



Demographic and Statistical Analysis Unit

National School Roll Projections

July 2005 update

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Introduction

This report describes the latest forecast for the number of students¹ enrolled in New Zealand's schools. The forecast is used to assess the demand for resources in the school sector. Forecasts described here support the forecasting of expenditure on teachers' salaries, schools' operations grants, and student allowances, as part of the Government's five-year budget forecasts. The forecast rolls are snapshots, they project primary year-levels as at 1 July and secondary year-levels as at 1 March.

In this update, the 1 July 2005 roll survey forms the new base for the primary level forecast, and the 1 March 2005 roll survey forms the new base for the secondary level forecast. The roll driver assumptions have been revised due to new birth and migration information from Statistics New Zealand (SNZ).

This report is in two parts:

1. Results of the latest national school roll projections (July 2005 update).
2. A detailed breakdown of the major changes between the current forecast and the previous forecast. This section includes a brief description of the methodology used in this forecast.

A more detailed report on the methodology used in the National School Roll Projections is also available on request.

¹ Note that this discussion excludes special school students. However, the appendix tables include special school students, hence there is a difference between totals in the text and totals in the appendices.

PART 1: Results from the National School Roll Projections

The forecast results are based on the medium projection of a series of four roll projections: low, medium-low, medium, and high. At the time of calculation, all the projections are considered possible in that the roll levels predicted by each will occur if their respective assumptions (rates of migration, births, senior school retention, etc) become true. While the medium forecast is the projection that the Ministry considers to be the most likely to occur, consideration should be given to the possibility of the high and low projections eventuating.

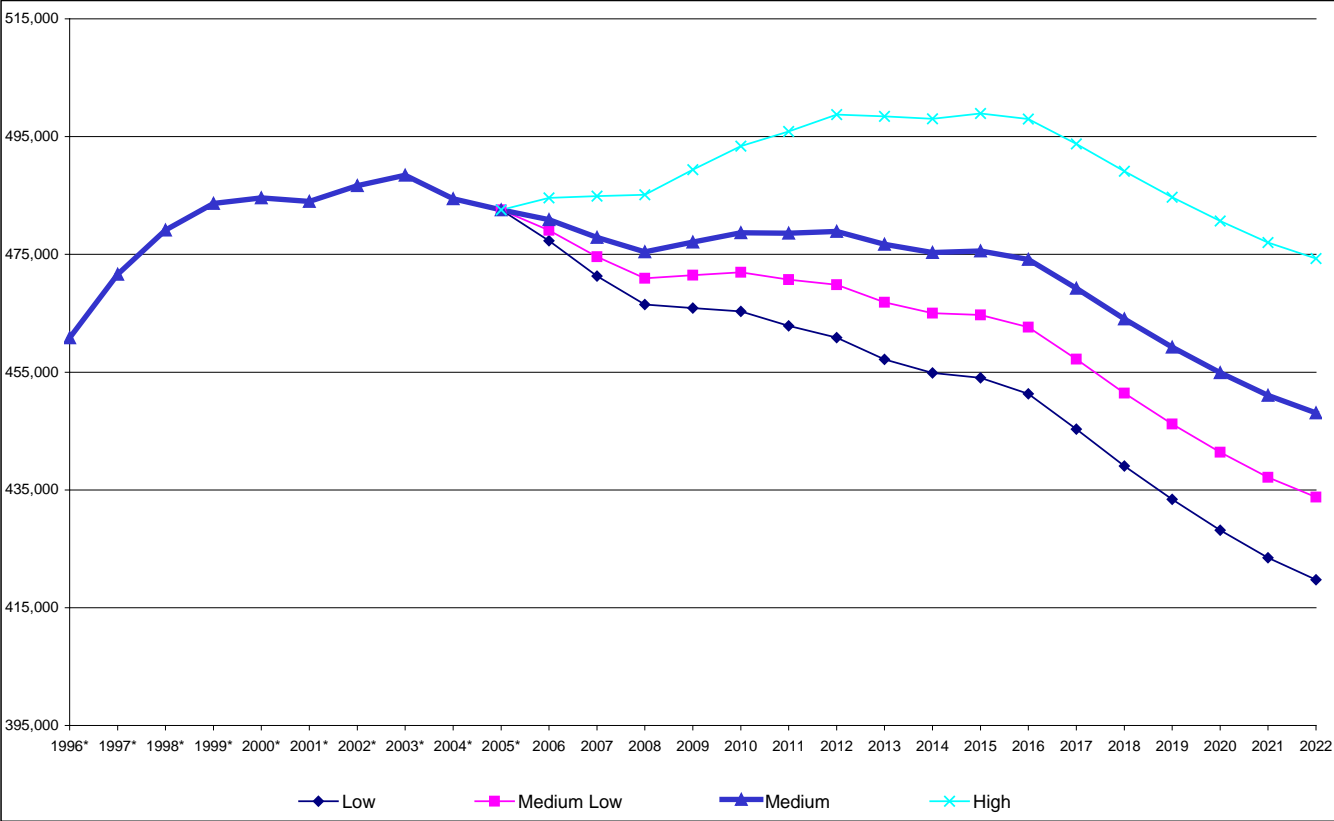
The roll projections are of regular students in Year 1 to Year 15. These include adult students but exclude foreign fee paying students (FFPs) and students on a scholarship from the New Zealand Agency for International Development (NZAID). Special school students are forecast separately.

