Dynamic Demographic Analysis of the New Community North of Fareham

A report for Fareham Borough Council

27 June 2012
## Revision and Authorisation History

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Executive Summary

In 2011, Cambridge Econometrics produced demographic projections for the New Community North of Fareham (NCNF) as part of a project undertaken for four prospective new housing ‘ecotown’ developments in England who acted in partnership with the Homes and Communities Agency in commissioning the work.

This report summarises those ‘baseline’ projections and presents the results of some further analysis and sensitivity testing. These focused on the following questions:

- how would the projections change if a higher proportion of the dwellings was made available as socially rented?
- how would the projections change if a higher proportion of the dwellings was of size 1-2 bedrooms?

**Baseline projection**

In the baseline projection, the population increases steadily while the NCNF is being built out. During this phase, the population dynamics are dominated by the arrival of new households to take up the new housing. The age structure of those moving into the development is relatively young and the average household size is initially high.

Once the number of houses is complete, there continues to be some in- and out-migration, but the population dynamics are dominated by the aging of the population. As a greater proportion of the population falls into older age bands, the average household size declines and so the size of the population that can be accommodated in a given number of dwellings also declines. The NCNF’s population starts to become more like the population of the mature surrounding settlements.

Because the population is initially young, the number of children is relatively high. The child yield (number of children per household) is initially much higher than in more mature settlements, but drops back in the longer term.

**Scenarios**

‘Dwellings-led’ estimates of the impact of the mix of housing by size and tenure on household size and composition (the number of children) were taken from analysis by Cambridgeshire County Council (which has experience of a number of new settlements). The method used to make the baseline projections was adapted to seek to match the implications derived from the dwellings-led estimates.

Increasing the proportion of socially-rented dwellings increases further the size of the peaks in the child population, because we assume that there are more children in households living in social housing.

When the proportion of 1-2 bedroom dwellings in the socially-rented stock is increased, the numbers of children in the 0-3 age band
increases, because it is assumed that additional provision of 1-2 bedroom homes attracts young (and small) families. The numbers in primary and secondary school age children is reduced, because it is assumed that these children tend to be in households that are too large for 1-2 bedroom dwellings.

The analysis raises the question as to how this outcome might be achieved in practice: will families that initially occupy a 1-2 bedroom dwelling increase in size and be forced to relocate outside the area? Although the analysis cannot give a definitive answer to this question, it does highlight the importance of considering not only the existing and anticipated need for smaller, affordable housing across the borough, but also whether the provision within the NCNF should seek to be sufficiently diverse to accommodate changes in circumstances for particular families over time.
1 Introduction

In 2011, Cambridge Econometrics produced demographic projections for the North of Fareham Strategic Development Area as part of a project undertaken for four prospective new housing ‘eco-town’ developments in England\(^1\) who acted in partnership with the Homes and Communities Agency in commissioning the work.

The methodology for those projections was the same for each of the four areas: a tailored implementation of the Chelmer Demographic Model\(^2\). Assumptions for a ‘baseline projection’ were based on the characteristics of each local area, resulting in projections that reflect local conditions.

Fareham Borough Council subsequently commissioned Cambridge Econometrics to undertake some further analysis and sensitivity testing of the demographic projections. These focused on the following questions:

- how would the projections change if a higher proportion of the dwellings was made available as socially rented?
- how would the projections change if a higher proportion of the dwellings was of size 1-2 bedrooms?

Cambridge Econometrics was also asked to make qualitative judgements (but not to undertaken modelling) about a range of further issues that may affect the nature of the New Community North of Fareham (NCNF):

- if no secondary school were built
- if the local employment provision were low, or relatively low skill
- the impact of ‘ecotown’ brand status
- if the rapid transit BRT were not provided

This report presents the results of the analysis. Chapter 2 summarises the assumptions and results of the baseline projection. Chapter 3 discusses the two scenarios that vary assumptions about the tenure or size of the housing to be provided in the NCNF. Chapter 4 gives qualitative comments on the other issues.

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\(^1\) Apart from the Fareham North SDA, the other areas were the Broadland Growth Area Triangle (new Norwich), the St Austell, St Blazey and China Clay Area Regeneration Area (in Cornwall) and Whitehill Bordon (in Hampshire).

2 Baseline Dynamic Demographic Projection for the New Community North of Fareham

2.1 How the Chelmer model works

We begin by describing the logic of the model, to explain what assumptions are required and how these are used to produce the demographic projections.

