



Final

2010 Based Population and Household
Projections for South Tyneside

A report for South Tyneside Council,
by TWRI Policy and Research

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Draft

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1. INTRODUCTION

1.1 Population and Household Projections

This report presents population and household projections for South Tyneside, using the Office for National Statistics (ONS) mid-year population estimates and population indicative figures. (ONS have produced national and local 2010 based population projections; see <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-246448>.)

A range of assumptions are used to provide different projected figures. These assumptions are based on previous figures (e.g. past migration patterns) and expected trends (e.g. anticipated trends in fertility and mortality rates). No attempt is used within these projections to incorporate any future policy initiatives; that is, proposals incorporated within any plan to develop new housing or demolish elements of existing housing are excluded from the assumptions. Whilst these projections are solely linked to South Tyneside, it must be appreciated that figures in the projections will be affected by the housing activity of neighbouring authorities, as well as national policies.

The general population model used starts with the population as estimated by ONS, for mid-2010, by single year of age and gender. As ONS have provided both a mid-year estimate and indicative figures we have used both sets to help understand the impact of the difference in the projected population and number of households.

To project the population to mid 2011, from 2010, the method, initially, ages each person by one year, adds in the expected number of births for boys and girls, and removes the anticipated number of deaths (by age and gender). This is known as the natural change model or Zero net-migration model (ZNM). This is a very useful model as it gives, as a basis, the situation if there were no outside influences on the population of the borough. To give the projected fertility and mortality rates, we assume that the rates for the borough will change in proportion to the change in the England figures.

Next, since it is anticipated that, as in the past, there will be future in-migration and out-migration from the borough, the ZNM model generally gives unrealistic projected figures and so we need to incorporate projected migration figures (see section 2, below).

As part of this work, TWRI have analysed the migration patterns into and out of South Tyneside in the period 2005 to 2010; these have been presented in a separate report, "Migration Analysis: South Tyneside 2005-2010".

In this report we are presenting some of the results, with appropriate analysis to aid understanding. Full results will be provided electronically, in an Excel spreadsheet.



2. MIGRATION SCENARIOS

2.1 Technical description of Migration

Having produced the ZNM model, to produce more realistic models the impact of migration is added into the projected figures. In this report we use four elements of migration, namely, a) migrants from the rest of the United Kingdom (UK) into South Tyneside, b) migrants out of South Tyneside into the rest of the UK, c) migrants from the rest of world into South Tyneside and d) migrants out of South Tyneside leaving the UK. The first and third are known as 'in-migrants', the other two 'out-migrants'. The first two are known as 'Internal migrants', the last two as 'International migrants'.

The international data is generally known as 'IPS', reflecting the original source of the data, namely the 'International Passenger survey'. Past data, for internal migrants, is provided through changes in the NHSCR (National Health Service Central Register).

Currently, the international migrant data is provided using the numbers of migrants adjusted by ONS, as a result of the recent IMPS (Improving Migration and Population Statistics) study. The general impact of these adjustments is to reduce the previously determined number of international in-migrants into South Tyneside and the North East region, as a whole, and thus reduce the total population of the borough and region. This result is the difference between the previously issued, 2010 mid-year and the 2010 indicative estimates. (For information on these adjustments see www.ons.gov.uk/ons/guide-method/method-quality/imps/improvements-to-local-authority-immigration-estimates/index.html.)

There are a variety of assumptions that we can reasonably use in relation to future migration patterns. Generally speaking the more recent patterns give the more likely picture for the expected future pattern. However, sometimes the previous years' figures can be affected by temporary affects and so it is necessary to incorporate earlier years' data into the model.

In the past TWRI have used 11 different assumptions; these are summarised here:

- a. **Option 1: Zero Net Migration,**
- b. Option 2: Long Term Trend (10 years unweighted NHSCR + 5 years unweighted IPS),
- c. **Option 3: 5 years weighted NHSCR,** [i.e. ignoring any International migration],
- d. **Option 4: Central Option (5 years weighted NHSCR + 3 years unweighted IPS),**
- e. **Option 5: 5 years weighted NHSCR + 5 years unweighted IPS,**
- f. Option 5A: 5 years weighted NHSCR + 5 years redistributed unweighted IPS,
- g. Option 6: Pessimistic trend (Lowest NHSCR + Lowest IPS),
- h. Option 7: Optimistic trend (Highest NHSCR + Highest IPS),
- i. Option 8: Short Term Trend (3 years weighted NHSCR + 3 years unweighted IPS),
- j. Option 9: 5 years unweighted NHSCR + 3 years unweighted IPS, and
- k. Option V: Variable Option (curve fitting of: NHSCR & redistributed IPS).

[Where the data are 'unweighted' each year's data is treated the same; where the data are 'weighted' the newest is given more weight. For example, for option 3, the 5 year weighted NHSCR analysis weights the newest years data '5' and the next newest a weight of '4' and so on. Those options in bold are the ones used in this report.]



For this exercise we were asked to present results for four different scenarios and justify a particular choice for further analysis. As ONS have produced both 2010 mid-year estimates and indicative it is useful, for comparison purposes, to produce a ZNM projection on both sets of base population figures. Summarising, we have produced and compared results for, in total, six projections as follows, each with a 'short-name':

- a. Zero Net Migration (ZNM) using initial ONS estimates (short-name ZNM1),
- b. The ONS projections, (ONS) [they have used the indicative figures],
- c. ZNM using ONS indicatives (ZNM2),
- d. As (c) with 5 years weighted NHSCR (option 3, Opt3),
- e. As (c) with 5 years weighted NHSCR + 3 years unweighted IPS (option 4, Opt4), and
- f. As (c) with 5 years weighted NHSCR + 5 years unweighted IPS (option 5, Opt5).

A comparison of the results of these six models will enable an understanding of the impacts of the various components of the differences between the models.

The first gives the results using the initial ONS mid-year estimates, the remainder use the ONS indicatives. This leads to a different starting point for the population for the first model, hence the figures and chart values for this model will give a different starting point.

Whilst ONS project to 2035, we were asked, if possible, to project to 2036. We have undertaken this work and extended, for the number of households, the ONS projection to 2036. For household projections, using the ONS data, the results use the ONS population projection data and the projected 2008 household headship rates; these results have not been computed by ONS and should **not** be attributed to ONS.