Primary enrolments

Primary level enrolments (Year 1 to Year 8) peaked in 2003 (see Figure 1). In 2005, there were around 480,800 primary level enrolments – around 1,900 (or 0.4 percent) fewer than in 2004.

The single most important driver in the primary level forecast is the number of children born in a given year and their entrance into the school system five years later. Since 2003 there has been a notable increase in the number of births. This increase is expected to boost primary rolls in 2009 and eventually impact secondary rolls in later years. The current set of SNZ birth projections forecast a decline in births from 2006 on.

Figure 1: Actual and projected Year 1 to Year 8 enrolments, 1996 to 2022



*Actual

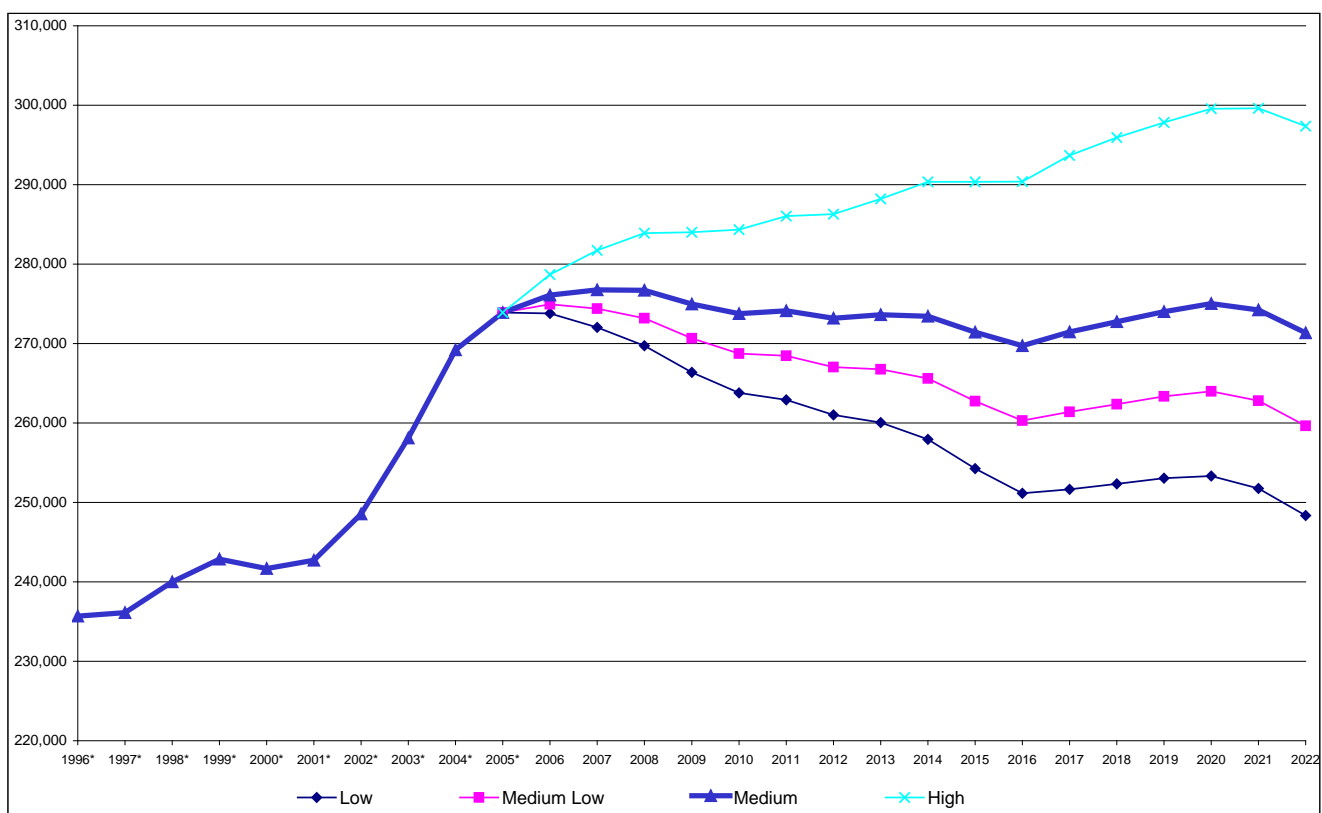
Secondary enrolments

Secondary level enrolments (Year 9 to Year 15) have shown large increases since 2001 (see Figure 2). In 2005, there were around 272,300 secondary level enrolments – around 4,600 (or 1.7 percent) more than in 2004.

The forecast period captures the primary bulge that resulted from the large increase in births from the mid-1980s until 1992. This bulge started flowing into secondary schools in 1999, bringing about increases in secondary school rolls. This bulge continues to push secondary rolls well in excess of previous levels. Secondary rolls are expected to peak in 2007 to 2008 at around 275,000 enrolments.

The forecast period also captures the increase in birth cohorts since 2003, which will leave primary school around 2016 and enter secondary school in 2017.

Figure 2: Actual and projected Year 9 to Year 15 enrolments, 1996 to 2022



*Actual

PART 2: Changes in assumptions

The National School Roll Projections are updated following the release of the March and July roll survey results. The March roll survey data is used to update Year 9 to Year 15 projections, and the July roll survey data is used to update the Year 1 to Year 8 projections.

