



2007 JUSTICE SECTOR PRISON POPULATION FORECAST

FORECAST REPORT

EXECUTIVE SUMMARY

2007 Prison Population Forecast

The prison muster is forecast to reach 10,385 by June 2015. This is a 27% increase from 30 June 2007. The increase in the actual prison population over the preceding eight years was 41%.

The forecast 2015 prison population is made up of 6,897 sentenced prisoners (a 7.6% increase from June 2007) and 3,488 remand prisoners (an 100.6% increase from June 2007).

The growth in the remand population accounts for much of the expected growth in the prison population as a whole.

Both the sentenced and remand populations are expected to grow more slowly than in the previous eight years, during which the sentenced population increased by 27%, and the remand population increased by 129%.

The incarceration rate is expected to increase from 195 per 100,000 in June 2007 to around 226 by 2015. This compares with an increase from 146 per 100,000 to 195 from 1998 to 2007.

Differences Between 2006 Forecast and 2007 Forecast

The 2007 forecast is higher than the 2006 forecast. The 2006 forecast projected a population of 9,028 by 2014. The 2007 forecast projects a prison population of 10,088 by June 2014 and 10,385 by 2015.

Sentenced Population

The principal reason for the difference between the 2006 and 2007 forecast for the sentenced population is that we have revised our assumptions in relation to the proportion of sentence that will be served by offenders with longer term sentences. Since the implementation of the Sentencing and Parole Acts 2002 offenders, particularly those given sentences of five years or longer, are serving a greater proportion of their sentences. The effects of this are only now beginning to impact on the longest sentences. These effects will continue, though with diminishing impact, until around 2020.

Remand Population

The increase in the remand population reflects the impact of increases in both the numbers remanded in custody and increases in the length of time spent on custodial remand. The growth in the remand population has been driven by growth in the average length of time on custodial remand. The latest data has caused us to revise our assumption of the projected annual growth of the average time spent on remand.

2007- 2015 Prison Population Forecast					
Actual Prison Population at end of June 2007	8,148	Forecast Prison Population June 2015 (% increase)	10,385 (27%)	% growth in actual Prison Population 1999-2006	41%
Actual Sentenced Prison Population at end of June 2007	6,409	Forecast Sentenced Prison Population June 2015 (% increase)	6,897 (8%)	% growth in actual Sentenced Prison Population 1999-2006	27%
Actual Remand Population at end of June 2007	1,739	Forecast Remand Prison Population June 2015 (% increase)	3,488 (101%)	% growth in actual Remand Population 1999-2006	129%

2006 and 2007 Prison Population Forecasts – Differences			
2006 Forecast Prison Population in 2014			
Forecast Population in 2014 % increase over 2006 actual – 7656	9,028 (18%)	Sentenced Population (2006 actual – 6,041)	6,405 (6%)
		Remand Population (2006 actual – 1,615)	2,623 (62%)
2007 Forecast Prison Population in 2014			
Forecast Population in 2014 (% increase over 2006 actual - 7656)	10,088 (32%)	Sentenced Population (2006 actual - 6,041)	6,800 (13%)
		Remand Population (2006 actual – 1,615)	3,288 (104%)
2007 Forecast Prison Population in 2015			
Forecast Population in 2015 (% increase over 2007 actual - 8148)	10,385 (27%)	Sentenced Population (2007 actual 6,409)	6,897 (8%)
		Remand Population (2007 actual – 1,739)	3,488 (101%)

