

## EDUCATION AND RECREATION COMMITTEE - 23 MARCH 2006

### RESERVED PLACES AT SECONDARY SCHOOLS

#### 1. Purpose of Report

- 1.1 This report requests the Committee to agree numbers of Reserved Places at all Aberdeenshire secondary schools.

#### 2. Background

- 2.1 At its meeting on 24 March 2005, the Committee agreed to set numbers of Reserved Places on an interim basis for 2005-06 whilst instructing that Officers should investigate the effect of housing turnover and the occupation of new housing in more detail with a view to refining these figures for session 2006/07.

#### 3 Placing Request Legislation

- 3.1 The right of parents to make Placing Requests was introduced by the Education (Scotland) Act 1981. Education Authorities were obliged to accede to Placing Requests unless one or more of the grounds for refusal which were set out in the Act applied in a particular case.
- 3.2 In relation to Placing Requests relating to admission in August to P1 and S1 classes, Authorities were obliged to give equal consideration to all Placing Requests received by 15 March, and to notify parents of their decisions by 30 April.

Particularly in areas where there was rapid housing development, the statutory timetable and the limited grounds for refusal could give rise to difficulties when families moved into the area of an oversubscribed school after the end of April.

In 1991, Mintlaw Academy had 206 in-zone applicants and a maximum of 210 places available for its S1 intake. The Authority, which was then Grampian Regional Council, was obliged to allocate the 4 remaining places to outwith-zone Placing Requests although there was no doubt that housing development in the area would give rise to additional in-zone requests before the start of session. The outcome was that some late arrivals had to undertake inconvenient cross-country journeys from Maud to Fraserburgh.

- 3.3 The legislation also had a ratchet mechanism on school rolls. If the Authority agreed that extra classes should be timetabled or temporary accommodation provided to meet the in-zone demand for places, it raised the number of pupils who could be admitted to the next multiple of 20 or 30. Although this change would have been agreed for the benefit of a handful of in-zone pupils, the Authority would then have no valid grounds for refusing to allocate the balance of these extra places in response to outwith-zone Placing Requests

- 3.4 Similar problems occurred elsewhere in Scotland and they led to the making of provision for Reserved Places in the Education (Scotland) Act 1996 at those schools where the nearest equivalent school was more than 3 miles away (2 miles for primary schools).
- 3.5 The Standards in Scotland's Schools etc (Scotland) Act 2000 added to the grounds for refusal of Placing Requests available under previous legislation. The Authority is specifically permitted to refuse a Placing Request on the grounds that the pupil capacity of the school would be exceeded even if the admission would neither require the employment of an additional teacher or give rise to significant expenditure on extensions or alterations to the school
- 3.6 The adoption of a policy on Reserved Places does not prevent parents whose Placing Requests are refused from appealing to an a Placing Requests Appeal Committee against the Authority's decision, or to the Sheriff against the decision of an Appeal Committee. It is important that the basis on which the policy is adopted is set out in sufficient detail for it to be justified in these fora if necessary.
- 3.7 The purpose of retention of a number of Reserved Places at the start of a school year is to be reasonably certain that a school will be able to accept pupils who move into its area during the course of the year. As the year proceeds the actual changes in the size of a year group may allow some of the Reserved Places to be relinquished, whilst retaining a prudent number for pupils who may move into the area during the remainder of the year. It is proposed that Education Network Managers should have discretion to relinquish some Reserved Places in this way in consultation with the Headteacher and after having regard to local circumstances.

#### **4 Proposals for Reserved Places**

##### **4.1 Mintlaw**

When the Reserved Places legislation was enacted, the only school to which the Council applied it was Mintlaw Academy in view of the previous problems described in 3.2 above. The level was arbitrarily set at 4 places per year group. Mintlaw's roll has declined since reaching 997 in 1993 and 996 in 1995, so the adequacy of this has not been tested.

##### **4.2 Meldrum**

When Meldrum Academy was about to open, the Committee agreed that 10 places should be reserved in each year group. This was based on a statistical calculation, which showed that only the effect of 100 new houses per year would require the reservation of 8 places to achieve 90% certainty of meeting the demand. The report acknowledged that turnover of the existing housing stock could also cause the roll to fluctuate but no calculation was made in support of this. The report recommended, and the Committee agreed, to reserve 10 places rather than 8 to allow for this factor.

##### **4.3 Housing Turnover**

It has been recognised that even in the absence of any significant housing development, the roll of individual year groups will be subject to fluctuation as existing houses are resold or relet and families move into or out of the area served by the school. This report seeks to include appropriate allowance for this factor as well as for the occupation of new housing.

## 5 Investigation and Conclusions

5.1 A statistical modelling exercise was undertaken to discover the expected range of variation in the size of a secondary school year group as a result of turnover of the existing housing stock and the occupation of new housing. The outcome of this was compared with the available evidence from the Council's school roll records.