Figure 2.1 sets out the logic of the model.

When assessing the demographic structure of large scale new eco-developments, the number of dwellings is known (or, at least, proposed phasing is known). This is entered as an assumption to the model, and it is assumed that this number of dwellings will be taken up so that the model determines the size of the future population.

Figure 2.1: How Chelmer Works

Note(s): 1 Apart from first period, starting population is the model result from the previous period.
2 Initial estimates of in and out migration by age and gender are required, but the final figures are the result of model calculations.

3 Chelmer can be used in various ways. For some applications it is used to determine future population changes as a result of trends in migration and in the natural increase of the population, and then to derive the number of dwellings that will be required to accommodate this population. But in the present case we take the number of dwellings as given and seek to determine the population that can be accommodated in a new development of that size.
The total number of households is set by the assumed number of dwellings (having made an allowance for a certain proportion of empty properties), the number of shared dwellings⁴ and the average number of households in each shared dwelling.

The size of the population that is associated with the total number of households in the area depends on what ‘kind’ of households (e.g., single person, married couple, etc.) are present, and this in turn depends upon the age and gender structure of the population. Assumptions are entered for ‘household representative rates’ by age and gender, that is the number of households of each type per number of people in the area of each age and gender. Thus, people in the older age bands are more likely to form a single-person household (they have a higher household representative rate for this type of household) than are people in the age bands where families with children are common.

Consequently, if the age structure of an area is relatively young, the number of single-person households will tend to be lower and the average household size (the number of people per household) of the whole settlement will be higher, in which case the size of the total population that can be accommodated within a given number of dwellings will be higher. Conversely, as the population in a given area ages, the size of the population that can be accommodated within a given number of dwellings falls.

In this way, the total number of households constrains the total size of the population, but the limit imposed depends upon the age structure.

The population of the area is determined as: the population present in the previous year, minus deaths, plus births, minus out-migration plus in-migration. This calculation is carried out for each age and gender.

For example, for any given year, the population of women aged 40 is determined as the number of women aged 39 living in the area a year earlier, less an estimate for those from that group who have died, less an estimate of those from that group who have moved away, plus an estimate of those of that age who have moved into the area. The number of children aged under 1 is determined by the number of live births to women living in the area, plus net migration of children of that age.

When the number of dwellings is given (as in this case), the scale of migration is adjusted so that the implied total number of households matches that which the number of dwellings can accommodate. The age structure of in-migrants and out-migrants is determined by initial assumptions entered by the user.

In a new settlement such as the NCNF, the size of the population in the starting year is typically small (and may be zero). While new build continues at a substantial rate, the vast majority of any increase in population is achieved through in-migration. Because the pool of people who want to move in any year is weighted towards younger

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⁴ Dwellings shared by more than one household.
adult age groups (because these are the people who have a greater tendency to face lifestyle or job changes that prompt the need to move), it is typically appropriate to reflect this weighting in the assumptions for the age structure of those moving into the new settlement.

The result is that during the phase of development, the age structure of the population tends to be considerably younger than that of the broader area in which the settlement is located and the number of children per household tends to be higher. Once construction is completed, the dynamics of natural population change take over. Depending on how quickly construction has been carried out, there may be a temporary dip in the number of children as the abnormally high bulge associated with the initial young population passes through school age and becomes young adults. Eventually (but this may take several decades) the settlement tends to become similar in age structure to the surrounding area.

Chelmer does not contain information about the offer of housing supply, for example the type of tenure of the type and size of dwelling. Consequently, these factors cannot exert any influence on the model projections. In effect, it is assumed that the type of and size of dwellings will accommodate the needs of the population (which may come about, for example, by the extension or adaptation of homes over time), and that the mix of tenures is similarly accommodating. This means that if a settlement were planned to have particularly unusual characteristics (for example, a large provision of sheltered accommodation targeted at the elderly), care must be taken to reflect this in the assumptions for the age structure of in-migrants (in this example, with an unusually large weighting towards the older age groups). Similarly, if it was planned to have an unusually large provision of social housing, this might need to be reflected in a larger ratio of children to adults in the in-migration assumptions (if this were felt to be a more reasonable assumption for the characteristics of families in social housing). This is the kind of analysis that has been developed for the sensitivity testing described in Chapter 3.