2.2 Recommendation and justification of the most likely Migration scenario

We recommend that the Authority, for its future development use Option 4, that is the model which incorporates 5 years [i.e. 2005 to 2010] weighted results from internal migration and 3 years [i.e. 2007 to 2010] unweighted results from international migrants, based on the 2010 ONS indicative population.

The following three reasons are given for this recommendation:

- a) It produces realistic figures, other scenarios, including ONS, are unrealistic.
- b) In the past, option 4 has produced the best results for South Tyneside, in comparison with Censuses and ONS Mid-Year population estimates.
- c) It incorporates the current migration patterns, using the last 3 years migrations data.
[The results of other options are also provided in the rest of the report.]

3. SUMMARY OF THE RECOMMENDED OPTION (OPTION 4)

The following table gives the population and household projections for South Tyneside using option 4 (Opt4), using as a base the 2010 indicative population figures.

Table 1 Summary of results under Option 4

Indicatives:	Population	Change	Households¹	Change
2010	151,300		68,500	
Projections:				
2016	152,200	+ 900	70,700	+2,200
2021	153,600	+1,400	73,400	+2,700
2026	154,600	+1,000	75,900	+2,500
2031	155,000	+ 400	78,300	+2,400
2036	155,100	+ 100	80,600	+2,300
Change 2010-2036	+3,800		+12,200	
Average change per year	+ 145		+ 470	

This option implies a population increase of 3,800 over the 26 years, an average increase of 145 per year. This increase is predominant at the start of the projection period and tails off beyond 2026.

Along with other scenarios there is an increase in the numbers aged 65 and over. Additionally there is a reduction in those aged under 16, and those aged 16 to 24, both by 20% and those aged 16 to 64 by 8%. (See section 5, below.)

The key element of the household part of this table is not the absolute number, but the implied number of extra households resulting from the increase in population size and the expected reduction in average household size over the projection period.

The increase in projected numbers of households arises because households have, in the past, become smaller and this trend is expected to continue and people are living longer increasing the likelihood of living alone. Hence for any particular age group the headship rates will continue to rise, the population is ageing and those over 75 tend to have higher headship rates (i.e. they are more likely to live alone) and so the overall headship rate is increasing; increasing the number of households.

¹ Note for the number of households, we have used the 2008 based projected headship rates, provided by the University of East Anglia for the Communities and Local Government department of Central Government (CLG) for 2010, and then used the projected headship rates to 2033 and extrapolated to 2036.

4. POPULATION PROJECTIONS USING THE VARIOUS OPTIONS

4.1 The various options

As noted above we have provided results for six options. The table, below, shows the results for the various options starting with 2010 and 2011 and presenting the results in five year intervals to 2035 and 2036. Chart 1, below, also shows the results. [The options are described in section 1.2. The full results by single year of age and sex are provided as Excel files.]

Table 2 Summary of population projections under the various options

Year	ZNM1	ONS	ZNM2	Opt3	Opt4	Opt5
2010	153,700	151,300	151,300	151,300	151,300	151,300
2011	153,500	151,600	151,000	150,900	151,200	151,000
2016	153,900	153,500	151,200	150,600	152,200	151,500
2021	154,300	155,400	151,500	150,500	153,600	152,200
2026	154,200	157,000	151,400	149,900	154,600	152,400
2031	153,500	158,300	150,700	148,800	155,000	152,100
2035	152,700	159,300	150,000	147,600	155,100	151,700
2036	152,500		149,700	147,200	155,100	151,500
Change 2010-2035						
Numbers	-1,000	+8,000	-1,300	-3,700	+3,800	+400
Percentage	-0.6%	+5.3%	-0.9%	-2.5%	+2.5%	+0.2%
Change 2010-2036						
Numbers	-1,200	-	-1,600	-4,100	+3,800	+200
Percentage	-0.8%	-	-1.0%	-2.7%	+2.5%	+0.1%

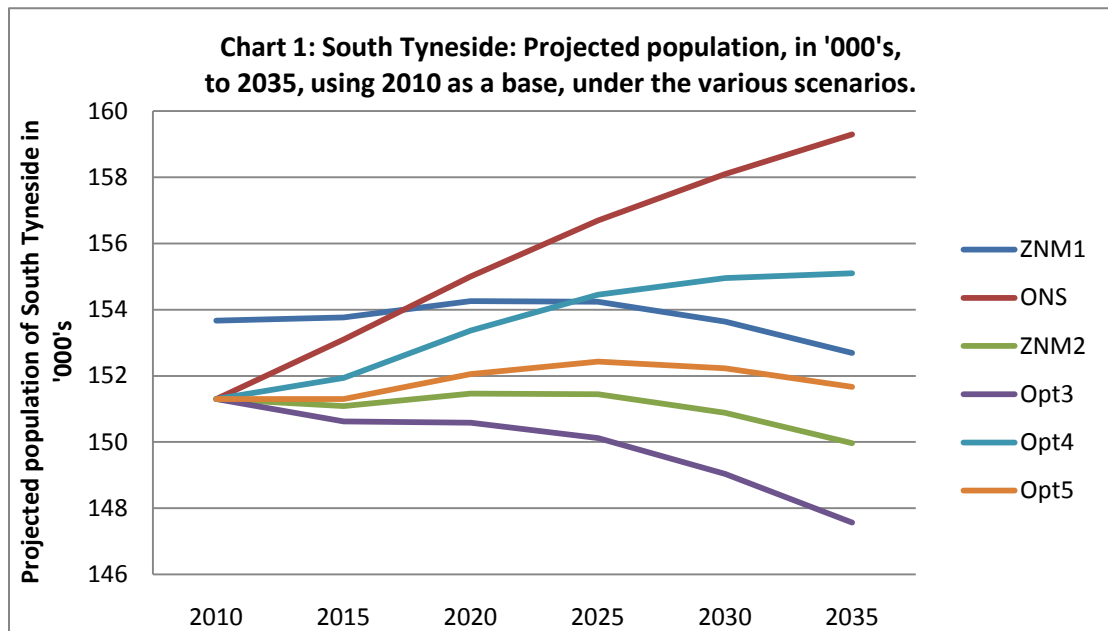
It shows, for each of the scenarios, the projected population for 2011 and at subsequent 5 year intervals up to 2035 and 2036. For example, option 4 starts along with four other scenarios at 151,300, has a slight fall for 2011 and rises to 155,100 for both 2035 and 2036, a growth of 3,800 (2.5%) over the period.