1. 2007 Justice Sector Prison Population Forecast

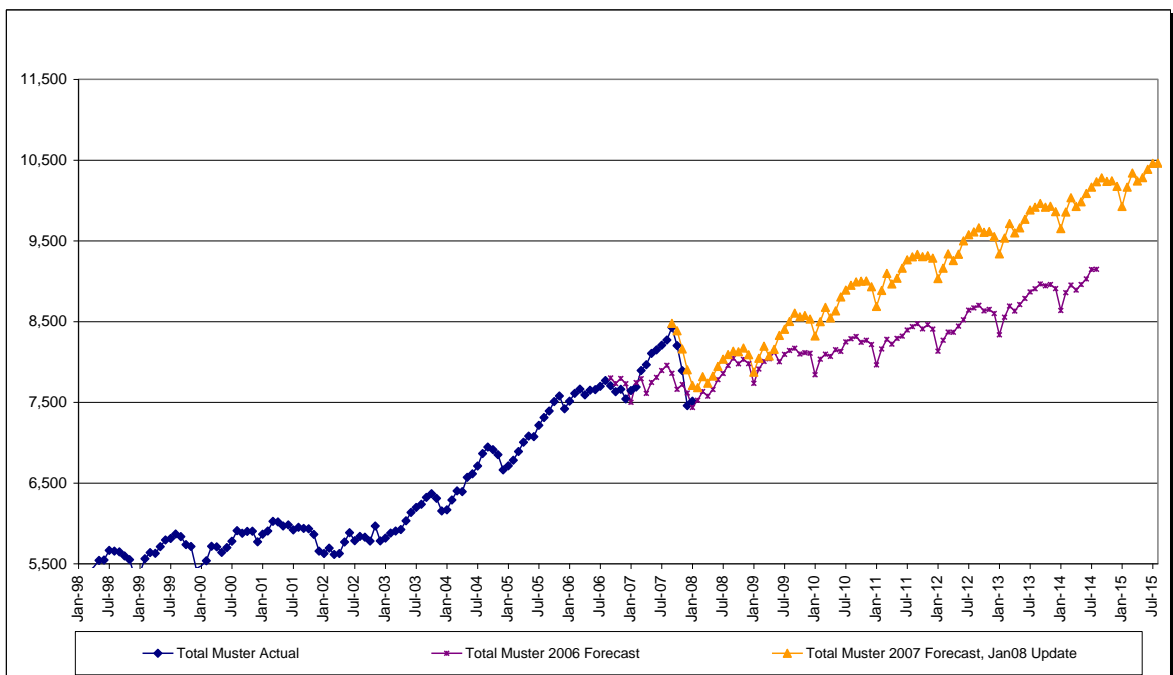
1.1. Forecast

The prison population is forecast to reach 10,385 by June 2015¹. This is a 27% increase on the June 2007 population. The increase over the last eight years was 41%.

The incarceration rate is projected to increase from 195 per 100,000 to 226 over the period. In 1998 the incarceration rate was 146 per 100,000.

The following graph shows the increase in the prison population over the forecast period. There is a difference of 824 between the 2006 and 2007 forecasts in 2014.

Figure 1: Total prison population forecast, 2007 and 2006



¹ The forecast produces point estimates for month end figures.

January 2008 Update

The forecast has been revisited in the wake of the larger-than-expected impact of legislation that came into force on 1 October (clarified provisions regarding the granting of bail; new sentences of Home Detention, Community Detention and Intensive Supervision). The graph above presents an unusual aspect, and the update has been undertaken at a time when it is particularly difficult to predict future behaviour.

It is clear from the graph that there have been previous occasions when some factor has caused a temporary drop in numbers. These have always been followed by a 'rebound' to even higher levels. However, the previous occasions have tended to be seasonal in nature (specifically Christmas). The latest change is both larger than any previous change, and has occurred at a time when downward change would not be seasonally expected. To that extent, it is unprecedented, which makes saying what happens next very difficult indeed.

We require more data to flesh out the picture of how these significant changes will 'bed down'. That will take some months to amass, but should be in place for the next annual forecast (to be undertaken by September 30 2008). For the time being, we have no information that long-term trends will not be maintained, and the remaining assumptions underpinning the forecast have thus been left unchanged. Issues which it is too early to consider include whether the take-up of the new sentences will be sustained at its initial level, and whether the drop in the numbers being received on remand will reduce congestion in the courts, lowering the average time spent on custodial remand.

To understand why we have lifted our projections we need to look at the composition of the overall prison population, in particular that part of the population that is remanded awaiting trial. The actual growth in the remand population since the 2006 forecast exceeded expectations.

The size of the sentenced population is influenced by changes since the last forecast in the proportion of sentences being served. These changes have been incorporated in the 2007 forecast.

In Section 2 we consider in more detail the projections for the remand and sentenced populations enabling us to draw out more clearly how and why our projections have changed.

1.2. Key Drivers of Forecast

To prepare Prison Population Forecasts we have identified six factors or drivers determining the size and rate of change of the prison population over time. They are:

- Numbers entering the system – number of charging events
- Remands in custody – numbers being remanded in custody and the average length of time spent on remand
- Proportion convicted

- Proportion given custodial sentences
- Length of sentence imposed
- Proportion of sentence served (excluding remand)