Estimates of the size of the labour force are calculated by applying age/gender-specific activity rates to the estimated population. Consequently, the size of the labour force will change as the age structure of the population changes (reflecting, for example, the impact of a larger retired population as the numbers in those age groups increases).

### 2.2 Assumptions for the baseline projection

Table 2.1 summarises the assumptions that have been used for the baseline projection.
Dynamic Demographic Analysis of the New Community North of Fareham

Table 2.1: Sources and assumptions for the baseline projection

<table>
<thead>
<tr>
<th>Source/Assumption</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of dwellings</strong></td>
<td>It is assumed that 500 dwellings per year are delivered, beginning in 2016 and culminating in 2030. The final stock is therefore 7,500 dwellings, which is a likely upper limit to the size of the settlement.</td>
</tr>
<tr>
<td><strong>Households</strong></td>
<td>Household representative rates taken from CLG 2008-based household projections.</td>
</tr>
<tr>
<td><strong>Activity rates</strong></td>
<td>Census 2001 and national labour force projections.</td>
</tr>
<tr>
<td><strong>Age structure of migration</strong></td>
<td>Net migration into the NCNF is determined by the available housing. Assumptions for the breakdown of migrants by age and gender are based on the 2001 Census data for people who moved into Fareham in 2001.</td>
</tr>
<tr>
<td><strong>Fertility rates</strong></td>
<td>The trends follow those for England developed by GAD.</td>
</tr>
<tr>
<td><strong>Fertility rate correction factors</strong></td>
<td>This factor adjusts the England projections to reflect historical differences for Fareham compared with the national average. It is calculated as the ratio of an estimate of births derived by applying national fertility rate assumptions to Fareham’s population and actual births in Fareham calculated from ONS mid-year population estimates.</td>
</tr>
<tr>
<td><strong>Mortality rates</strong></td>
<td>The trends follow those for England developed by GAD.</td>
</tr>
<tr>
<td><strong>Mortality rate correction factors</strong></td>
<td>This factor adjusts the England projections to reflect historical differences for Fareham compared with the national average. It is calculated as the ratio of an estimate of deaths derived by applying national mortality rate assumptions to Fareham’s population and actual deaths in Fareham calculated from ONS mid-year population estimates.</td>
</tr>
<tr>
<td><strong>Vacancy rate</strong></td>
<td>Proportion of dwellings that are vacant, from Census 2001.</td>
</tr>
<tr>
<td><strong>Sharing rate</strong></td>
<td>Proportion of dwelling stock with multiple households, Census 2001.</td>
</tr>
</tbody>
</table>

2.3 Results for the baseline projection

Table 2.2 presents the headline results for the baseline projection, and Figure 2.2 shows how population is projected to change over time. The population increases steadily until while the NCNF is being built out. During this phase, the population dynamics are dominated by the arrival of new households to take up the new housing. Since, by assumption, the age structure of those moving into the development is relatively young, the average household size is initially high.

5 If the upper limit to the number of dwellings were lower than this, the scale of the demographic results would be correspondingly lower, but the character (in terms of age structure) would be unchanged.
Once the number of houses is complete, there continues to be some in- and out-migration, but the population dynamics are dominated by the aging of the population. As a greater proportion of the population falls into older age bands, labour force participation declines from the peak at the year of completion and so the size of the labour force (the number of residents in work or seeking work) declines. The average household size also declines and so the size of the population that can be accommodated in a given number of dwellings also declines. The NCNF’s population is becoming more like the population of the mature surrounding settlements.

... followed by gradual decline as average household size falls back to the level of a mature community.
The proportion of younger adults and children falls back as the settlement matures. Figure 2.3 shows the breakdown of the projected population by age group. Initially, the proportion of people in the age groups associated with young families (i.e. adults aged from their mid-20s to late-30s, and children in younger age groups) is high. There are relatively few people in their late teens and in the 50+ age groups. After completion of the development, the gradual aging of the population is reflected in a fall in the numbers of children and adults aged 25-44 and increases in the older age bands.

**Figure 2.3: Age Structure of the NCNF - Baseline Projection**

The needs of the population change over time. The dynamics of the change in the age structure of the population help to highlight the kinds of issues that are likely to be important at different stages in its development. Table 2.3 sets out an illustrative set of issues to show the relationship between the community’s needs and its stage of development.