The previous forecast was completed in January 2005 and is referred to as the *July 2004 update*². The current forecast incorporates the July 2005 Year 1 to Year 8 roll survey data and the March 2005 Year 9 to Year 15 roll survey data, as well as the latest actual migration data. This current forecast is referred to as the *July 2005 update*.

Main drivers

Birth data provided by SNZ is the most important factor in determining the number of children at school age. Children born in any one year enter school five years later, and then proceed through primary and secondary schooling in subsequent years.

Migration projections are also provided by SNZ and are another important factor in the roll projections. The current roll projections use SNZ's official long-term population projections for both the age profile of migrants and the projected number of births as mentioned above.

Methodology

This forecast uses the results from the roll surveys of July 2005 and March 2005 for Year 1 to Year 8 rolls and Year 9 to Year 15 rolls respectively as its base. From this base we use a cohort component methodology to produce the school roll projections out to the year 2022. The projections are snapshot projections – they project primary year-levels as at 1 July and secondary year-levels as at 1 March.

The main drivers used in this projection are:

1. number of actual and projected births;
2. progression rates of students from one school year-level to the next, between calendar years. These are also called retention rates in secondary Years 12 to 15; and
3. the number of actual and projected permanent and long-term (PLT) migrants arriving/leaving NZ.

The number of special school and home-schooled students is also forecast. The regular school roll forecast is adjusted to reflect roll movement to and from these sectors. Please refer to appendices 2 and 3 for the special school and home-school roll forecast.