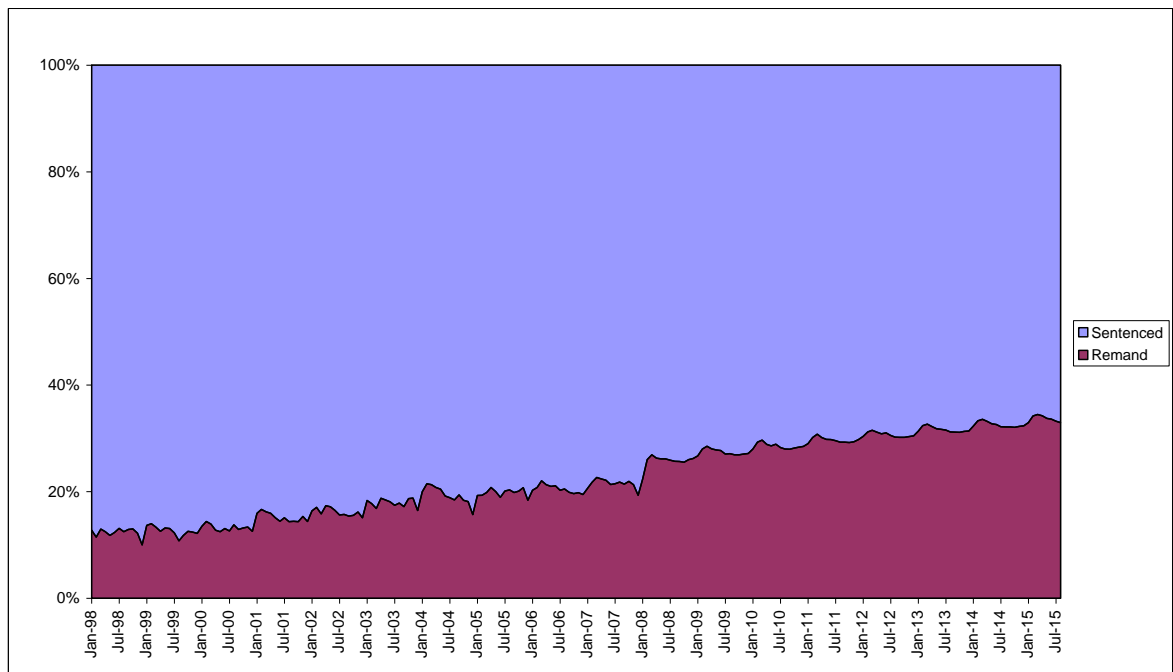
In the 2007 forecast the two most significant drivers are remands in custody and the length of sentence imposed (see section 6 Figure 10 for a more detailed discussion of key drivers).

2. Composition of the forecast – the remand and sentenced populations

The prison population in 2015 is projected to comprise 6,897 sentenced prisoners and 3,488 remand prisoners.

We look first at the remand population as the percentage change in this part of the overall prison population is the most significant during the forecast period.

Figure 2: Remand as a proportion of total prison population



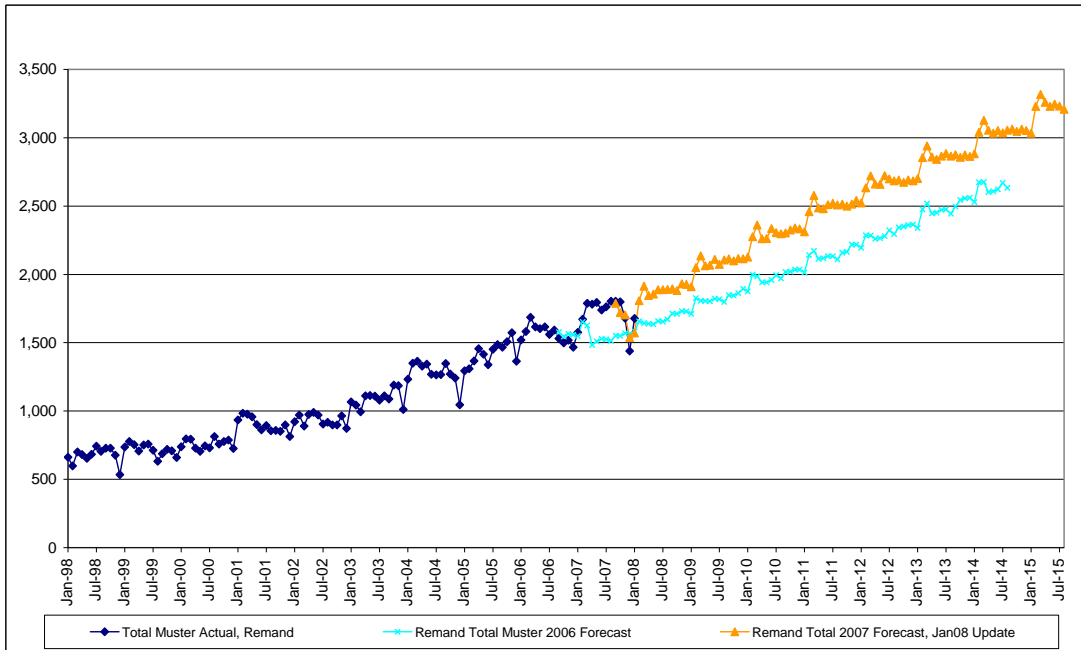
2.1. Remand Population

The number of remand prisoners is increasing over the forecast period as a proportion of the total prison population reaching around 34% in 2015. Remand prisoners currently make up approximately 22% of the total population.