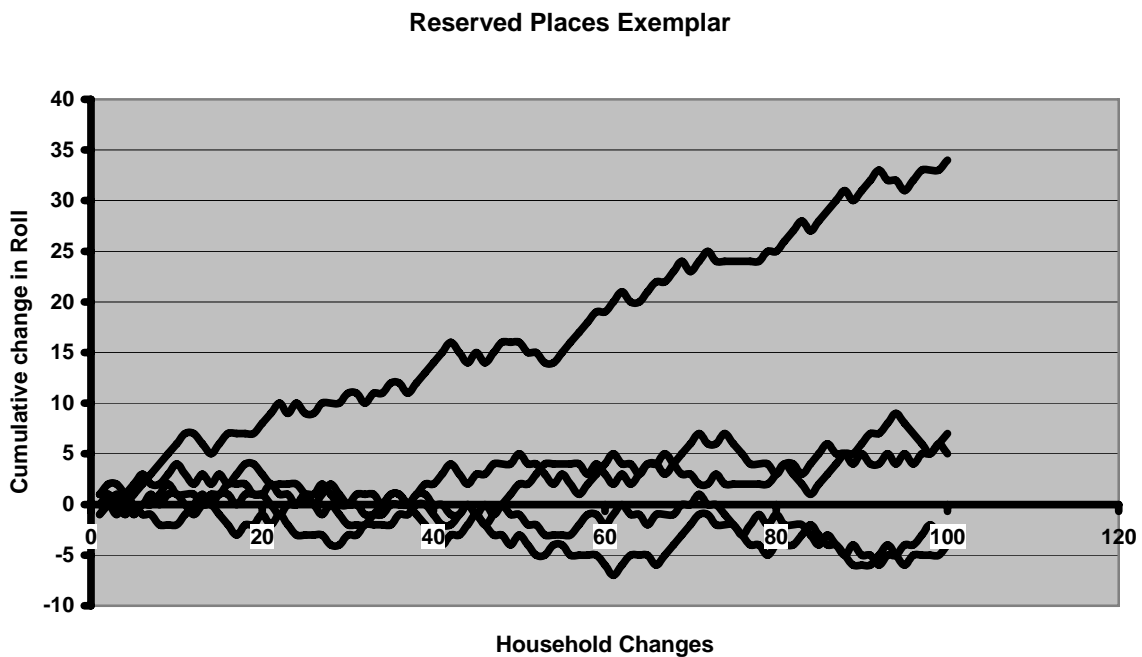
The main report summarises this. More detail is provided in the Appendix.

### 5.2 Preliminary Example

5.2.1 A preliminary example will illustrate the limitations of statistical results. It assumed that in the zone of a particular school, 100 houses were resold or relet during the course of a year and that in each case the school roll would either increase by 1 pupil, decrease by 1 pupil or remain unchanged.

The simulation was run 5 times and the results are shown in the chart below (Fig 1).

Fig 1



In this artificial example, the variation is rarely more than +/- 5 pupils, but:

5.2.2 Although most simulations show similar levels of variation, the top line on the graph shows that large variations are possible even if they are rare. Simulations need to be repeated many times to determine what constitutes a range of variation which may reasonably be expected in the great majority of cases

5.2.3 The maximum increase does not necessarily coincide with the end of the process. From the top of the graph, the first and second lines finish at their respective maximum values of 34 and 7. The third line finishes at 5 although its maximum value was 9 after 94 changes. The fourth and fifth lines finish at the value -4, although their maximum values were both +2 after 16 changes in one case and 18 in the other.

For a headteacher, it is the maximum increase in roll, at whatever time of the year it occurs, which must be managed within the timetable structure.

5.3 Statistical Modelling

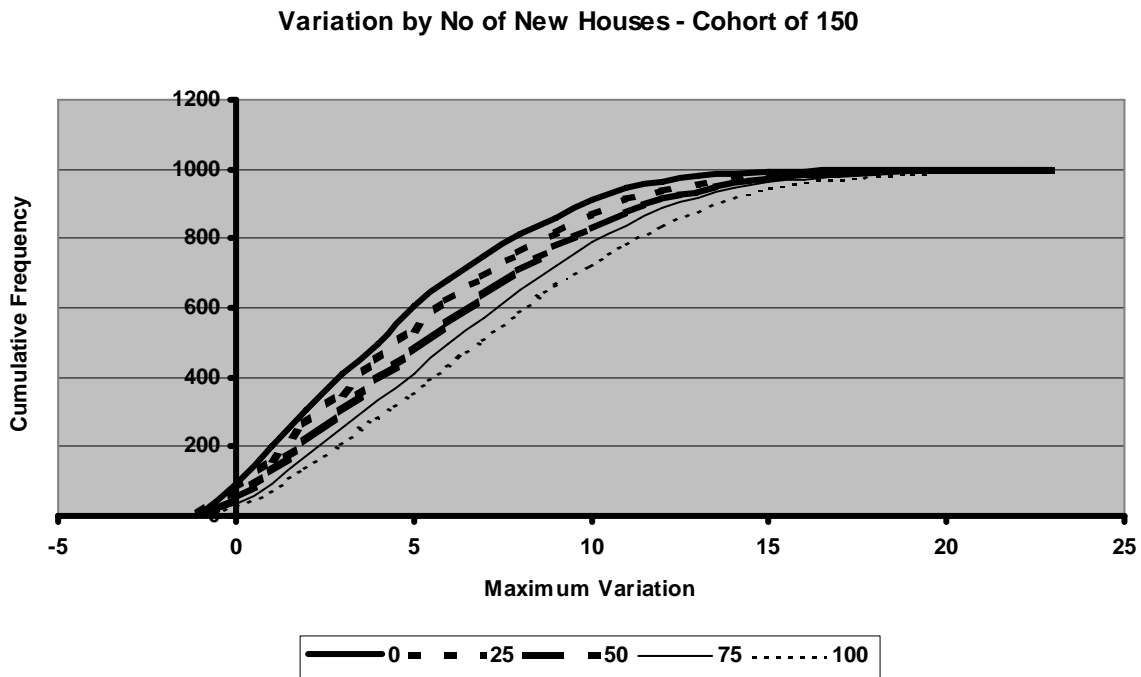
A statistical model was set up to simulate the combined effect of housing turnover and new housing for year groups of 50, 100, 150 and 200 pupils and for 0, 25, 50, 75 and 100 new houses during the course of the year.

For each combination of the cohort size and scale of housing development, the simulation was run 1000 times and the frequency with which different variations to the cohort occur was analysed.

For the reason given in 5.2.3 above, the analysis was based on the maximum variation occurring during the year rather than the final position at the end of the year.

This model is likely to overestimate the variation as it treats each housing transaction as an independent event. As a proportion of housing moves are to another house in the same locality, this condition is not fulfilled in all cases.

Fig 2



The graph above (Fig 2) shows the cumulative frequency of particular levels of variation for a cohort size of 150 for different levels of housing development.