A comparison of the other models shows the following:

- a) in terms of change there is only a small difference between the changes in the two Zero Net Migration models (ZNM1 & ZNM2), both of which show a decline of around 1% to 2036.
- b) the ONS projection is large compared to all the others, suggesting that it may be unrealistically high,
- c) comparing ZNM2 with Option 3 (this latter option does not have any International migration component) shows that without the international component (i.e. the natural change and internal migration only) there would be a decline in population of around 2.7% over the projection period to 2036,



- d) the addition of the international component in Option 4 (compared to Option 3) shows that this could lead to an increase of population of around 3,800 (2.5%); note this is reliant on international migration reflecting the period 2007 to 2010, rather than 2005 to 2010; this latter is presented in Option 5 in the final column leading to just a very small increase in population.



4.2 Population of South Tyneside in relation to population of Tyne & Wear

This section gives the population change in relation to the population change of Tyne & Wear.

The table, below, shows, for example, for Option 4, that for 2010, the indicative population of South Tyneside is, as above, 151,300. The corresponding figure for Tyne & Wear, as a whole, is 1,106,200; that is South Tyneside's population is 13.7% of the Tyne & Wear.

Table 3 Summary of comparison population projections with Tyne & Wear's population projection, under the various options

Model	Area	2010	2035	%change	2036	% change
ZNM1	S. Tyneside	153,700	152,700	-0.6%	152,500	-0.8%
	Tyne & Wear	1,119,500	1,154,600	+3.1%	1,153,600	+3.0%
	(Proportion)	13.7%	13.2%	(-3.7%)	13.2%	(-3.7%)
ONS	S. Tyneside	151,300	159,300	+5.3%	-	-
	Tyne & Wear	1,106,200	1,185,400	+7.2%	-	-
	(Proportion)	13.7%	13.4%	(-2.2%)	-	-
ZNM2	S. Tyneside	151,300	150,000	-0.8%	149,700	-1.0%
	Tyne & Wear	1,106,200	1,138,400	+2.9%	1,137,500	+2.8%
	(Proportion)	13.7%	13.2%	(-3.6%)	13.2%	(-3.7%)
Opt3	S. Tyneside	151,300	147,600	-2.4%	147,200	-2.6%
	Tyne & Wear	1,106,200	1,072,100	-3.1%	1,068,800	-3.4%
	(Proportion)	13.7%	13.8%	(+0.7%)	13.8%	(+0.8%)
Opt4	S. Tyneside	151,300	155,100	+2.6%	155,100	+2.6%
	Tyne & Wear	1,106,200	1,233,300	+11.5%	1,237,200	+11.8%
	(Proportion)	13.7%	12.6%	(-8.0%)	12.5%	(-8.3%)
Opt5	S. Tyneside	151,300	151,700	+0.3%	151,500	+0.2%
	Tyne & Wear	1,106,200	1,210,500	+9.4%	1,213,400	+9.7%
	(Proportion)	13.7%	12.5%	(-8.3%)	12.5%	(-8.6%)

Under option 4, Tyne & Wear's population is projected to grow to 1,233,300 in 2035. Whereas South Tyneside's population is expected to grow by 2.6%, Tyne & Wear's is, under this scenario, expected to grow by 11.5%, that is well above the rate that ONS had projected (7.2%). Under this option there is a relative drop of 8.0% in the share of the population.²

² If, for example, both South Tyneside and Tyne & Wear are projected to increase in population and if the population of South Tyneside is expected to increase proportionately *less* than the population of Tyne & Wear as a whole, then South Tyneside's proportion of the Tyne & Wear population, as a whole, will decrease.

(It would appear, as has happened in the past, that the best scenario for a particular borough may not be the best projection scenario for other boroughs and the area as a whole.)

4.3 Population of South Tyneside in relation to population of N.E. LEP area

The North East Local Enterprise Partnership (N.E. LEP) area is made up of the three areas: Durham Unitary Authority [the former Durham County], Northumberland Unitary Authority [the former Northumberland County] and Tyne & Wear. The following table shows the population projections for the various scenarios.

Table 4 Summary of comparison of population projections with the N.E. LEP area population projection, under the various options

Model	Area	2010	2035	%change	2036	% change
ZNM1	S. Tyneside	153,700	152,700	-0.6%	152,500	-0.8%
	N.E. LEP	1,942,300	1,978,300	+1.8%	1,976,000	+1.7%
	(Proportion)	7.9%	7.7%	(-2.4%)	7.7%	(-2.5%)
ONS	S. Tyneside	151,300	159,300	+5.3%	-	-
	N.E. LEP	1,924,900	2,072,500	+7.7%	-	-
	(Proportion)	7.9%	7.7%	(-2.2%)	-	-
ZNM2	S. Tyneside	151,300	150,000	-0.8%	149,700	-1.0%
	N.E. LEP	1,924,900	1,957,700	+1.7%	1,955,400	+1.6%
	(Proportion)	7.9%	7.7%	(-2.5%)	7.7%	(-2.5%)
Opt3	S. Tyneside	151,300	147,600	-2.4%	147,200	-2.6%
	N.E. LEP	1,924,900	1,931,400	+0.3%	1,928,200	+0.1%
	(Proportion)	7.9%	7.6%	(-2.7%)	7.7%	(-2.7%)
Opt4	S. Tyneside	151,300	155,100	+2.6%	155,100	+2.6%
	N.E. LEP	1,924,900	2,121,900	+10.2%	2,127,200	+10.4%
	(Proportion)	7.9%	7.3%	(-6.9%)	7.3%	(-7.2%)
Opt5	S. Tyneside	151,300	151,700	+0.3%	151,500	+0.2%
	N.E. LEP	1,924,900	2,095,500	+8.8%	2,099,600	+9.1%
	(Proportion)	7.9%	7.2%	(-7.8%)	7.2%	(-8.1%)

A similar pattern applies to a comparison with the North East Local Enterprise Partnership as applied to a comparison with Tyne & Wear. Under option 4, whilst the population of the Borough is growing, the population of the N.E. LEP is projected to grow faster, and thus South Tyneside is projected to form, in 2035 & 2036, a smaller proportion of the N.E. LEP than it did in 2010.