The graph below compares the 2007 and 2006 forecasts for the remand population. The remand population is expected to increase by 101% between June 2007 and June 2015. The increase over the eight years to 2007 was 129%.

In the 2007 forecast we project that the population will reach 3,288 by 2014, which is 665 higher than in the 2006 forecast. The population is projected to reach 3,488 in June 2015.

Figure 3: Remand prison population forecast, 2007 and 2006



The key drivers of the remand population are:

- the length of time spent on remand, and
- the numbers remanded in custody

The 2007 remand forecast is higher than the 2006 forecast because the data shows that both drivers are increasing faster than assumed in the previous year. As a result we have revised our assumption about the annual rate of growth over the 2007 forecast period.

The annual growth in the numbers being remanded in custody is in line with the 2006 forecast, although we note a significant increase in the three months to June 2007. In the period to December 2007, the numbers dropped back but have since returned to higher levels. Variation and volatility are inevitable features of the environment. For the 2007 forecast we have assumed the longer term trend of the numbers remanded in custody. We will continue to monitor actual data to determine if this assumption continues to be valid.

An additional contributing factor to the high remand population is that fewer have been diverted onto Electronic Monitoring (EM) Bail than expected. The pool of remanded defendants deemed suitable for EM Bail is smaller than assumed for the 2006 forecast. The original estimate of bed savings of up to 120 per annum has been revised to between 40 and 60 beds per annum. The initial estimates did not take into account two factors:

- the large number of defendants who are not in custody long enough to be considered for EM Bail, and
- EM Bail is unlikely to be sought by defendants who have pleaded or intend to plead guilty.

Justice sector officials have been working together to address issues that impact on the uptake of EM Bail. Numbers on EM Bail have picked up over the last 6 months and total bed savings are likely to reach 60 beds in August/September 2008.

Length of time on remand

The average number of days spent on remand has increased from 35 days in 1999 to 52 days in 2007, an increase of around two days per annum.

Our 2006 forecast underestimated the growth in the average length of time spent on remand. The following two graphs illustrate the assumptions made in both the 2006 and 2007 forecast. The data available in 2007 provides the rationale for assuming a higher growth rate than that assumed in 2006 for the first four years of the forecast period.