² The July 2004 update used the results from the roll surveys of July 2004 and March 2004 for Year 1 to Year 8 and Year 9 to Year 15 respectively as its base.

Baseline update: school enrolments

The current Year 1 to Year 8 and Year 9 to 15 forecast baseline have been updated with the actual rolls from the 1 July 2005 and the 1 March 2005 roll surveys. Inclusion of the actual rolls allows us to:

1. update the primary and secondary level roll base for 2005 on which the projections for the out-years are based;
2. analyse the accuracy of the previous forecast; and
3. evaluate the assumptions (migration, retention, and births) that were previously used and make appropriate revisions for the current forecast.

Actual results from the 1 July 2005 roll survey indicate that the previous forecast of students in primary year-levels was too high by 260 students, or 0.05 percent. The number of Year 1 to Year 8 students attending schools decreased by around 1,900 regular students, or 0.4 percent, between July 2004 and July 2005.

Actual results from the 1 March 2005 roll survey indicate that the previous forecast of students in secondary year-levels was too high by 2,200 students, or 0.8 percent. The number of Year 9 to Year 15 students attending schools increased by around 4,600 regular students, or 1.7 percent, between March 2004 and March 2005.

Assumption changes to migration

Net PLT migration (the difference between migrant arrivals and departures) is the most difficult driver to predict. The roll projection model assumes net migration in 1 July to 30 June years.

The net PLT migration assumptions used in this forecast, as with the previous forecast, come from SNZ's official long-term projections (December 2004). For 2007 onwards the assumptions remain the same as in the previous forecast. However, the assumptions for 2006 have been changed to reflect the lower than expected level of school-aged migrants experienced in 2005.

Table 1: Net permanent and long-term migration of school-aged children (0 to 17 years)

Year	Current Forecast (0 to 17 year olds)	Previous Forecast (0 to 17 year olds)	Net Change (0 to 17 year olds)
2005	2,700*	5,200	-2,500
2006	3,900	5,300	-1,300
2007	5,300	5,300	0
2008	5,900	5,900	0
2009 onwards	6,600	6,600	0

* Actual migration

Net PLT migration statistics give us a starting point for estimating the number of migrants in schools, as they include all children intending to enter/leave New Zealand for a period of 12 months or more. It is important to note however that the number of net PLT school-aged migrants does not translate directly to the number of extra children in schools.

In the roll projections, estimates are made of the number of PLT migrants who will enrol in NZ schools in each year-level. Table 2 summarises the number of PLT migrants expected to enter NZ schools in coming years.

Table 2: Number of migrant students expected to enter primary and secondary level schooling

Year	Primary**			Secondary		
	Current forecast	Previous Forecast	Net Change	Current forecast	Previous Forecast	Net Change
2005	1,600*	2,800	-1,200	1,300*	1,800	-500
2006	3,000	3,600	-600	1,400	1,700	-300
2007	3,700	3,900	-100	1,700	1,700	0
2008	3,900	4,000	-100	1,800	1,800	0
2009 onwards	3,900	4,100	-200	2,000	1,900	0

*Estimated actual

** Primary totals include 0 to 4 year old migrants who arrived in NZ in the last four years and who will be turning 5 years old in the projected year.

Assumption changes to progression rates

Enrolment projections use progression rates to estimate how many students at a given year-level will progress to the next year-level the following year. A progression rate is derived by analysing historical, gender-specific trends in enrolments for each year-level, and is adjusted to exclude the effects of net migration.

These progression rates are assumed constant throughout the projection period³. They are first applied to the most recent actual roll data to estimate the number of students that will enter each year-level in the following year, and then reapplied to this result to estimate the number of students in subsequent years.

Between the previous forecast and the current one, progression rates have been changed to reflect changes in actual roll data. Primary level progression rates increased for Year 2 and Year 7 students. Secondary level progression rates have generally decreased (Table 3).