For this size of cohort, the 90th percentile of the variation occurs at about

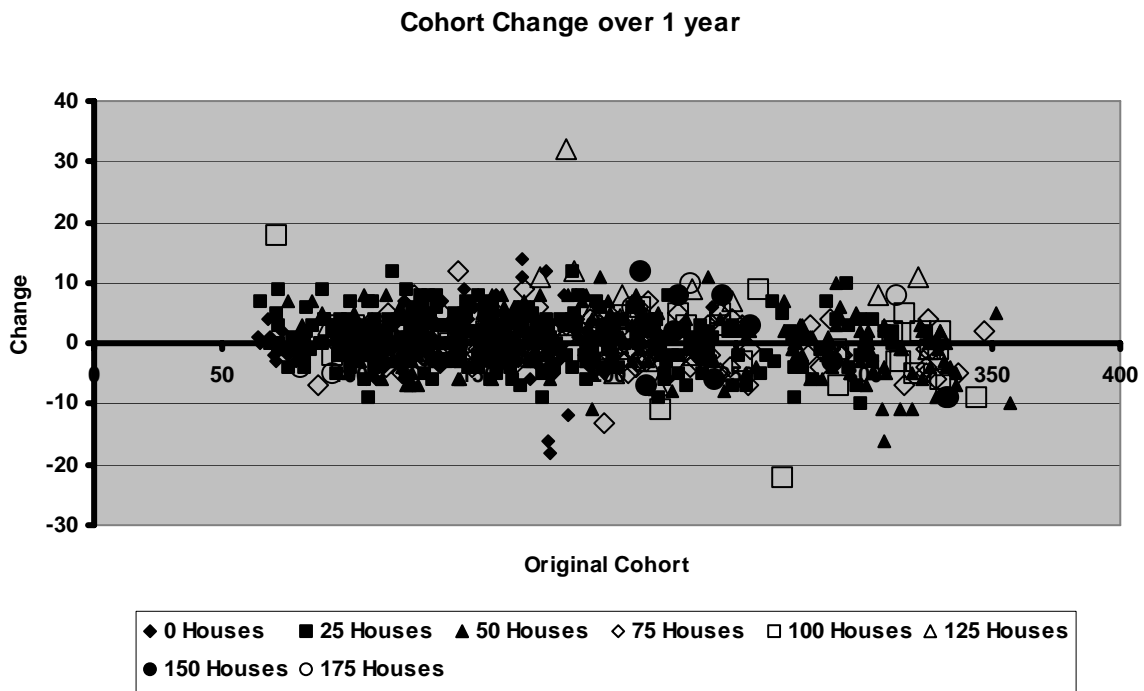
Houses Built	0	25	50	75	100
Variation	10	11	12	13	14

5.4 Evidence of School Roll Records

5.4.1 The rolls of S1, S2 and S3 in the years 1986 to 2003 were compared with the rolls of S2, S3 and S4 in the following year to show how the year groups had changed. These data were further classified by the number of new houses built in the area during the year.

The data are shown in Fig 3 below

Fig 3



5.4.2 Although the chart displays 857 pieces of data, this is far fewer than the 1000 pieces of data generated for each pair of parameters in the simulation. The data do however show that the year on year variation is only rarely greater than +/- 10 pupils for any combination of cohort size and new housing.

5.4.3 These data relate to the net change over a period of a year and will understate the maximum variation which the school may have experienced during the course of the year. However, as shown in the Appendix, this difference is probably small.

5.4.4 As these are actual data, the problem in the statistical model of intra-catchment area house moves disappears. The families notify the school of their new address but no change in the roll is recorded.

5.4.5 Surprisingly, the actual data do not appear to show either that larger year groups are subject to greater fluctuation or that the level of housebuilding affects it.

5.5 Conclusions

5.5.1 The statistical model and the actual data are likely to err on the high and the low side respectively, and in that light they are not inconsistent. It is proposed that the Committee agree to reserve 10 places in each of the year groups S1 to S4 at each of Aberdeenshire's secondary schools.

5.5.2 The Committee agreed last year that Admission Limits would not formally apply to S5 and S6, so there is no reference figure against which a number of Reserved Places could be set. Local discretion will apply in accordance with the framework set out in the Admission Limits policy

5.6 Mearns Academy

It is proposed that Mearns Academy be allowed to offer all 100 places in its S1 intake. Additional pupils who move into the zone could be accommodated within classes which are already timetabled as the classes of 30 will start the year at 25, and the classes of 20 at 16/17. They will not therefore have an impact on teaching accommodation. They will, however, add to the overall numbers and the general pressure on space.

In their report of December 2004, HMI have referred to the general overcrowding of the school, so it is important to keep the intake as near as possible to the limit of 100. HMI also point to the restriction on the curriculum imposed by restricted staffing as well as by accommodation difficulties. The requirement to hold 10 reserved places would result in limiting the intake this year to the approximately 90 in-zone pupils. The operation of the Council's staffing formula would aggravate the staffing issue to which HMI refer.

Although this is arguably permissible as the exercise of local discretion in accordance with 3.7 above, it would represent an extreme case of such discretion. Accordingly, the Committee is asked to give explicit approval to it.

**6. Financial Implications**

6.1 Although there are no financial implications arising directly from this report, the operation of an effective Reserved Places policy may be expected to reduce the number of occasions on which the Council requires to provide temporary accommodation or build extensions.

**7. Area Implications**

7.1 There are no implications of this report which have specific implications for particular Areas within Aberdeenshire.

**8. Consultation**

8.1 The Aberdeenshire Secondary Head Teachers Association has been consulted on these proposals

**9. Policy Implications**

9.1 A policy on Reserved Places provides a degree of increased control over admissions which will enable the Council to operate its Asset Management Plan more effectively.

