,298,060	769,701	30.4%	6,305

Thames Water



2020 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	9,636,351	12,019,956	2,383,605	24.7%	49,658	9,636,351	14,458,769	4,822,417	50.0%	37,003
Housing-Plan-P	9,635,394	11,776,760	2,141,366	22.2%	41,790	9,635,394	13,180,132	3,544,738	36.8%	26,513
ONS-18-L	9,570,084	10,494,887	924,804	9.7%	27,903	9,570,084	10,782,495	1,212,411	12.7%	14,437
ONS-18-P	9,570,084	10,494,887	924,804	9.7%	27,903	9,570,084	11,775,778	2,205,694	23.0%	20,991
OxCam-1a-r-P	9,555,172	11,330,382	1,775,210	18.6%	48,209	9,555,172	12,685,994	3,130,822	32.8%	29,749

2023 Scenarios	Population		Population Change	Population Change %	Dwellings p.a.	Population		Population Change	Population Change %	Dwellings p.a.
	2021	2050				2021	2100			
Housing-Need-H	9,264,012	12,128,318	2,864,306	30.9%	52,770	9,264,012	14,123,008	4,858,996	52.5%	33,757
Housing-Plan-P	9,264,534	11,804,698	2,540,164	27.4%	48,201	9,264,534	12,647,581	3,383,048	36.5%	24,964
ONS-18-Rebased-L	9,264,012	10,103,932	839,920	9.1%	23,865	9,264,012	9,767,215	503,203	5.4%	8,502
ONS-18-Rebased-P	9,264,012	10,103,932	839,920	9.1%	23,865	9,264,012	10,841,426	1,577,414	17.0%	15,107
OxCam-1a-P	9,264,012	11,930,647	2,666,635	28.8%	49,987	9,264,012	12,781,586	3,517,574	38.0%	25,689
OxCam-1a-r-P	9,264,012	11,097,513	1,833,500	19.8%	50,012	9,264,012	11,900,407	2,636,395	28.5%	25,699

4 FUTURE DATA RELEASES

4.1 All forecasts are dependent on the data inputs and assumptions used in their configuration, so it is important to monitor future data releases to understand when it may be needed to revisit and update the forecasts in the light of more up-to-date evidence.

4.2 The following table details the key forthcoming data from ONS which will provide additional intelligence to inform future forecasts:

Data release	Release date
Revised official 2021 MYE for the UK, its constituent countries and local authority districts.	September 2023 (provisional)
Rebasing of MYEs following Census 2021, England and Wales This release contains the rebased MYEs for the period 2012 to 2020 to align with Census 2021 results.	September 2023 (provisional)
Population estimates for England and Wales: mid-2022 National and sub-national mid-year population estimates for England and Wales by administrative area, age and sex.	September 2023 (provisional)
National population projections: 2021-based	December 2023 (provisional)
Sub-national population projections: 2021-based	Will follow on from 2021-based national population projections in 2024, but release timescale unknown
Household projections: 2021-based	Unknown

4.3 Due to uncertainty around the 2021 Census estimates and the intercensal MYEs, it is recommended that, once the updated MYEs are released in September 2023, a refresh of the scenario evidence is considered.

Appendix A
SCENARIO DEFINITION 2020

A.1 The table below provides a list of all 2020–2050 scenarios that were delivered to WRSE in 2020:

ID	SCENARIO	DESCRIPTION
1	ONS-14	ONS 2014-based sub-national population projection (SNPP), using a six-year history (2008–2014) to derive local fertility, mortality and internal migration assumptions, with a long-term UK net international migration assumption of +185k p.a.
2	ONS-16	ONS 2016-based Principal sub-national population projection (SNPP), using a five-year history (2011–2016) to derive local fertility, mortality and internal migration assumptions, and a long-term UK net international migration assumption of +165k. In line with the ONS 2016-based national population projection (NPP), this round of projections includes a reduced UK fertility outlook compared to ONS-14 and a dampened rate of improvement in life expectancy compared to ONS-14.
3	ONS-18	ONS 2018-based Principal sub-national population projection (SNPP), using a five-year history (2013–2018) to derive local fertility & mortality assumptions and a long-term UK net international migration assumption of +190k. Unlike earlier rounds of SNPP, the 2018-based Principal projection uses a two-year history (2016–2018) of internal migration assumptions, following recent changes to the methodology used for its estimation, which have only covered the latest 2 years. In line with the ONS 2018-based national population projection (NPP), this round of projections includes a reduced UK fertility outlook compared to ONS-16 and a dampened rate of improvement in life expectancy compared to ONS-16.
4	ONS-18-Alt	ONS 2018-based Alternative Internal Migration sub-national population projection (SNPP), produced by ONS as a comparison with the Principal projection. It uses a five-year average of internal migration (2013–2018), combining 3 years of data based on the old methodology and 2 years based on the new methodology. All other assumptions are consistent with ONS-18.
5	ONS-18-High	ONS 2018-based High International Migration sub-national population projection (SNPP), incorporating a High long-term UK net international migration assumption of +290k p.a., with all other assumptions consistent with ONS-18.
6	ONS-18-Low	ONS 2018-based Low International Migration sub-national population projection (SNPP), incorporating a Low long-term UK net international migration assumption of +90k p.a., with all other assumptions consistent with ONS-18.
7	ONS-18-10Y	ONS 2016-based 10yr Migration (all types) sub-national population projection, using a ten-year history (2008–2018) to derive internal migration assumptions, with all other assumptions consistent with ONS-18.
8	GLA-18-Central	Greater London Authority (GLA) 2018-based Central population projection, incorporating: GLA's own adjustments to the mid-year population estimates of London Boroughs; local fertility and mortality assumptions, trended in line with the ONS 2018-based NPP assumptions; internal and international migration assumptions derived from a 10-year history (2008–2018). This scenario includes projections for London Boroughs and for all other local authority areas.
9	GLA-18-15Y	GLA 2018-based long-term trend projection, incorporating internal and international migration assumptions derived from a 15-year history (2003–2018), with all other assumptions consistent with the Central scenario. This scenario includes projections for London Boroughs and for all other local authority areas.
10	GLA-18-5Y	GLA 2018-based short-term trend projection, incorporating internal and international migration assumptions derived from a 5-year history (2013–2018), with all other assumptions consistent with the Central scenario. This scenario includes projections for London Boroughs and for all other local authority areas.