Figure 4: Mean remand length (days), actual and 2006 forecast, male

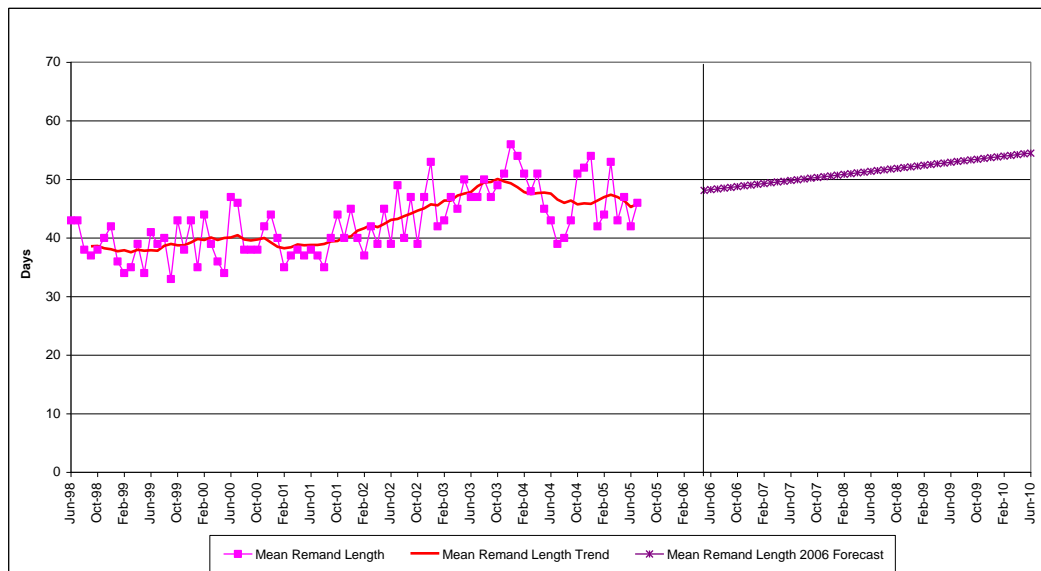
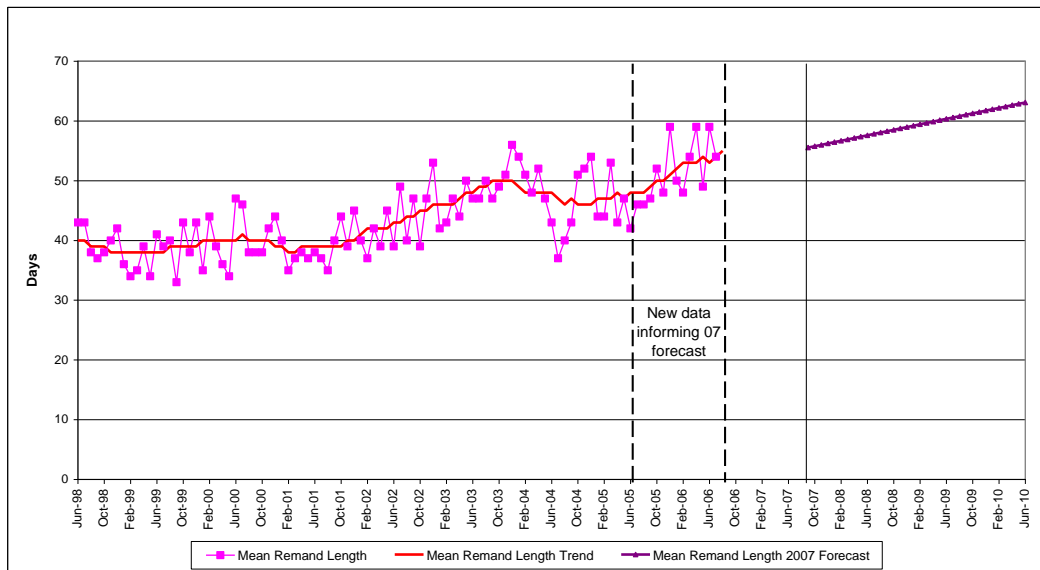


Figure 5: Mean remand length (days), actual and 2007 forecast, male



In the 2007 forecast we have assumed that the average length of time spent on remand will grow at 6.1% per annum for four years (the 2002-06 average) and then slow to 4.2% per annum (the 1998-2006 average) for the last four years of the forecast period.

We believe the rate of growth will slow over the forecast period because the range of initiatives underway to increase court capacity and streamline processes are expected to affect the average length of time on remand. Most initiatives will take time to implement and bed down so we expect current trends to continue in the early forecast period.

Factors driving the increase in the average time spent on remand include:

- increases in the numbers of not guilty pleas in court
- more complex cases in courts (such as methamphetamine cases which often involve scientific evidence and several accused being tried at the same time); and
- growing workloads of the courts generally.

Numbers being remanded in custody

In the 2006 forecast we assumed that the numbers being remanded in custody would grow by 5.6% per annum. While the growth of remand inflows over the nine months to June 2007 was at rate equivalent to 5.2% per annum, the actual rate of increase varied dramatically across the year.

For the early part of the period from September 2006 to February 2007 the annualised rate was about 4%. The rate began to increase in February 2007 and has continued to increase. For the three months to June 2007 the average annualised rate of increase had jumped to 8%.

In the 2007 forecasts we have assumed that the numbers being remanded in custody will grow for three years at 6% (the average of the growth over the last eight years) then will grow at 4.5% for the remaining five years of the forecast. We will continue to monitor actual growth in remand numbers to test the continuing validity of these assumptions.

From 1 October 2007, the number of people remanded into custody per week declined. This drop has been factored into the forecast. There is as yet no evidence of a change in long-term trends, however, so the assumption for growth over time has been retained.