**10. Environmental Implications**

10.1 There are no implications for the Council's Environmental Charter arising from this report.

**11. Staffing Implications**

11.1 There are no staffing implications arising from this report.

**12. Recommendations**

**The Committee is recommended to:**

- 12.1 Agree that there should be 10 Reserved Places in each of the year groups S1 to S4 in each Aberdeenshire Secondary School;**
- 12.2 Agree that Education Network Managers should have discretion to relinquish some Reserved Places during the course of the year in accordance with paragraph 3.7 of this report;**
- 12.3 Agree that the special circumstances of Mearns Academy should be dealt with as proposed in paragraph 5.6 of this report;**
- 12.4 Ask for a brief report on the operation of the policy to form part of the annual report on Admission Limits.**

**Author of Report**

**S W Shaw  
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**28 February 2006**

## Statistical Modelling of the Combined Effect of Housing Turnover and the Occupation of New Housing on the Roll of Individual Secondary School Year Groups

### Housing Turnover

On average gains and losses will by and large cancel out, but in the short term they do not match exactly and schools have to make provision for the incoming children. We need to know what level of fluctuation may reasonably be expected

### New Housing

On average a new house may give 0.0375 pupils per year group in S1 –4, but in reality the number for any house is either 1 or 0. For a sufficiently large number of houses, departures from average will be small in percentage terms, but the actual departure from an average can be significant for the number of houses actually built in an individual school zone in a particular year.

## Data used and its Sources

### Households

In 2002-03 there were 90,736 households in Aberdeenshire  
(Source: 2002-03 Accounts Commission Pis)

### School Rolls

In 2002-03 there were 12.084 pupils in S1 –S4 in Aberdeenshire Secondary Schools  
(Source: 2002-03 Aberdeenshire Council School Roll Records)

### Pupils per Household from New Housing

0.15 pupils per new house in S1 –S4 is the factor used for most schools

### Pupils per Household from Resold/Relet Housing

Assumed to be the same as for new housing at 0.15 pupils per new house in S1–S4.  
No data is available to check this

### Turnover of Housing

10% per annum

(Source:2001 Census)

## Derived Values

From the data above it follows that there are:

3004 households for year group of 100 pupils

0.333 pupils/household/year group

0.375 pupils/new house/year group

These values are used to derive empirical probabilities for the changes to roll when a house is resold or relet

### Housing Turnover

Household unchanged	0.9
Sold, gain a pupil	0.0036
Sold, lose a pupil	0.0032
Sold, gain and lose	0.0001
Sold, no gain or loss	0.093
Sum of these	1.000

### New Housing

The model only allows for the gain or loss of 1 pupil on each occasion. Where a family has more than one child, they will be in different year groups unless they are twins. Twins account for about 1 birth in 80 and this model has made no allowance for them. Their inclusion would require the probabilities of gaining or losing a single pupil to be reduced and additional outcomes relating to twins with appropriate, very small probabilities to be introduced. Such adjustments will be too small to affect the outcomes of the process.

Every house is represented by a random number.

A Lookup table ascribes an outcome according to value of random number.

In each simulation, each event is treated as occurring in sequence and a running total of the changes is calculated to obtain the maximum change.

The simulation is repeated 1000 times and the distribution of results is analysed.

### **Effect of New Housing**

Every new house is represented by a random number.

Another Lookup table based on the new housing probability values ascribes an outcome according to value of random number.

The new house cells are distributed across the spreadsheet to simulate even distribution throughout the “year”.

### **Different Parameters**

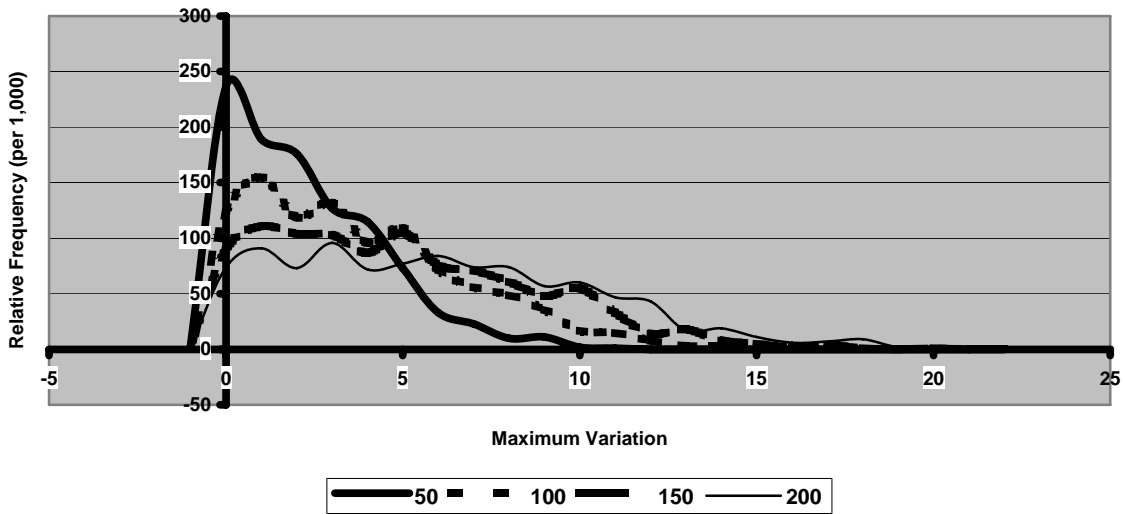
The process is then repeated for each combination of cohort size and number of new houses.

The values used were cohort sizes of 50, 100, 150 and 200 pupils with 0, 25, 50, 75 and 100 new houses occupied during the year. It would be impractical to carry out the simulation for every possible value, so the nearest pair of cohort and housing values would be used in practice.

It should be remembered that both the cohort size and the number of new houses occupied in the forthcoming school year are themselves forecasts.

The results set out below show that the changes in outcome between adjacent values of the parameters are typically an extra 2 for 50 extra pupils and 1 for 25 extra houses.