Table 3: Progression rates in the current forecast vs. previous forecast

	Current Forecast		Previous Forecast	
	Male	Female	Male	Female
Birth to Year 1	1.0035	1.0049	1.0058	1.0062
Year 1 to Year 2	0.9806	0.9840	0.9747	0.9787
Year 2 to Year 3	1.0010	1.0007	1.0015	1.0008
Year 3 to Year 4	1.0022	1.0020	1.0020	1.0026
Year 4 to Year 5	1.0003	1.0014	0.9988	1.0019
Year 5 to Year 6	0.9918	0.9897	0.9912	0.9889
Year 6 to Year 7	1.1707	1.1542	1.1652	1.1501
Year 7 to Year 8	0.8767	0.8911	0.8803	0.8940
Year 8 to Year 9	1.0014	0.9971	1.0056	0.9977
Year 9 to Year 10	0.9860	0.9969	0.9915	0.9982
Year 10 to Year 11	0.9658	0.9830	0.9556	0.9835
Year 11 to Year 12	0.8081	0.8633	0.8088	0.8781
Year 12 to Year 13	0.7106	0.7548	0.7275	0.7532
Year 13 to Year 14	0.0282	0.0261	0.0420	0.0365
Year 14 to Year 15	0.1373	0.2253	0.1454	0.2476

³ With the exception of Year 12 and Year 13 which have non-static progression rates applied to the first five years of the projection period.

APPENDIX

- A1 Summaries of primary-level, secondary level and total student rolls
- A2 Forecast special school rolls
- A3 Forecast home-schooling rolls

APPENDIX ONE

Table 1: Actual and projected number of students in Year 1 to Year 8, 1996 to 2022

Actual and Projected Roll					Index of Growth	Change from Previous Year				
Year	Low	Medium Low	Medium	High	Medium 2005 Base	Year	Low	Medium Low	Medium	High
1996*			460,800		0.95				10,800	
1997*			471,600		0.98				7,500	
1998*			479,100		0.99				4,600	
1999*			483,700		1.00				900	
2000*			484,600		1.00				-600	
2001*			484,000		1.00				2,700	
2002*			486,700		1.01				1,800	
2003*			488,500		1.01				-4,000	
2004*			484,500		1.00				-1,900	
2005*			482,600		1.00				2,000	
2006	477,300	479,100	480,900	484,600	1.00	2006	-5,300	-3,500	-1,700	300
2007	471,300	474,600	477,900	484,900	0.99	2007	-6,000	-4,500	-3,000	200
2008	466,500	471,000	475,400	485,100	0.99	2008	-4,800	-3,600	-2,500	4,300
2009	465,900	471,500	477,100	489,400	0.99	2009	-600	500	1,700	4,000
2010	465,300	472,000	478,700	493,400	0.99	2010	-600	500	1,600	2,500
2011	462,900	470,700	478,600	495,900	0.99	2011	-2,400	-1,300	-100	2,800
2012	460,900	469,800	478,900	498,700	0.99	2012	-2,000	-900	300	-300
2013	457,200	466,900	476,700	498,400	0.99	2013	-3,700	-2,900	-2,200	-400
2014	454,800	465,000	475,300	498,000	0.98	2014	-2,400	-1,900	-1,400	900
2015	454,000	464,700	475,600	498,900	0.99	2015	-800	-300	300	-900
2016	451,300	462,600	474,100	498,000	0.98	2016	-2,700	-2,100	-1,500	-4,300
2017	445,300	457,200	469,300	493,700	0.97	2017	-6,000	-5,400	-4,800	-4,600
2018	439,000	451,400	464,000	489,100	0.96	2018	-6,300	-5,800	-5,300	-4,400
2019	433,400	446,200	459,200	484,700	0.95	2019	-5,600	-5,200	-4,800	-4,000
2020	428,200	441,400	454,900	480,700	0.94	2020	-5,200	-4,800	-4,300	-3,700
2021	423,500	437,100	451,100	477,000	0.93	2021	-4,700	-4,300	-3,800	-2,700
2022	419,700	433,800	448,100	474,300	0.93	2022	-3,800	-3,300	-3,000	

* Actual

Note 1: The total figures may differ from other total figures due to rounding.