2.2. Sentenced Population

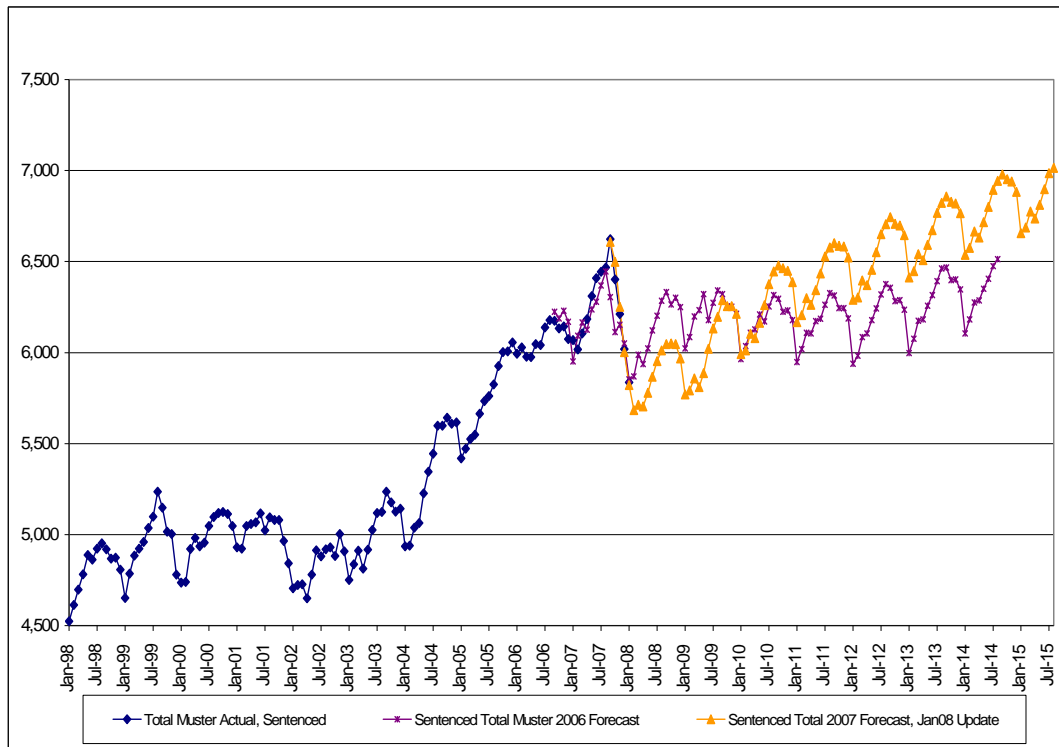
The graph below compares the 2007 and 2006 forecasts for the sentenced population. The projected increase in numbers from June 2007 to June 2015 is 8%. This is an increase on the 2006 forecast but is still a significant decrease on the rate of growth in the previous eight years (1999 to 2007) when the sentenced population rose by 27%.

There are three key drivers of the size of the sentenced population:

- the proportion of convicted offenders given custodial sentences
- the length of sentence imposed, and
- the proportion of sentence served.

The increase in the 2007 forecast is primarily due to a revision of our assumption in relation to the proportion of sentence served which we discuss in more detail below.

Figure 6: Sentenced prison population forecast, 2007 and 2006



Proportion of sentence served

The Parole Act 2002 removed mandatory release at two thirds of sentence, for inmates serving finite sentences of more than two years, allowing them to be detained for the full period of their sentence at the discretion of the Parole Board. The way in which the Parole Board has exercised discretion has differed from that anticipated in our 2006 forecast.

In particular, since the implementation of the Sentencing and Parole Acts 2002 offenders, particularly those given sentences of five years or longer, are serving a greater proportion of their sentences than we assumed in 2006. As a result the average proportion of sentence served has increased from approximately 50% to over 60% across all sentences.

The increase in proportion of sentence served impacts the prison population at different times for different sentence lengths. The removal of automatic release at two thirds of sentence means that an offender who received a five year sentence and who would, under previous regimes, have served two years, will now serve three years. An offender sentenced to ten years in 2002 under the previous legislation would have been released by 2007. Our analysis shows an offender will now stay on average until 2008.

This change necessarily has had a delayed impact and the overall prison population is only now reflecting the extra time offenders with longer sentences are spending in prison. Although the group of offenders to whom this applies is small it has a disproportionate impact on the overall population.

Accordingly we have revised our assumption for the 2007 forecast to reflect the likelihood that the Parole Board will continue to keep more serious offenders in prison for longer in the future.

Our assumption in 2006 in relation to medium term (3-5 year) sentences was more consistent with actual trends. The 2006 assumption for shorter sentences (<2-3 years) was higher than observed. This has been revised down in our 2007 assumption but it is not sufficient to offset the increase in longer term sentences.

The graphs below compare the 2006 and 2007 projections for longer term sentences, and illustrate how our assumptions about such sentences have changed.