Maximum Cohort Variation caused by Housing Turnover



Variation by Cohort Size

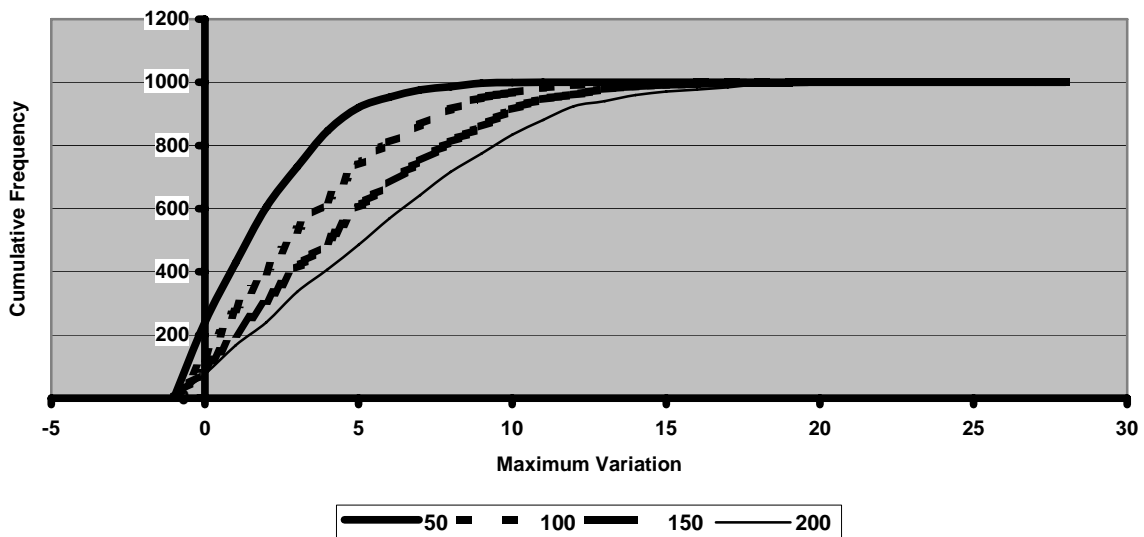


Table A1

90% Confidence

	Admission Limit			
New Houses	50	100	150	200
0	5	8	10	12
25	6	9	11	13
50	7	10	12	14
75	8	11	13	15
100	9	12	14	16

Table A2

95% Confidence

	Admission Limit			
New Houses	50	100	150	200
0	6	9	12	14
25	7	11	13	15
50	9	12	14	16
75	10	13	15	17
100	11	14	16	18

**Problems with the Statistical Model**

The Statistical Model treats each “event” as random and independent, as would be the case for throwing dice or shuffling and cutting a pack of cards. No result is influenced by the previous result.

For house moves within a secondary school zone, if a family move from house A to house B, the school roll change caused by the sale of house B is determined by the sale of house A. The pupil who left house A is the same pupil who moves into house B. The family who move into house A and the family who move out of house B

remain subject to the probabilities. In effect, these 2 “events” are only a single random event.

The need for reserved places is likely to be overstated in consequence.

The model does, however, identify the MAXIMUM variation during the year.

In the School Roll Forecasts, the housebuilding relates to a calendar year whilst the roll relates to the start of an academic year. The change in cohort has been compared to the average number of houses built in the two calendar years which the school year straddles.

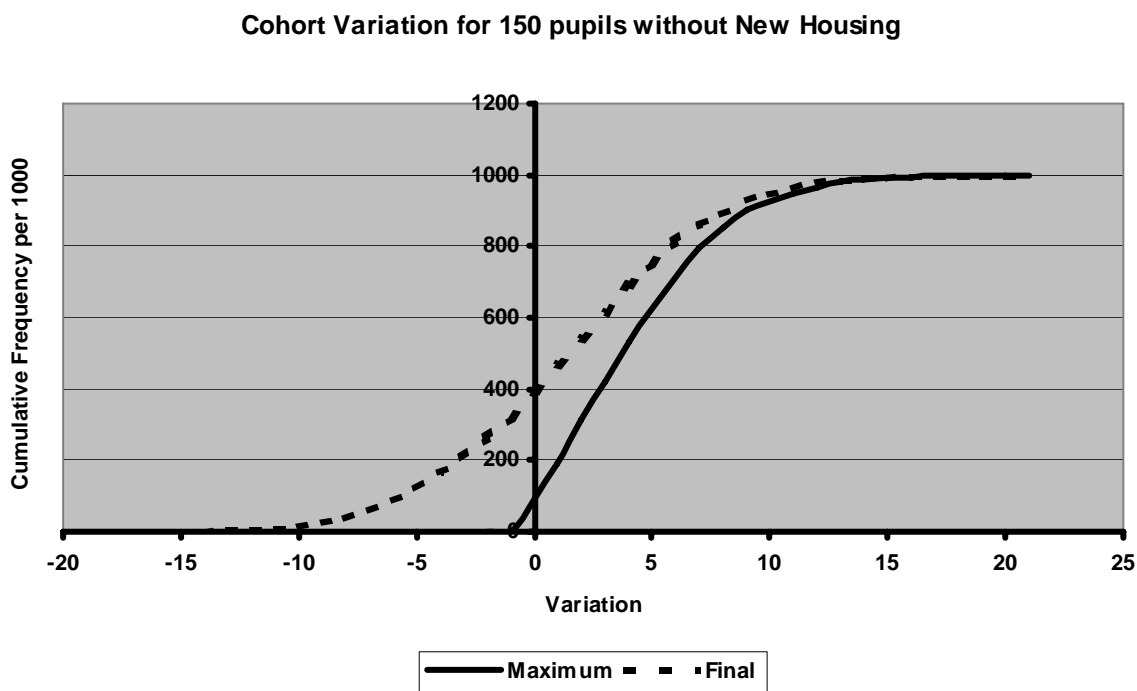
The historical data identifies the net change in a cohort from year to year, but does not identify MAXIMUM variation during the year.

It avoids the Statistical Model’s main problem as a family who move within the zone will not be recorded as a change in roll by the school.

The actual data is factual so there are no assumptions which may be challenged.

Fig A3 below shows the cumulative frequency for both the maximum value and the final value for a cohort of 150 pupils without new housing, and with a 9% turnover rate.

Fig A3



The 90th percentile for the maximum and final values are at 9 and 8 respectively, whilst the 95th percentiles are at 11 and 10. As the cumulative frequency curves converge, the difference between the values is small.