Implications for school places. Clearly one of the key needs which must be addressed from very early in the life of the development is for pre-school and school provision, and for the other facilities (for example, playgrounds) that young children need. Apart from schools, these needs are often not provided for in the first years of development. Because new developments tend to have an unusually young age structure, the number of children is unusually high while the development is being built. This is measured in the indicator ‘child yield’: the number of children (in an age band associated with a given phase of education) per dwelling in the development.
### Table 2.3: Changing Issues as the Development Grows and Matures

<table>
<thead>
<tr>
<th>Facilities for children (e.g. playgrounds)</th>
<th>Early stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>First primary school, residents’ association</td>
<td></td>
</tr>
<tr>
<td>Local amenities (shops, public transport, meeting places)</td>
<td></td>
</tr>
<tr>
<td>GPs, dentist, pharmacy</td>
<td></td>
</tr>
<tr>
<td>Pre-school places</td>
<td></td>
</tr>
<tr>
<td>Places in secondary school outside of the development</td>
<td></td>
</tr>
<tr>
<td>Sports facilities (especially football pitch / changing rooms)</td>
<td></td>
</tr>
<tr>
<td>High turnover of population</td>
<td></td>
</tr>
<tr>
<td>Social club, church, rooms for groups to hire</td>
<td></td>
</tr>
<tr>
<td>Additional primary school</td>
<td></td>
</tr>
<tr>
<td>Secondary school</td>
<td></td>
</tr>
<tr>
<td>Starting to lose original community spirit</td>
<td></td>
</tr>
<tr>
<td>Youth provision / vandalism</td>
<td></td>
</tr>
<tr>
<td>Elderly provision</td>
<td></td>
</tr>
<tr>
<td>Vacant spaces in primary schools</td>
<td></td>
</tr>
</tbody>
</table>

#### Figure 2.4: Number of children in School Phase Age Groups – Baseline Projection

![Graph showing number of children in School Phase Age Groups – Baseline Projection](image)
Figure 2.4 shows that the numbers of children projected to be in the 0-3 and 4-10 (primary school) age bands peaks when the development is completed. Two decades later, the numbers in these age bands are projected to be only half their value at the peak. The number in the 11-15 age band peaks later (when the cohorts with the largest numbers pass from primary to secondary school).

The associated child yield numbers are shown in Figure 2.5. The peak for the 0-3 child yield occurs in the first year that people begin to move into the development. This is because in each subsequent year the children of settlers from earlier years are becoming older (and also because women who were initially in the peak child-bearing years are becoming older, reducing the crude birth rate). The peak for the 4-10 child yield occurs just before the settlement is completed, but the numbers in that age range continue to rise because this effect is outweighed by the increase in the number of dwellings. The peak in the 11-15 child yield again occurs later, reflecting the time taken for the peak cohorts to move into that age range.

Figure 2.5 also shows an estimate of the child yields in Fareham in 2010. It can be seen that the peaks are substantially above the corresponding Fareham values, reflecting the unusually young age structure. It can also be seen that in the latter part of the period, the projected child yields dip below the Fareham 2010 estimates.

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Two points can be made about the longer-term projections.

Firstly, a temporary dip of this kind has been experienced in other new settlements, because the concentration of initial settlers that had young families when they first arrived move into middle age. Much depends here on how long people remain in the settlement. If the settlement is regarded as a place to secure a first home with the hope of moving to a preferred location later, the turnover of the population will be relatively high and the age structure of the settlement will remain younger for longer. This is sometimes the experience of a new settlement in its early years, when the community lacks roots and local service provision is still less developed than in other locations. But if there is a sufficient range of housing available for people to move within the settlement when their children get older (and when they can afford a larger house), the scope for a new wave of younger people to move in and replenish the child population is less. Eventually (beyond the period shown in the chart) the population becomes more like the surrounding area and child yields may rise again.

Secondly, the long-term context for the projections is one in which the UK population is aging and the number of childless households will increase, and so the Fareham child yield numbers may decline in the longer term. So the benchmark for ‘becoming more like the surrounding area’ is what the surrounding area will be like in future decades rather than how it is now.