5. AGE STRUCTURE UNDER THE VARIOUS SCENARIOS

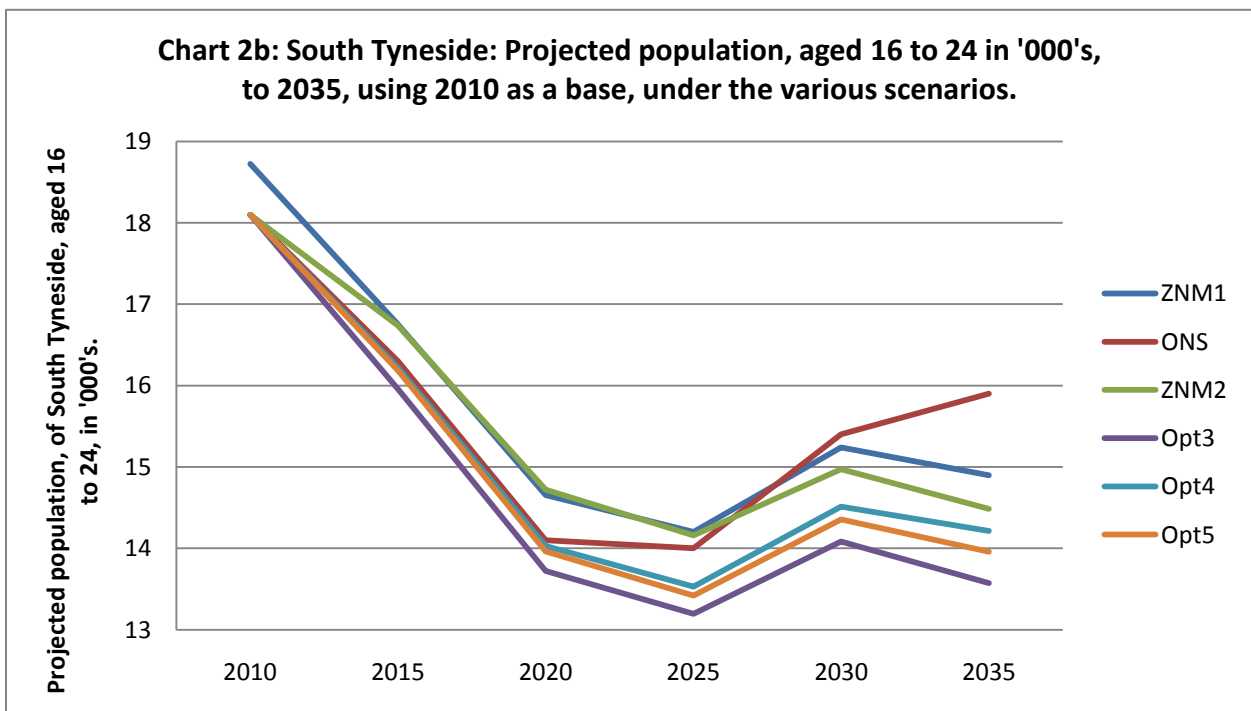
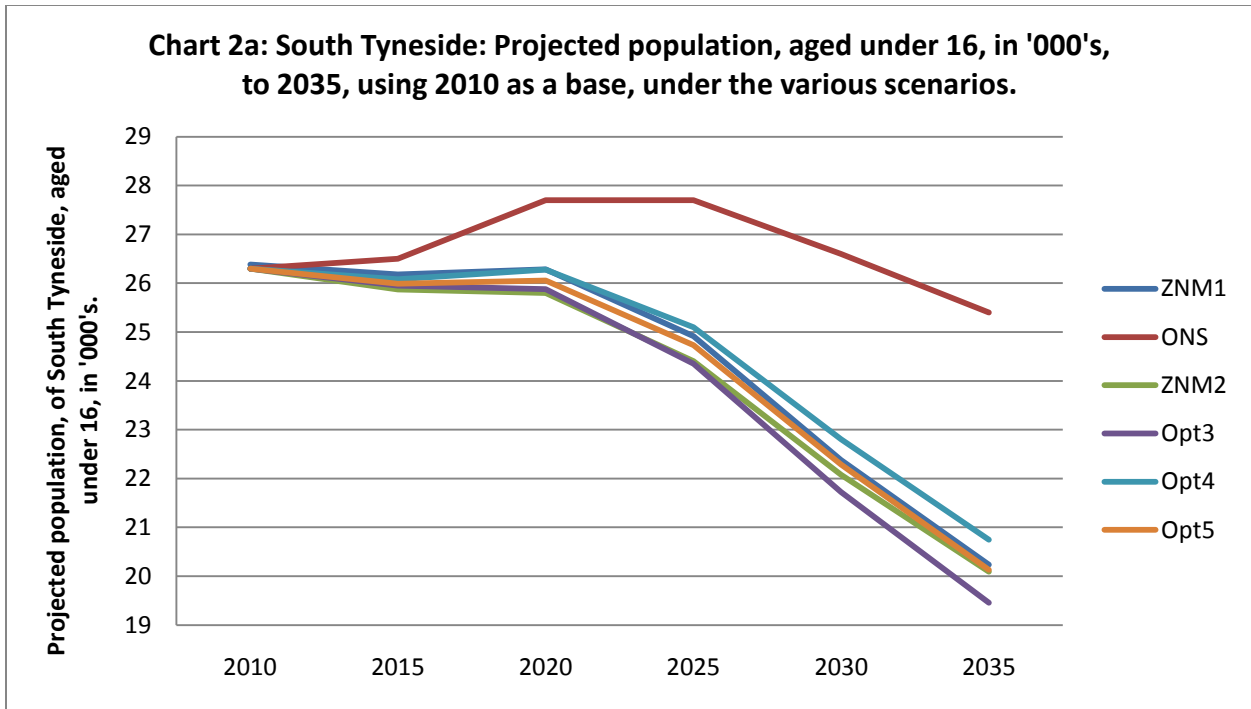
This section shows the projected age changes, for each of the six options, in four age groups, a) under 16, b) 16 to 24, c) 16 to 64 and d) 65 and over. [More details are given in the Excel spreadsheets.] Charts 2a to 2d below, also show the projection results.

5.1 Population aged under 16

Table 5a, below, shows the expected numbers of under 16's for various years under the six scenarios. All scenarios suggest a decline in numbers to 2035/2036. The biggest falls are those beyond 2021; the numbers in the various scenarios, initially, remain fairly stable in the range 25,000 to 27,000. Only after 2021 do the various models diverge with significant drops, in most of the models, to 2031 and beyond as the population generally ages; see chart 2a, below.