This conclusion is drawn from the statistical model, but it is reasonable to infer that it probably also true of the historic data.

# Reserved Places at Secondary Schools

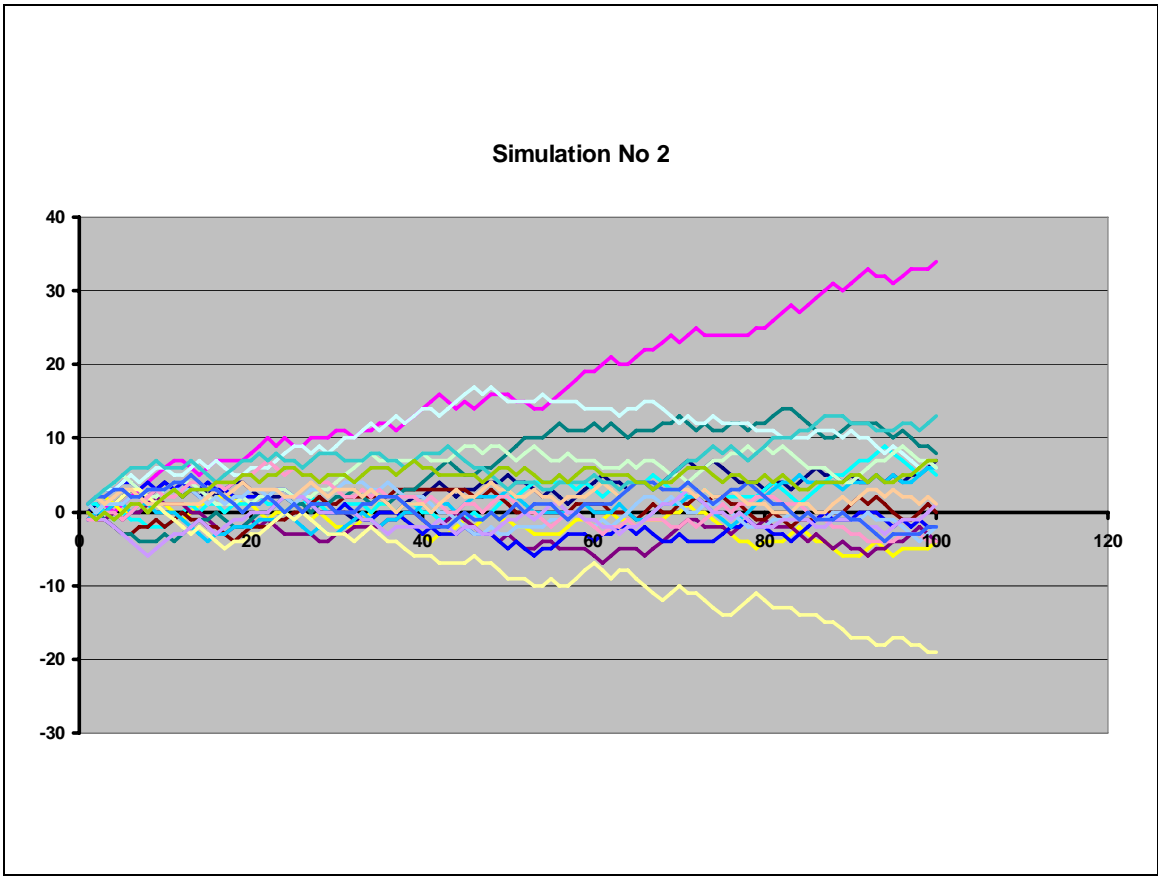
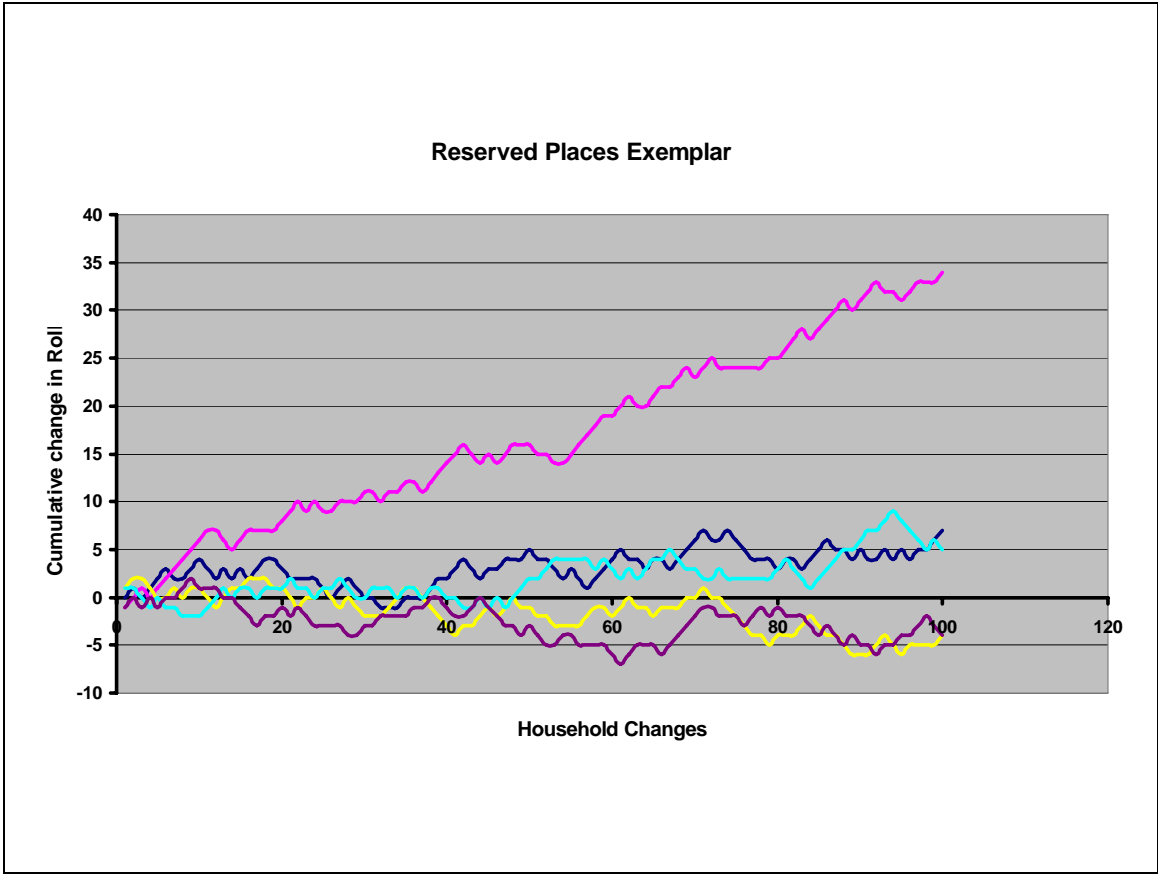
Education & Recreation  
Committee