Figure 7: Proportion of sentence served (excluding remand), actual and 2006 forecast - males sentenced for serious violence (except where noted) in years

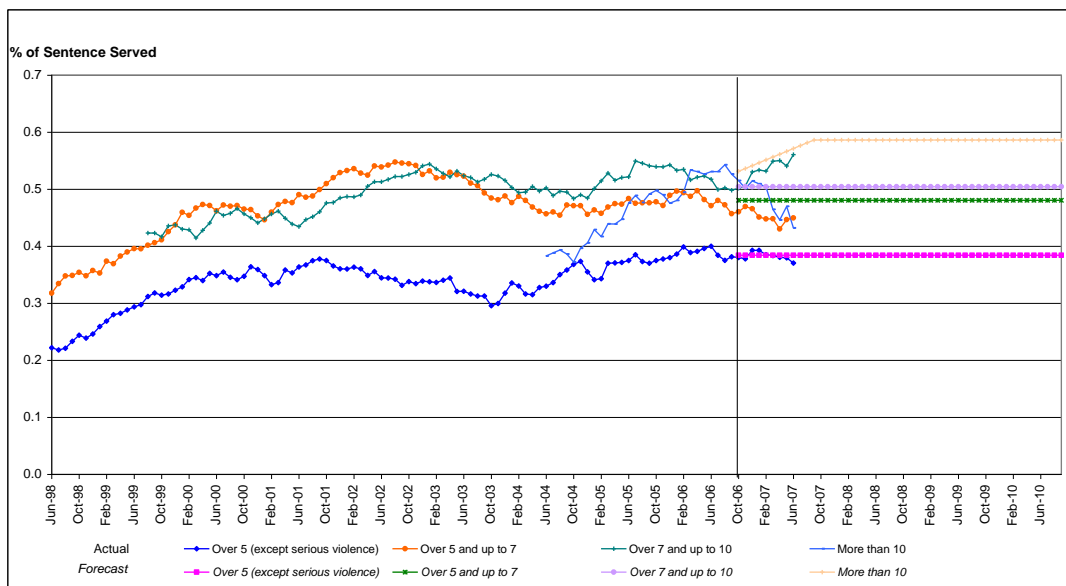
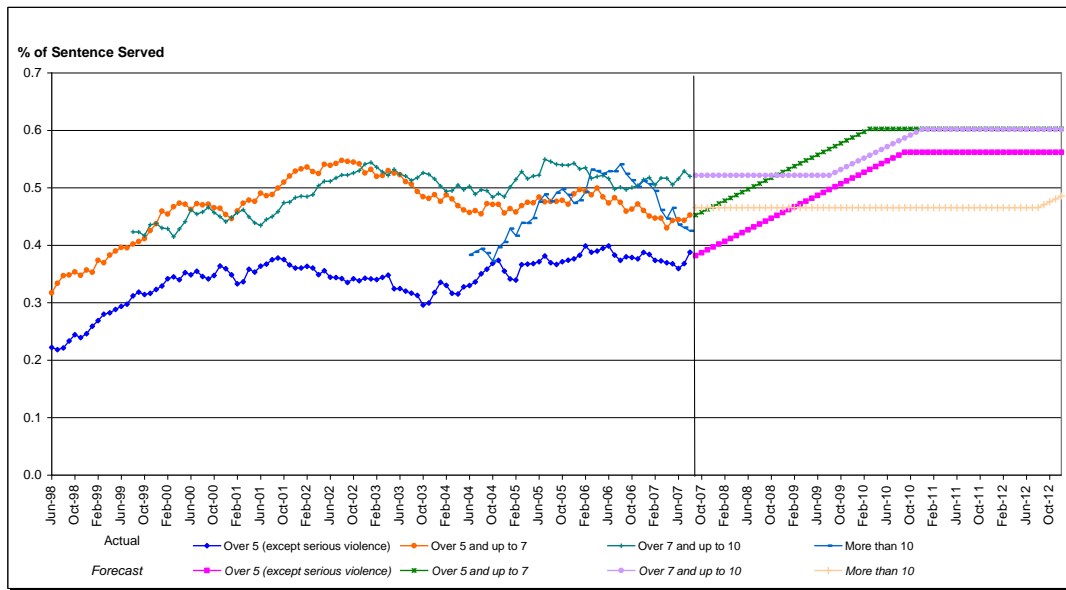


Figure 8: Proportion of sentence served (excluding remand), actual and 2007 forecast - males sentenced for serious violence (except where noted) in years



3. Impact of Effective Interventions

The projected bed savings associated with Effective Interventions have been factored into the Justice Sector prison forecast. The effect of these initiatives has been to mitigate the impact of key drivers of the prison population. In particular:

- Under Effective Interventions, Home Detention and Community Sentences were expected to reduce the growth in the sentenced population by 450 by 2009. It is now apparent, however, that the use of these sentences has been greater than anticipated, leading to larger and quicker reductions than expected in the sentenced population.
- EM Bail is expected to have a small effect (up to 60 beds) in relation to the remand population.
- The guidelines issued by the Sentencing Council are expected to neutralise the impact on the prison population of the parole changes (Sentencing Amendment Act 2007).

Notwithstanding these impacts the 2007 forecast is expected to exceed the previous forecast because of the unexpected continued increase in the remand population and the additional impacts of the Sentencing and Parole Acts 2002.