Table 5a Summary of projections for those aged under 16 under the various options

Year	ZNM1	ONS	ZNM2	Opt3	Opt4	Opt5
2010	26,400	26,300	26,400	26,400	26,400	26,400
2011	26,300	26,200	26,200	26,300	26,300	26,300
2016	26,200	26,700	25,800	25,900	26,100	26,000
2021	26,200	27,800	25,700	25,700	26,200	25,900
2026	24,400	27,500	23,900	23,800	24,700	24,200
2031	21,900	26,300	21,600	21,200	22,300	21,800
2035	20,200	25,400	20,100	19,500	20,700	20,100
2036	19,900		19,800	19,100	20,400	19,800
Change 2010-2035						
Numbers	-6100	-900	-6300	-6900	-5600	-6300
Percentage	-23.3	-3.4	-23.9	-26.3	-21.4	-23.7
Change 2010-2036						
Numbers	-6500		-6600	-7300	-6000	-6600
Percentage	-24.5		-25.0	-27.6	-22.6	-25.0



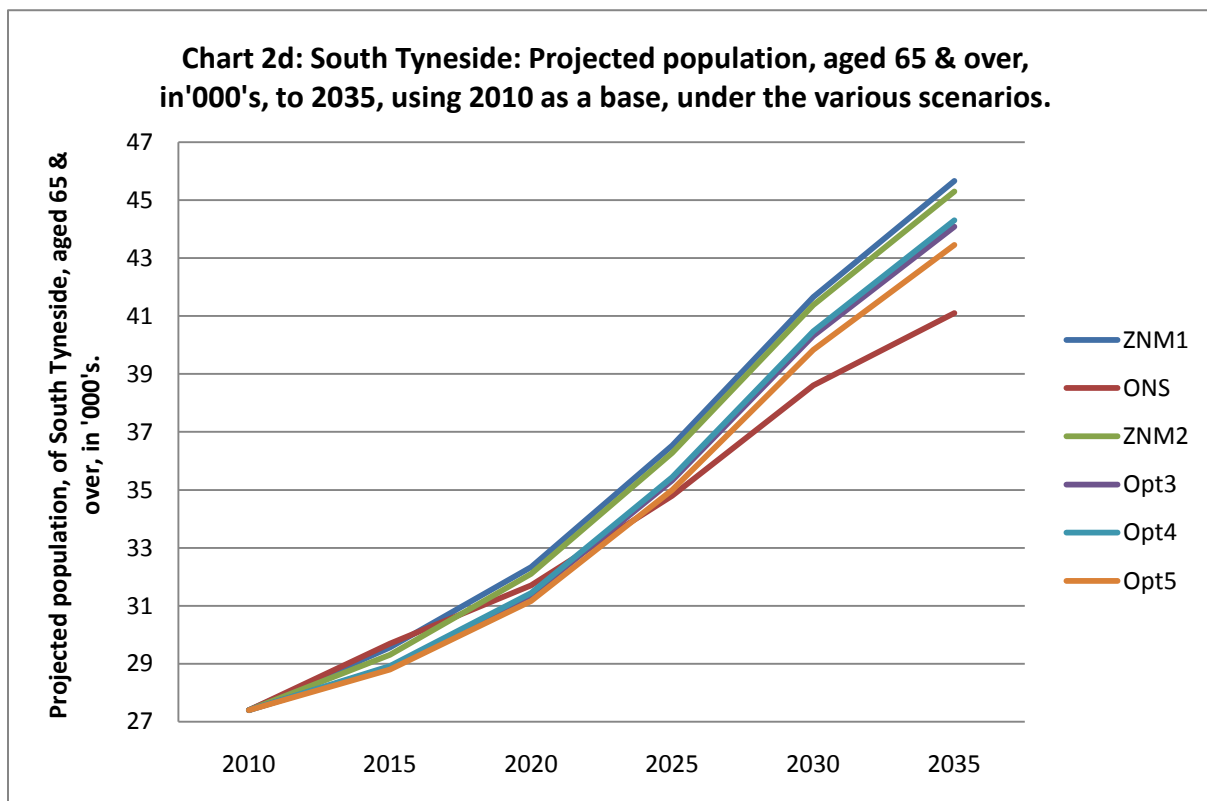
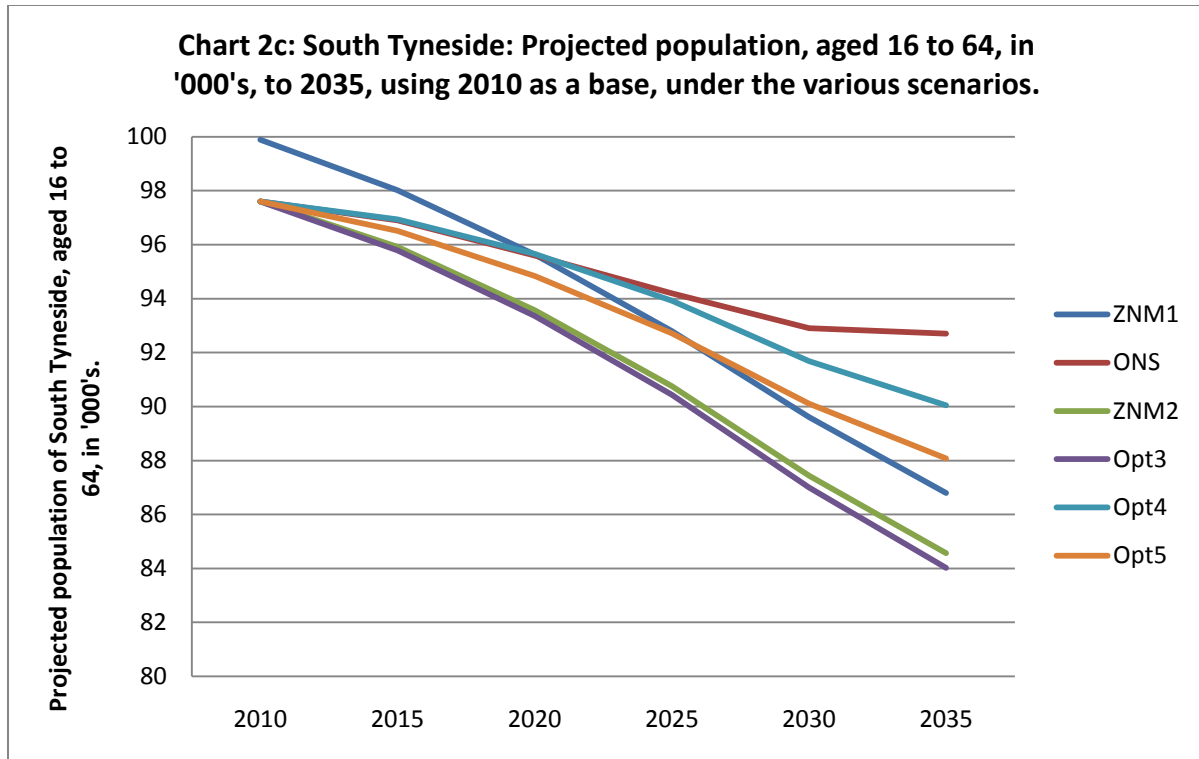
5.2 Population aged 16 to 24 inclusive

TWRI was asked to project the number of 'students'. Given the information available (namely population and means of projection), we have considered this an unrealistic task and have instead simply produced the projected numbers of 16 to 24 year olds, an age range covering most students. The following table gives the projections for this age group.