23 March 2006

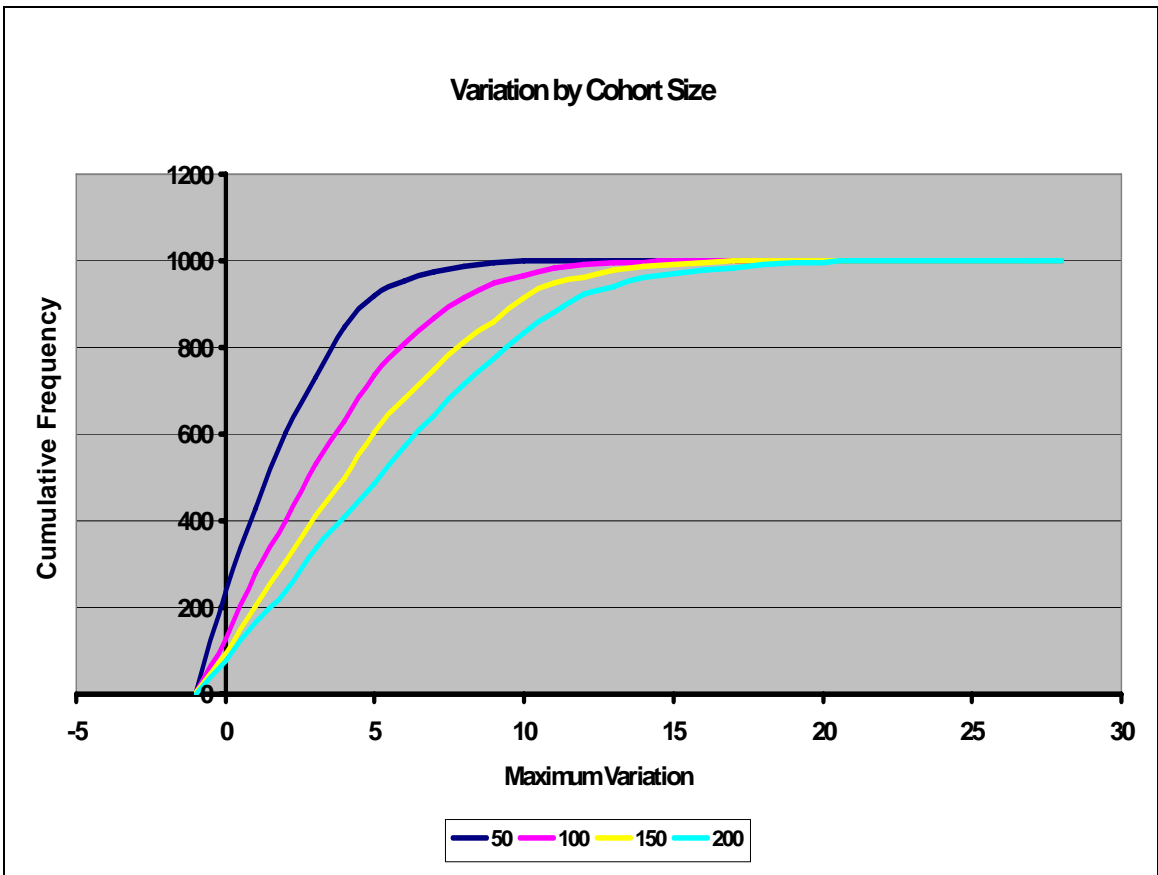
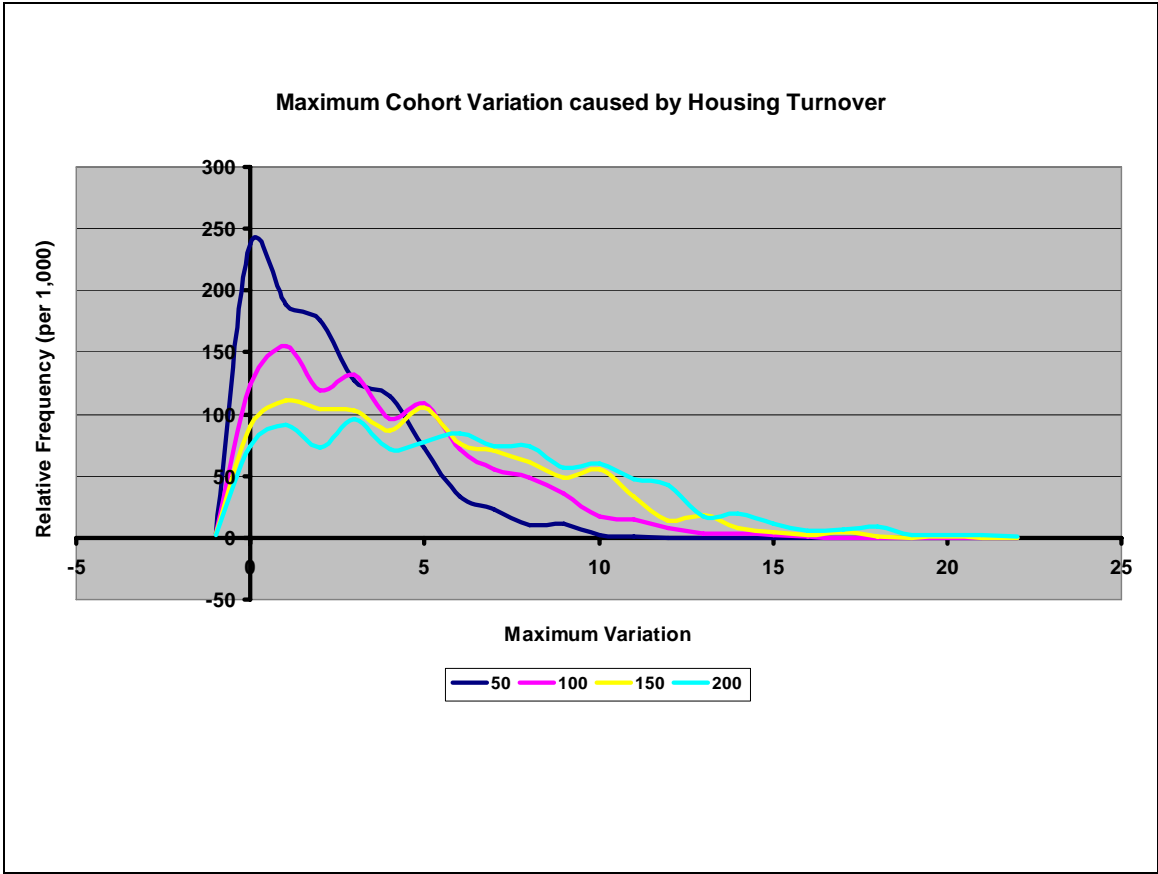