Because of the uncertainty about the extent to which people will move out of the settlement and allow younger people to move in, the scale of the reduction in school numbers in the baseline projections should be treated with some caution. The qualitative message is that some reduction can be expected, with a consequent impact on vacant school places, but monitoring of numbers at the time will be required to gauge whether the rate of decline is as fast as projected here. The projections should therefore not be used to try to predict with any precision when and for how long a problem of vacant places might emerge, but they do expose one of the logical implications of the process of change as the age structure adjusts to something more typical of the wider area.
3 Sensitivity to Alternative Assumptions about Housing Tenure and Size

3.1 Motivation for the sensitivity testing

The Chelmer method for projecting the demographic features of the population makes assumptions about the characteristics of people who move in and out and then takes account of the impact of aging on the population that does not move. It is assumed that the mix of housing that is provided will accommodate the kinds of households that this population forms.

An alternative, ‘dwellings-led’ method is to make assumptions about the number of dwellings of different sizes and tenure and make these the driver of projections for population.

Since policy-makers are interested in responding to the existing need for affordable housing and the long-term needs of smaller households, we are interested in exploring the impact of providing a particular mix of housing (by size and/or tenure). The aim is to assess the scale of impact of certain expected consequences: If the housing provision is skewed towards smaller dwellings, the NCNF will not be able to accommodate as many large households; if the housing provision has a large social housing element, there will be a tendency for average household size to be larger for any particular size of dwelling.

There are limits as to how atypical the housing provision can be. For private housing, builders will provide what they think the market will demand, and it would be surprising if a settlement as large as the NCNF were to develop over 15 years in such a way that the mix of housing was strongly skewed to large or small dwellings. Similarly, the upper end of the range of affordable housing that could be delivered is constrained by the overall financial viability of the NCNF, and both the upper and lower ends of the range are probably limited by the desire to ensure a varied social mix while contributing appropriately to the borough’s need for affordable housing. But the size mix of social housing that forms part of the affordable housing provision is clearly something that policy will wish to influence, so as to address the existing gaps in provision and in anticipation of the needs that will become more prominent in the future.

In this chapter we report on some tests that we have carried out to see how sensitive the baseline projections are to alternative assumptions for the mix of housing by size and tenure.

3.2 Method for constructing the scenarios

The objective is to use the Chelmer model to represent the impact of assuming a particular view for the size and tenure of the housing to be provided in the NCNF.
We begin by gathering information about the number of people, per dwelling of different sizes and tenure. Cambridgeshire County Council’s demography research team has carried out analysis in this field, reviewing the experience of a number of new developments that have taken place in recent years, to support its own estimates of population and child yield for prospective new developments in the county. These are shown in Table 3.1.

### Table 3.1: Assumptions for the Impact of Size and Tenure on Household Composition

<table>
<thead>
<tr>
<th></th>
<th>Market housing</th>
<th>Socially-rented housing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Children per 100 dwellings</td>
<td>Children per 100 dwellings</td>
</tr>
<tr>
<td></td>
<td>Number of bedrooms</td>
<td>Number of bedrooms</td>
</tr>
<tr>
<td>Aged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>4-10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>140</td>
</tr>
<tr>
<td>11-15</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>100</td>
</tr>
</tbody>
</table>


Similar data were not available from Hampshire County Council for comparison. It may be that Cambridgeshire’s experience is at the high end of the range for child yield, because the county has experienced strong in-migration of people of working age over a long period (and so its new developments are likely to have a high proportion of young people). If so, by using the Cambridgeshire assumptions we are at any rate unlikely to understate the impact of varying the mix or tenure of housing in the NCNF. Note that the assumptions in Table 3.1 do not refer to any particular year in the stage of a new development’s life cycle; rather, they refer to the peak number of children (since this is what school capacity planning must seek to accommodate), in whatever year this occurs.

Since Chelmer does not make any explicit assumption for size and tenure of housing, the next step is to derive a reasonable estimate of what mix of housing could be implied by the baseline population projections for the NCNF presented in Section 2.3. The set of assumptions shown in Table 3.2 for the mix of housing by size and tenure was adopted. When combined with the assumptions in Table 3.1, a peak child yield for each age band for the NCNF can be derived and Figure 3.1 shows that these peaks give a reasonable match with those of the baseline projections.
Table 3.2: Assumptions for Housing Mix Consistent with Baseline Projections

<table>
<thead>
<tr>
<th>Tenure</th>
<th>All</th>
<th>1-2</th>
<th>3</th>
<th>4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socially-rented</td>
<td>25%</td>
<td>54%</td>
<td>35%</td>
<td>11%</td>
</tr>
<tr>
<td>Market etc.</td>
<td>75%</td>
<td>35%</td>
<td>42%</td>
<td>22%</td>
</tr>
<tr>
<td>All</td>
<td>100%</td>
<td>40%</td>
<td>41%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Figure 3.1: Comparison of Peak Child Yield from Baseline Projections and Housing Mix Method

The next step is to determine what housing mix assumptions to use for the sensitivity scenarios.