Note 2: Actuals and projections are as at 1 July each year, and do not include weighting on the new entrant roll. Where census date does not occur on 1 July, the new entrant roll has been adjusted accordingly.

Note 3: Includes special school students hence double counting of hospital and health camp students has occurred.

Table 2: Actual and projected number of students in Year 9 to Year 15, 1996 to 2022

Actual and Projected Roll					Index of Growth	Change from Previous Year				
Year	Low	Medium Low	Medium	High	Medium 2005 Base	Year	Low	Medium Low	Medium	High
1996*			235,700		0.86					
1997*			236,100		0.86	1997*			400	
1998*			240,000		0.88	1998*			3,900	
1999*			242,900		0.89	1999*			2,900	
2000*			241,700		0.88	2000*			-1,200	
2001*			242,700		0.89	2001*			1,000	
2002*			248,500		0.91	2002*			5,800	
2003*			258,100		0.94	2003*			9,600	
2004*			269,200		0.98	2004*			11,100	
2005*	273,900	273,900	273,900	273,900	1.00	2005*			4,700	
2006	273,800	274,900	276,100	278,700	1.01	2006	-100	1,000	2,200	4,800
2007	272,000	274,400	276,800	281,700	1.01	2007	-1,800	-500	700	3,000
2008	269,700	273,200	276,700	283,900	1.01	2008	-2,300	-1,200	-100	2,200
2009	266,400	270,600	275,000	284,000	1.00	2009	-3,300	-2,600	-1,700	100
2010	263,800	268,700	273,800	284,300	1.00	2010	-2,600	-1,900	-1,200	300
2011	262,900	268,500	274,100	286,100	1.00	2011	-900	-200	300	1,800
2012	261,000	267,000	273,200	286,300	1.00	2012	-1,900	-1,500	-900	200
2013	260,100	266,800	273,600	288,200	1.00	2013	-900	-200	400	1,900
2014	257,900	265,600	273,400	290,300	1.00	2014	-2,200	-1,200	-200	2,100
2015	254,300	262,700	271,400	290,300	0.99	2015	-3,600	-2,900	-2,000	0
2016	251,200	260,300	269,700	290,400	0.98	2016	-3,100	-2,400	-1,700	100
2017	251,600	261,400	271,400	293,700	0.99	2017	400	1,100	1,700	3,300
2018	252,300	262,400	272,700	295,900	1.00	2018	700	1,000	1,300	2,200
2019	253,000	263,300	274,000	297,800	1.00	2019	700	900	1,300	1,900
2020	253,300	264,000	275,000	299,600	1.00	2020	300	700	1,000	1,800
2021	251,700	262,800	274,200	299,600	1.00	2021	-1,600	-1,200	-800	0
2022	248,300	259,600	271,300	297,400	0.99	2022	-3,400	-3,200	-2,900	-2,200

* Actual

Note 1: The total figures may differ from other total figures due to rounding.

Note 2: Actuals and projections are as at 1 March each year.

Note 3: Includes special school students hence double counting of hospital and health camp students has occurred.

Table 3: Actual and projected number of students in Year 1 to Year 15, 1996 to 2022