Table 5b Summary of projections for those aged 16 to 24 (inclusive) under the various options

Year	ZNM1		ONS	ZNM2	Opt3	Opt4	Opt5
2010	18,700		18,100	18,200	18,200	18,200	18,200
2011	18,200		17,700	17,800	17,800	17,800	17,800
2016	16,300		15,700	16,300	16,300	16,300	16,300
2021	14,400		14,000	14,400	14,400	14,400	14,400
2026	14,400		14,300	14,400	14,400	14,400	14,400
2031	15,400		15,400	15,100	15,100	15,100	15,100
2035	14,900		15,900	14,500	14,500	14,500	14,500
2036	14,700			14,300	14,300	14,300	14,300
Change 2010-2035							
Numbers	-3,800		-2,200	-3,700	-4,600	-4,000	-4,300
Percentage	-20.4		-12.2	-20.5	-25.5	-22.0	-23.3
Change 2010-2036							
Numbers	-4,000			-3,900	-4,900	-4,200	-4,400
Percentage	-21.6			-21.5	-26.7	-22.8	-24.4

The above table (table 5b) shows the expected numbers of 16 to 24 year olds, for various years, under the six scenarios. Under all scenarios the numbers are expected to reduce significantly, by 2026. The scenarios do not differ substantially until beyond 2016; after 2021 ONS, unlike other scenarios, have the number of 16 to 24 year olds increasing. (See chart 2b, above.)



5.3 Population aged 16 to 64 inclusive

The table, below, (table 5c) shows the expected numbers of adults, aged under 65, for various years under the six scenarios. All scenarios suggest a decline in numbers to 2035/2036. The ONS figures imply a smaller change than the other scenarios, with only a 5% reduction; others imply a bigger one, up to nearly 14% by 2035.

Table 5c Summary of projections for those aged 16 to 64 (inclusive) under the various options

Year	ZNM1	ONS	ZNM2	Opt3	Opt4	Opt5
2010	99,900	97,600	97,600	97,600	97,600	97,600
2011	99,700	97,700	97,500	97,500	97,700	97,600
2016	97,700	96,700	95,600	95,400	96,800	96,300
2021	95,100	95,400	93,000	92,800	95,300	94,400
2026	92,200	94,000	90,200	89,800	93,600	92,300
2031	89,000	92,800	86,800	86,300	91,300	89,600
2035	86,800	92,700	84,600	84,000	90,100	88,100
2036	86,300		84,100	83,500	89,800	87,800
Change 2010-2035						
Numbers	-13,100	-4,900	-13,000	-13,600	-7,600	-9,500
Percentage	-13.1	-5.0	-13.4	-13.9	-7.7	-9.8
Change 2010-2036						
Numbers	-13,600		-13,500	-14,100	-7,800	-9,800
Percentage	-13.6		-13.8	-14.4	-8.0	-10.1

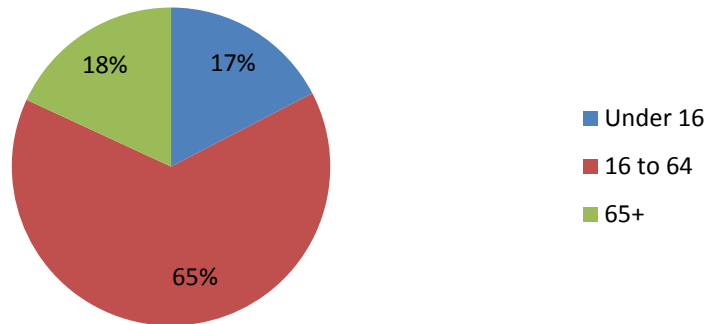
5.4 Population aged 65 and over

Table 5d, below, shows the expected numbers of older adults, those aged 65 and over for various years under the six scenarios. All scenarios suggest a substantial increase in numbers, with between, for all models, a 50% to 70% growth in numbers. The various scenarios suggest that the numbers are growing at about 400 per year, with some scenarios implying an even steeper growth later in the projection period. (See chart 2d, above).

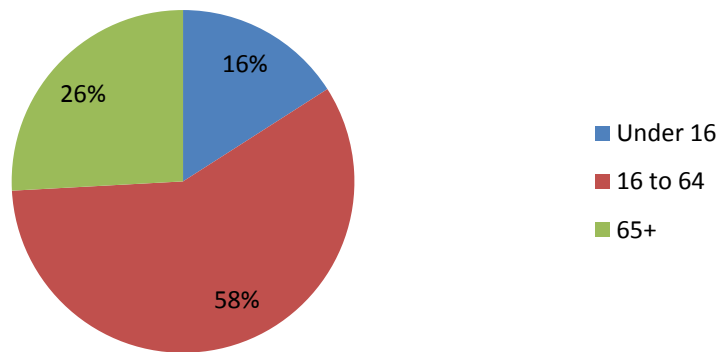
Table 5d Summary of projections for those aged 65 and over under the various options

Year	ZNM1		ONS	ZNM2	Opt3	Opt4	Opt5
2010	27,400		27,400	27,200	27,200	27,200	27,200
2011	27,500		27,600	27,300	27,200	27,200	27,200
2016	30,000		30,100	29,800	29,300	29,300	29,200
2021	33,100		32,200	32,800	32,000	32,100	31,800
2026	37,500		35,500	37,200	36,300	36,400	35,900
2031	42,600		39,300	42,300	41,200	41,400	40,700
2035	45,700		41,100	45,300	44,100	44,300	43,500
2036	46,200			45,800	44,600	44,800	43,900
Change 2010-2035							
Numbers	18,300		13,700	18,100	16,900	17,100	16,300
Percentage	66.6		50.0	66.5	62.1	62.9	59.8
Change 2010-2036							
Numbers	18,800		-	18,600	17,400	17,600	16,700
Percentage	68.7		-	68.5	64.0	64.8	61.5