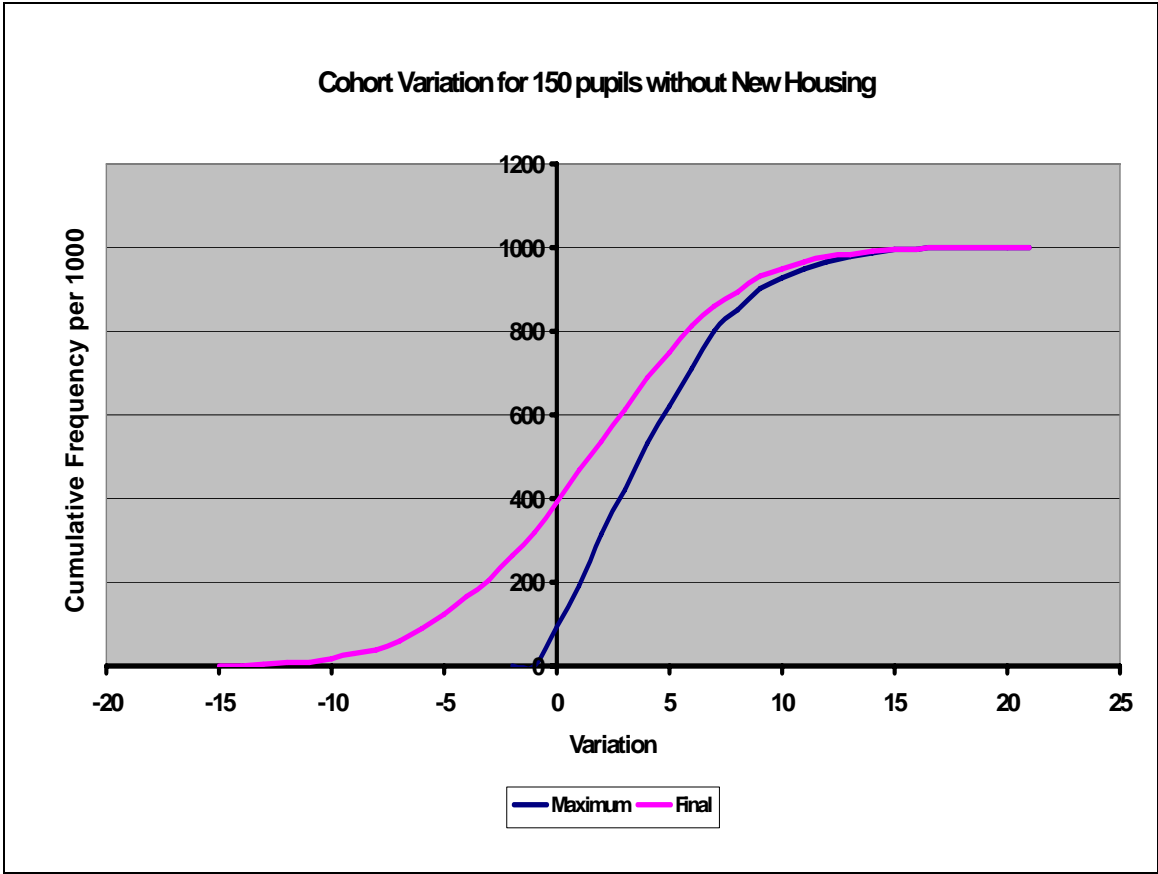
# Charts in the Report in colour











## Minute Details

### 3. RESERVED PLACES AT SECONDARY SCHOOLS

With reference to the Minute of Meeting of 24 March, 2005 (Item 2, Page 1962), there had been circulated a report dated 28 February, 2006, by the Director of Education and Recreation requesting the Committee to agree numbers of reserved places at Aberdeenshire secondary schools.

The Committee **agreed**:-

- (1) that there should be ten reserved places in each of the year groups S1 to S4 in each Aberdeenshire secondary school,
- (2) that Education Network Managers should have discretion to relinquish some reserved places during the course of the year in consultation with the head teacher and after having regard to local circumstances, and that officers investigate the feasibility of involving Area Committees in these decisions,
- (3) that the special circumstances of Mearns Academy should be dealt with as set out in paragraph 5.6 of the report, and
- (4) that officers prepare a brief report on the operation of the policy to form part of the annual report on admission limits.