Actual and Projected Roll					Index of Growth	Change from Previous Year				
Year	Low	Medium Low	Medium	High	Medium 2005 Base	Year	Low	Medium Low	Medium	High
1996*			696,500		0.92					
1997*			707,700		0.94	1997*			11,200	
1998*			719,100		0.95	1998*			11,400	
1999*			726,500		0.96	1999*			7,400	
2000*			726,300		0.96	2000*			-200	
2001*			726,700		0.96	2001*			400	
2002*			735,200		0.97	2002*			8,500	
2003*			746,600		0.99	2003*			11,400	
2004*			753,700		1.00	2004*			7,100	
2005*			756,500		1.00	2005*			2,800	
2006	751,100	754,000	757,000	763,300	1.00	2006	-5,400	-2,500	500	6,800
2007	743,300	749,000	754,600	766,600	1.00	2007	-7,800	-5,000	-2,400	3,300
2008	736,200	744,200	752,100	769,000	0.99	2008	-7,100	-4,800	-2,500	2,400
2009	732,300	742,100	752,100	773,400	0.99	2009	-3,900	-2,100	0	4,400
2010	729,100	740,700	752,400	777,700	0.99	2010	-3,200	-1,400	300	4,300
2011	725,800	739,200	752,700	781,900	0.99	2011	-3,300	-1,500	300	4,200
2012	721,900	736,900	752,100	785,000	0.99	2012	-3,900	-2,300	-600	3,100
2013	717,200	733,600	750,300	786,700	0.99	2013	-4,700	-3,300	-1,800	1,700
2014	712,800	730,600	748,800	788,400	0.99	2014	-4,400	-3,000	-1,500	1,700
2015	708,300	727,500	747,000	789,300	0.99	2015	-4,500	-3,100	-1,800	900
2016	702,500	722,900	743,900	788,400	0.98	2016	-5,800	-4,600	-3,100	-900
2017	697,000	718,600	740,700	787,400	0.98	2017	-5,500	-4,300	-3,200	-1,000
2018	691,400	713,800	736,800	785,000	0.97	2018	-5,600	-4,800	-3,900	-2,400
2019	686,400	709,600	733,200	782,500	0.97	2019	-5,000	-4,200	-3,600	-2,500
2020	681,500	705,400	729,900	780,200	0.96	2020	-4,900	-4,200	-3,300	-2,300
2021	675,200	699,900	725,300	776,600	0.96	2021	-6,300	-5,500	-4,600	-3,600
2022	668,100	693,400	719,400	771,700	0.95	2022	-7,100	-6,500	-5,900	-4,900

* Actual

** Consist of actual enrolments for Y9 - Y15 students and forecast enrolments for Y1-Y8 students.

Note 1: The total figures may differ from other total figures due to rounding.

Note 2: Actuals and projections are as at 1 July each year for Y1-Y8 and 1 March each year for Y9-Y15.

Note 3: Includes special school students hence double counting of hospital and health camp students has occurred.

APPENDIX TWO

Table 1: Actual and forecast special school students

Year	Special School Students		
	Male	Female	Total
1996*	1537	954	2491
1997*	1550	954	2504
1998*	1537	954	2491
1999*	1521	878	2399
2000*	1782	1095	2877
2001*	1883	1145	3028
2002*	1908	1126	3034
2003*	1967	1180	3147
2004*	2030	1183	3213
2005*	2120	1254	3374
2006	2144	1261	3405
2007	2157	1265	3422
2008	2169	1269	3438
2009	2189	1277	3466
2010	2209	1286	3495
2011	2229	1294	3524
2012	2247	1301	3548
2013	2261	1306	3567
2014	2275	1312	3587
2015	2290	1316	3607
2016	2300	1318	3619
2017	2310	1321	3630
2018	2317	1321	3638
2019	2326	1322	3648
2020	2336	1323	3659
2021	2340	1322	3662
2022	2341	1318	3659

*Actual

Note: Special school rolls are as at 1 July.

APPENDIX THREE

Table 1: Actual and forecast home-schooling rolls

Year	Number in Home Schooling		Total
	Primary	Secondary	
1996*	3383	1768	5151
1997*	3374	1977	5351
1998*	3513	1761	5274
1999*	3645	1806	5451
2000*	3975	1902	5877
2001*	3954	2022	5976
2002*	4118	2055	6173
2003*	4285	2152	6437
2004*	4315	2191	6506
2005*	4371	2057	6428
2006	4355	2074	6429
2007	4328	2078	6406
2008	4306	2078	6383
2009	4321	2065	6386
2010	4335	2055	6391
2011	4334	2058	6392
2012	4337	2051	6388
2013	4317	2054	6371
2014	4304	2053	6357
2015	4306	2037	6344
2016	4293	2025	6317
2017	4248	2038	6286
2018	4201	2047	6248
2019	4157	2057	6214
2020	4118	2065	6182
2021	4083	2058	6141
2022	4056	2037	6092

*Actual

Note: Home-schooling rolls are as at 1 July.