In the first scenario, we vary the proportion of socially-rented housing but keep the size mix within each of the two types of tenure the same as in Table 3.2. Plans for the provision of socially-rented housing are not yet firm, but discussions with potential housing providers suggested that a reasonable working assumption could be 40% of the total stock being affordable of which 80% might be socially rented, giving a share of the total stock of 32% for socially-rented housing.

The consequence is that the overall mix of housing by size shifts slightly in favour of smaller dwellings (because we assume that there is a higher proportion of smaller dwellings in the socially-rented sector than in the market sector).

In the second scenario, we keep the proportion of socially-rented housing at 32%, but within this we increase the proportion that is made up of 1-2 bedroom dwellings. Again, decisions have not yet been made
about the required proportion of socially-rented dwellings in each size category. The shares consistent with our baseline, presented in Table 3.2, are also broadly consistent with the guesstimate for the NCNF suggested by one housing provider. In the past, Fareham Borough Council’s Affordable Housing Strategy has suggested that a higher proportion of 1-2 bedroom dwellings might be needed, and so in the sensitivity testing we have used the following shares: 70% 1-2 bedrooms, 25% 3 bedrooms, 5% 4+ bedrooms.

Using the assumptions in Table 3.1, the two scenarios have the following impacts on the child yield compared with the base scenario.

<table>
<thead>
<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children per 100 dwellings</td>
<td></td>
</tr>
<tr>
<td>0-3</td>
<td>2.0</td>
</tr>
<tr>
<td>4-10</td>
<td>1.4</td>
</tr>
<tr>
<td>11-15</td>
<td>1.0</td>
</tr>
</tbody>
</table>

The higher proportion of socially-rented housing raises the number of children for a given number of dwellings. In the second scenario, this effect is offset by reducing the proportion of larger dwellings so that the number of primary school and secondary school aged children is lower than in the baseline (because the yield data in Table 3.1 assume that such children are typically in households that are too large for a 1-2 bedroom dwelling).

In order to develop the scenarios in Chelmer, we adjust Chelmer’s assumptions for the age structure of in-migration so as to achieve approximately the changes in peak child yield shown in Table 3.3. In this way we use the evidence on the relationship between housing mix and child yield to calibrate a full dynamic population scenario with characteristics that reflect the impact on child yield derived using the ‘dwellings-led’ method.

### 3.3 Results of sensitivity testing

The impacts of the two scenarios on the total population are quite small. Increasing the proportion of social housing from 25% to 32% leads to an increase in the overall population of about 1% over the baseline. When, in addition, the proportion of 1-2 bedroom dwellings in the social housing provision is increased to 70%, the overall population could be reduced by some 2-5% of the baseline.
Children

Figure 3.2 shows the estimated impact of raising the proportion of social housing from 25% to 32%. The effect is to increase further the size of the peaks in the child population (because we assume that there are more children in households living in social housing).

Figure 3.2: Impact on the number of children of raising the proportion of social housing from 25% to 32%

![Graph showing the estimated impact of raising the proportion of social housing from 25% to 32%]

Figure 3.3 shows the estimated impact of both raising the proportion of social housing from 25% to 32% and raising the share of 1-2 bedroom homes within the social housing provision from 54% to 70%.

The numbers of children in the 0-3 age band increases, because it is assumed that additional provision of 1-2 bedroom homes attracts young (and small) families. The numbers in primary and secondary school age children is reduced, because it is assumed that these children tend to be in households that are too large for 1-2 bedroom dwellings.

The scale of the reductions shown in Figure 3.3 do not exactly match those derived from the dwellings-led approach shown in Table 3.3: compared to the numbers implied by the table, the reduction in primary age children is somewhat less and the reduction in secondary age children somewhat more. An exact match could not be achieved because the Chelmer method assumes that most of the children of primary age go on to form the secondary age population. The predictions from the dwellings-led approach are for a larger impact on primary than secondary age children, but in Chelmer a scenario that cuts the primary age population feeds through to a lower secondary age population a few years later. Although there is uncertainty about the exact scale of effect, the scenario does raise the question as to whether
a higher proportion of smaller dwelling in the social housing stock might call into question the viability of a secondary school.