ID	SCENARIO	DESCRIPTION
11	GLA-Housing	GLA 2018-based Housing-led projection, based on data from the 2016 Strategic Housing Land Availability Assessment (SHLAA). Beyond 2041, housing growth is aligned to the 2035–2041 average. Whilst the housing-led approach is applied to each London Borough, the population projection for Greater London, in total, remains consistent with the Central scenario. This scenario includes projections for London Boroughs only and is combined with the Central scenario for all other local authority areas when aggregated to WRZ geographies.
12	Completions-18Y	A Housing-led scenario, with population growth underpinned by a continuation of the rate of housing growth recorded in each local authority's 18-year completions history (2001–2019).
13	Completions-5Y	A Housing-led scenario, with population growth underpinned by a continuation of the rate of housing growth recorded in each local authority's 5-year completions history (2014–2019).
14	Housing-Need	A Housing-led scenario, with population growth underpinned by the trajectory of housing growth associated with each local authority's Local Housing Need (LHN) or Objectively Assessed Housing Need (OAHN). Following the final year of data, projected housing growth in non-London areas returns to the ONS-14 & ONS-16 long-term annual growth average by 2050. For London Boroughs, housing growth returns to the GLA Central scenario long-term annual average by 2050.
15	Housing-Need-r	A Housing-led scenario, consistent with the Housing-Need scenario, but with household representative rates for young adults returning to (higher) 2001 levels by 2039, remaining fixed thereafter.
16	Housing-Req	A Housing-led scenario, with population growth underpinned by the trajectory of housing growth associated with each local authority's housing Requirement. Following the final year of data, projected housing growth in non-London areas returns to the ONS-14 & ONS-16 long-term annual growth average by 2050. For London Boroughs, housing growth returns to the GLA Central scenario long-term annual average by 2050.
17	Housing-Req-r	A Housing-led scenario, consistent with the Housing-Req scenario, but with household representative rates for young adults returning to (higher) 2001 levels by 2039, remaining fixed thereafter.
18	Housing-Plan	A Housing-led scenario, with population growth underpinned by each local authority's Local Plan housing growth trajectory. Following the final year of data, projected housing growth in non-London areas returns to the ONS-14 & ONS-16 long-term annual growth average by 2050. For London Boroughs, housing growth returns to the GLA Central scenario long-term annual average by 2050.
19	Housing-Plan-r	A Housing-led scenario, consistent with the Housing-Plan scenario, but with household representative rates for young adults returning to (higher) 2001 levels by 2039, remaining fixed thereafter.
20	Employment-1	An Employment-led scenario with 1.0% pa growth in London to 2030 and 0.5% pa thereafter; 0.8% pa growth in the South East and East of England to 2030, 0.4% thereafter.
21	Employment-2	An Employment-led scenario with 0.5% pa growth in London to 2030 and 0.25% pa thereafter; 0.4% pa growth in the South East and East of England to 2030, 0.2% thereafter.
22	OxCam-1a-r	'New Settlement' 23k dpa scenario, with c.4.2k dpa above Housing Plan distributed between Cherwell (20%), Aylesbury Vale (20%), Central Bedfordshire (40%), South Cambridgeshire (20%). Household representative rates for young adults returning to (higher) 2001 levels by 2039, remaining fixed thereafter.
23	OxCam-1b-r	'Expansion' 23k dpa scenario, with c 4.2k dpa distributed between: Milton Keynes: (30%) Luton (15%), Bedford (15%), Oxford (10%), Cambridge (10%), Northampton (10%), and Peterborough (10%). Household representative rates for young adults returning to (higher) 2001 levels by 2039, remaining fixed thereafter.
24	OxCam-2a-r	'New Settlement' 30k dpa scenario, with c.11.2k dpa above Housing Plan distributed between Cherwell (20%), Aylesbury Vale (20%), Central Bedfordshire (40%), South Cambridgeshire (20%). Household representative rates for young adults returning to (higher) 2001 levels by 2039, remaining fixed thereafter.

ID	SCENARIO	DESCRIPTION
25	OxCam-2b-r	'Expansion' 30k dpa scenario, with c 11.2k dpa distributed between: Milton Keynes: (30%) Luton (15%), Bedford (15%), Oxford (10%), Cambridge (10%), Northampton (10%), and Peterborough (10%). Household representative rates for young adults returning to (higher) 2001 levels by 2039, remaining fixed thereafter.

Edge Analytics Ltd.

Nexus | Discovery Way | University of Leeds | Leeds | LS2 3AA

www.edgeanalytics.co.uk

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