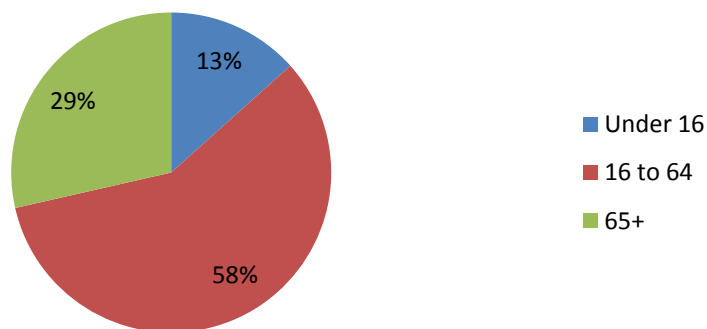
**Chart 3a: Age structure of South Tyneside 2010
(ONS Indicative estimates)**



**Chart 3b: Age structure of South Tyneside 2035
(ONS projection)**



**Chart 3c: Age structure of South Tyneside 2035
(Option 4 projection)**



The charts above (Charts 3a, 3b & 3c) show that for 2010, the percentage of the population who were under 16, was 17% (Chart 3a); ONS project that this will fall slightly to 16% by 2035 (Chart 3b), option 4 projects a bigger fall to just 13% of the population (Chart 3c).

For older people (those aged 65 and over), both ONS and option 4 imply an increase, option 4 having a proportionately bigger increase than ONS. For those aged 16 to 64, in 2010, this was 65%, and both options imply a reduction to 58%.

6. MIGRATION PATTERNS

In this section we look at the different scenarios to help understand the importance of migration in projecting the future population of South Tyneside.

6.1 Migration in the recent past

As mentioned earlier, the report “Migration Analysis: South Tyneside 2005-2010” gives details of local and more distant internal, as well as international, migration patterns over the period 2005 to 2010. Over this period, South Tyneside had a reduction of about 60 per year through natural change (i.e. there were more deaths than births). Similarly there was a net outflow of around 100, per year, to the rest of England & Wales. However, there was a net inflow of migrants from elsewhere, of some 270 per year of migrants from elsewhere, thus giving a modest increase in population of around 500 over the period 2005 to 2010.

In summary, without the overseas migrants the population would have fallen by some 800 over the five year period. Hence future migration is likely to be a key to population increase or decrease.

6.2 Projected Migration

To help understand this we can compare the results of the different options. We restate four of the scenarios, which we will compare, namely:

- a. ZNM using ONS indicatives (short name ZNM2),
- b. As (a), with 5 years weighted NHSCR (option 3, Opt3),
- c. As (a), with 5 years weighted NHSCR + 3 years unweighted IPS (option 4, Opt4), and
- d. As (a), with 5 years weighted NHSCR + 5 years unweighted IPS (option 5, Opt5).

The table, below, shows, for each specified year, for the indicative population figures, a) in column 2, the projected population under the ‘zero net migration’ scenario, using the indicative figures as a basis, b) in column 3, the projected population, under option 3, i.e. with the impact of the projected internal migration, c) in column 4, the difference between column 3 and column 2, showing that we expect a net loss of migration to the rest of England & Wales to be around 100 per year,

- d) in column 5, the projected population, under option 4, i.e. with the impact of the projected internal migration and three year averaged international migration,
- e) in column 6, the difference between column 5 and column 3, showing that we expect a net gain of migration from elsewhere to be just over 300 per year,
- f) in column 7, the projected population, under option 5, i.e. with the impact of the projected internal migration and five year averaged international migration, and
- g) in column 8, the difference between column 7 and column 3, showing that, under this scenario, we expect a net gain of migration from elsewhere to be a little over 150 per year.

Table 6 Summary of population projections under the various options

Year	ZNM2	Option 3		Option 4		Option 5	
		Number	Diff	Number	Diff	Number	Diff
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2010	151,300	151,300	-	151,300	-	151,300	-
2011	151,000	150,900	-100	151,200	200	151,000	100
2016	151,200	150,600	-600	152,200	1600	151,500	800
2021	151,500	150,600	-1000	153,700	3100	152,200	1600
2026	151,400	149,900	-1400	154,600	4600	152,400	2500
2031	150,700	148,800	-2000	155,000	6200	152,100	3400
2036	149,700	147,200	-2500	155,100	7900	151,600	4300

The figures show that

- a) there would be a loss of some 1,600 [=151,300-149,700] without any migration,
- b) that there would be an additional loss of 2,500 without any international migration,
- c) if we take the last three years international migration patterns this would increase the population by some 7,900 over option 3, and
- d) if we take the last five years international migration patterns this would increase the population by just 4,300 over option 3.

It is clear that to maintain the population that in-ward net migration is an important element and that this would normally be expected to come in the form of a net international in-flow.

7. HOUSEHOLD PROJECTIONS

This section looks at the projected change in the number of households during the period to 2036. In this section we have extrapolated the ONS figures to provide figures for 2036. (Note: as mentioned earlier the figures headed 'ONS' are **not determined by ONS**; the figures use the ONS projected population together with the 2008 projected headship rates to determine the projected number of households determined by the ONS projected population data.)

7.1 Projected number of households

Table 7, below, shows that the number of households is expected to grow under the various scenarios, between 8,300 and 12,100 over the projection period. The lowest percentage growth

is around 12%, the highest a little under 18%. The recommended option suggests that the borough will have, 80,600 households; this is an increase of 12,100, from 68,500 in 2010.

Table 7 Summary of projections for number of households under the various options

Year	ZNM1	ONS	ZNM2	Opt3	Opt4	Opt5
2010	69,800	68,700	68,500	68,500	68,500	68,500
2011	70,000	69,100	68,700	68,600	68,700	68,700
2016	71,700	71,200	70,200	70,000	70,700	70,300
2021	73,900	73,300	72,300	71,900	73,400	72,700
2026	75,900	75,100	74,300	73,700	75,900	74,900
2031	77,800	76,800	76,100	75,300	78,300	77,000
2036	79,400	78,600	77,800	76,800	80,600	79,000
Change 2010-2036						
Numbers	9,600	9,900	9,300	8,300	12,100	10,500
Change	13.8%	14.4%	13.6%	12.1%	17.7%	15.3%

7.2 Projected average household size

With the exception of the ONS based projection, the average household size is projected to fall by about 0.3, to around 1.89; the ONS projection is a reduction of only 0.18. The differences start to appear after 2016. Option 4 projects an average household size, in 2036, of 1.89 (a drop of 13.6%) in line with other scenarios; i.e. except that the ONS model gives a value of 2.00.