**Figure 3.3: Impact on the number of children of raising the proportion of 1-2 bedroom dwelling in social housing from 54% to 70%**

**Implications of smaller dwellings for the scope for moves within the NCNF**

The same logic in Chelmer highlights another potential issue that could be raised by having a high proportion of 1-2 bedroom dwellings in the social housing provision: will families that initially occupy a 1-2 bedroom dwelling increase in size and be forced to relocate outside the NCNF? In the Chelmer scenario shown in Figure 3.3, the outcome was achieved by assuming a higher rate of outmigration for families with children in primary school.
4 Comments on Other Issues that Might Affect the Characteristics of the NCNF’s Population

4.1 Introduction

In this chapter we offer qualitative comments on a selection of issues that have been raised as potentially having an influence on the character of the population of the NCNF. We have not attempted to undertake formal modelling of any of these issues because there is much greater uncertainty about the nature of their impact.

4.2 Impact of not building a secondary school in the NCNF

The potential impact of no secondary school provision is clearly that the NCNF might be less attractive for families of children of secondary school age, and there could conceivably be a knock-on effect for families with children at a younger age (either because they are part of a family with children of secondary school age, or because parents seek to move into the catchment area of a secondary school in anticipation of their children reaching secondary school age).

If a secondary school is not provided in the NCNF then children will have to be bussed elsewhere. How unpopular this is will depend in part on how long the journey time would be, and whether there is any perception that children from the NCNF would face greater difficulty in securing a place at a school of their parents’ choice. It is well known that secondary schools with a good reputation have a measurable positive impact on house prices in their catchment area. There is some anecdotal evidence from Whitely that some families move out when their children approach secondary school age.

The wider question arises as to whether a settlement the size of the NCNF would suffer from the loss of the possibility of dual use of the facilities associated with a secondary school, and the answer to this depends on whether those facilities would be made available in some other form.

4.3 Impact of low or low-skill provision of local employment opportunities

Low provision of local employment opportunities will clearly result in more out-commuting. The main impact is likely to be the pressure that this places on peak-time road congestion, and the consequent effects on the attractiveness of the NCNF as a place to live.

Decisions on where to live are not determined only by access to work, and even when this is a consideration there may be more than one worker in the household to consider. Higher-paid occupations are associated with longer work journeys, so the provision of local employment opportunities is unlikely to affect these groups. For
households with workers in lower paid occupations, the decision to move to the NCNF is more likely to be made on the basis of the availability of suitable housing than access to work. But the cost and inconvenience of commuting might discourage participation in the labour force by those with low skills (and hence the prospect of a low wage) when they might otherwise seek work.

For the same reasons, if provision of local employment opportunities were primarily low-skill in nature, it is unlikely that this alone would have a major impact on the attractiveness of the NCNF for any particular groups (higher-paid occupations would mostly not work in the NCNF anyway; lower-paid occupations would not choose to move to the NCNF for this reason alone).

4.4 Impact of ‘green’ branding

Unless ‘green’ features (higher standards of energy and water efficiency; an emphasis on non-car modes of transport) in the NCNF make it very markedly different from alternative places to live, it seems unlikely that this will have much impact on the characteristics of the population. Our judgement is that

- the proportion of people for whom ‘green’ branding would be a major factor in their location decision is probably small
- for these people, the kinds of ‘green’ features that would be required to make a difference (for example, severe curbs on the use of the private car, substantially better performance of homes with respect to energy use, or community heating schemes) seem unlikely to be offered in the NCNF.

4.5 Impact of not providing the rapid transit BRT

The main issue here is the impact on peak-time commuting road congestion and hence journey-to-work times (and the difference made by the BRT compared with the service offered by conventional buses). This in turn will affect the attractiveness of the NCNF not just for those who would use the BRT but also for those who would in any case use the private car to travel to work. How severe this effect would be depends on what is done to improve road transport capacity to accommodate the additional burden placed on the system by the NCNF’s population.

The fact that people show an apparent willingness to tolerate long and uncomfortable journeys to work suggests that it will not necessarily be a major influence on location decisions, but if problems emerged during the course of the development of the NCNF then the area might gain a bad reputation for accessibility which would affect is attractiveness to new residents.