Table 8 Summary of projections for average household size under the various options

Year	ZNM1	ONS	ZNM2	Opt3	Opt4	Opt5
2010	2.18	2.18	2.18	2.18	2.18	2.18
2011	2.17	2.17	2.17	2.17	2.17	2.17
2016	2.12	2.13	2.12	2.12	2.12	2.13
2021	2.06	2.09	2.07	2.06	2.07	2.07
2026	2.00	2.06	2.01	2.00	2.01	2.01
2031	1.94	2.03	1.95	1.94	1.95	1.94
2036	1.89	2.00	1.89	1.88	1.89	1.88
Change 2010-2036						
In h/h. Size	-0.29	-0.18	-0.29	-0.30	-0.29	-0.30
Change	-13.3%	-8.2%	-13.3%	-13.6%	-13.0%	-13.6%

7.3 Range around projected number of Households in 2036

The table, below, shows the projected number of households arising from each of the scenarios, together with the institutional population and the household population. Also presented is the projected number of households and the corresponding average household size.

Table 9 Summary of estimated range interval for number of households in 2036, using the different scenarios.

Year 2036	Scenario						
	ZNM1		ONS	ZNM2	Opt3	Opt4	Opt5
Total Population	152,500		159,600	149,700	147,200	155,100	151,500
Institutional Pop. ³	2,700		2,700	2,700	2,700	2,700	2,700
Household Pop.	149,800		156,900	147,100	144,600	152,400	148,800
Projected households	79,400		78,600	77,800	76,800	80,600	79,000
Average H/hold size ⁴	1.89		2.00	1.89	1.88	1.89	1.88
Add 0.01	1.90		2.01	1.90	1.89	1.90	1.89
Lower H/holds	79,000		78,200	77,400	76,400	80,200	78,600
Subtract 0.01	1.88		1.99	1.88	1.87	1.88	1.87
Upper H/holds	79,900		79,000	78,200	77,200	81,100	79,400
Range	79,000 to 79,900		78,200 to 79,000	77,400 to 78,200	76,400 to 77,200	80,200 to 81,100	78,600 to 79,400

To get some idea of the accuracy of the numbers of households, we have taken the average household size and added 0.01 (the figures in 'red') to give a lower limit for the projected number of households. Similarly, subtracting 0.01 (the figures in 'purple') gives an upper limit for the number of households.

For example, for option 4, the results give a projected number of households as 80,600 with an interval suggesting that, under this scenario, the number of households can reasonably be expected to be in the range 80,200 to 81,100.

³ The projected institutional population (ie. students, those in nursing homes and hospitals, residing in prisons or on MoD sites) is given as 2,452 for 2031. As this figure is considered to be growing at that time, around 44 per year, we have extrapolated a figure of 2,672, for 2036, rounded to 2,700.

⁴ The average household size in 2010, using the 2008 projected headship rates, was estimated to be 2.18, so the projected decline in average household size over the projection period is, for most scenarios, about 0.3, i.e. around 13% (=0.3*100/2.18).

8. SUMMARY AND CONCLUSIONS

8.1 Summary

- a) We have projected South Tyneside's population under six scenarios, one starting with the ONS mid-2010 estimate as a base, the remainder starting with the ONS mid-2010 indicative population figures.
- b) Besides the two Zero Net Migration models, we have compared the ONS projection with three migration options, one including the impact of internal migration only; and one with internal migration with the average of the last five years and one with internal migration with the last three years international migration.
- c) These scenarios have in general given different results; the ONS model gives a higher figure (in 2035, 159,300) than any of the other scenarios (range in 2035 is from 147,600 to 155,100). (See table 2).
- d) Not surprisingly, in terms of the difference between the two starting points, the two Zero Net Migration models show a very similar decline, in population, over the period 2010 to 2036. (See table 2). Both models imply more deaths than births.
- e) Option 4 [internal migration and international migration over 3 years] shows a rise in population during the projection period of just under 4,000, 2.5%. (See table 2). We recommend that Option 4 is considered to be the most likely scenario. (See section 2.2).
- f) In relation to the projected populations of Tyne & Wear, only option 3 maintains the population of South Tyneside at the same proportion of Tyne & Wear, the other scenarios imply a reduction of at least 2%, up to over 8%. (See table 3). A similar pattern applies in relation to the North East Local Enterprise Partnership, but all scenarios imply a reduction of at least 2%, with again a maximum of 8% less. (See table 4).
- g) Analysis of the age structure of the projected population shows a significant decline in the number of children (those aged under 16), young people (aged 16 to 24) and adults (aged 16 to 64), while the elderly population (i.e. those aged 65 and over) is expected to substantially increase. (See tables 5a, 5b, 5c and 5d).
- h) Section 6 concludes that we project a net loss of internal migration. To maintain the population level there will have to be a net international in-flow of population.
- i) We have used 2008 projected headship rates to project the number of households. We project that the number of households will increase, by in the range 9,300 (under option 3) to 12,100 under option 4. (See table 7).
- j) Table 8 shows the projected average household size. All scenarios imply a reduction in average household size over the projection period. The table shows that using the ONS population figures together with the headship rates, there would be a reduction of just 0.18 persons per household. All the other models imply a reduction of around 0.3 persons per household.



- k) To get some idea of accuracy about the projected number of households, we produced for each scenario, a range for the projected number of households. Using a reduction or increase in average household size of 0.01, gives a range, for each scenario, of the projected number of households. These lead to intervals of 400 to 500 households either side of the projected number. For example, for option 4, we project a figure of 80,600 with a range of 80,200 to 81,100. (See table 9).

8.2 Conclusions

We have projected South Tyneside's population size forward and conclude

- a) that if the net international in-flow continues as it did in 2007 to 2010, then the population is projected to increase, primarily as a result of this net in-flow,
- b) any population increase is likely to be much less than projected by ONS,
- c) that under any of the scenarios, the population will become more elderly, and
- d) that the projected population increase and anticipated fall in average household size will lead to more households.