4. Annual breakdown of forecast numbers

The forecast produces a month end estimate for every month of the forecast period. Table 1 sets out the numbers for the prison population for 30 June for each year of the 2007 forecast compared to the 2006 forecast. Table 2 provides the comparative December 31 figures.

Table 1: 30 June forecast, 2006 and 2007

Year	Total Prison Population 2006 Forecast	Total Prison Population 2007 Forecast
June 2008	7,780	7,945
June 2009	8,001	8,329
June 2010	8,131	8,804
June 2011	8,319	9,162
June 2012	8,522	9,499
June 2013	8,787	9,766
June 2014	9,028	10,088
June 2015	-	10,385

Table 2: 31 December forecast, 2006 and 2007

Year	Total Prison Population 2006 Forecast	Total Prison Population 2007 Forecast
December 2008	7,978	8,089
December 2009	8,108	8,531
December 2010	8,215	8,932
December 2011	8,407	9,286
December 2012	8,601	9,554
December 2013	8,908	9,861
December 2014	-	10,174

Peak month figures are useful for capacity planning purposes. Table 3 provides the highest month end figures for each calendar year. For most years, the peak month is September. In two instances, 2008 and 2010, November is the peak month. This indicates that seasonal patterns are beginning to change.

Table 3: Peak month for each calendar year, 2007

Year	Total Prison Population 2007 Forecast
September 2007	8,478
November 2008	8,172
September 2009	8,604
November 2010	9,002
September 2011	9,333
September 2012	9,661
September 2013	9,963
September 2014	10,280

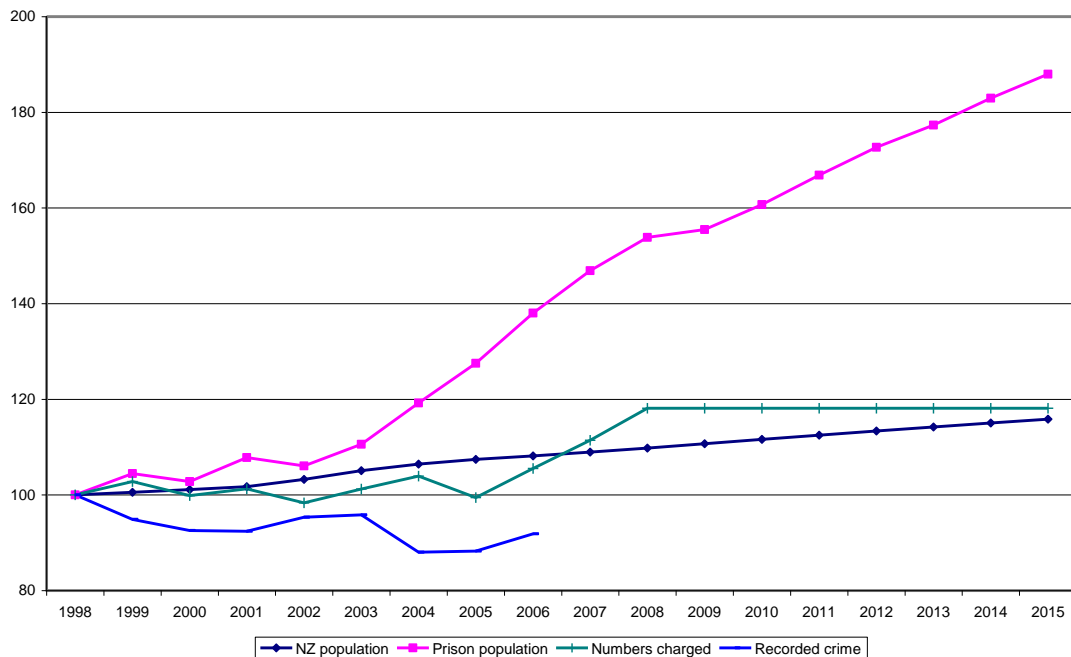
5. Demographic Factors

The demographic composition of the New Zealand population changes over time and could affect the growth of the prison population. Currently the prison population forecast does not use demographic change directly in its underlying model. Analysis shows that other factors such as remand and custody rates have an impact on changes in prisoner numbers that significantly outweigh any demographic influences.

The graph below shows that change in recorded crime, change in the prison population and change in the total population are not related. This means that changes in the population such as the large group of young males expected to enter their late teens in the next two years may result in an increase in the number of charges being laid but need not change the number of prison receptions.

Should factors that are currently affecting the prison population reduce in significance in the future, relative to demographic changes, then the forecast model will pick up the relevant demographic characteristics.

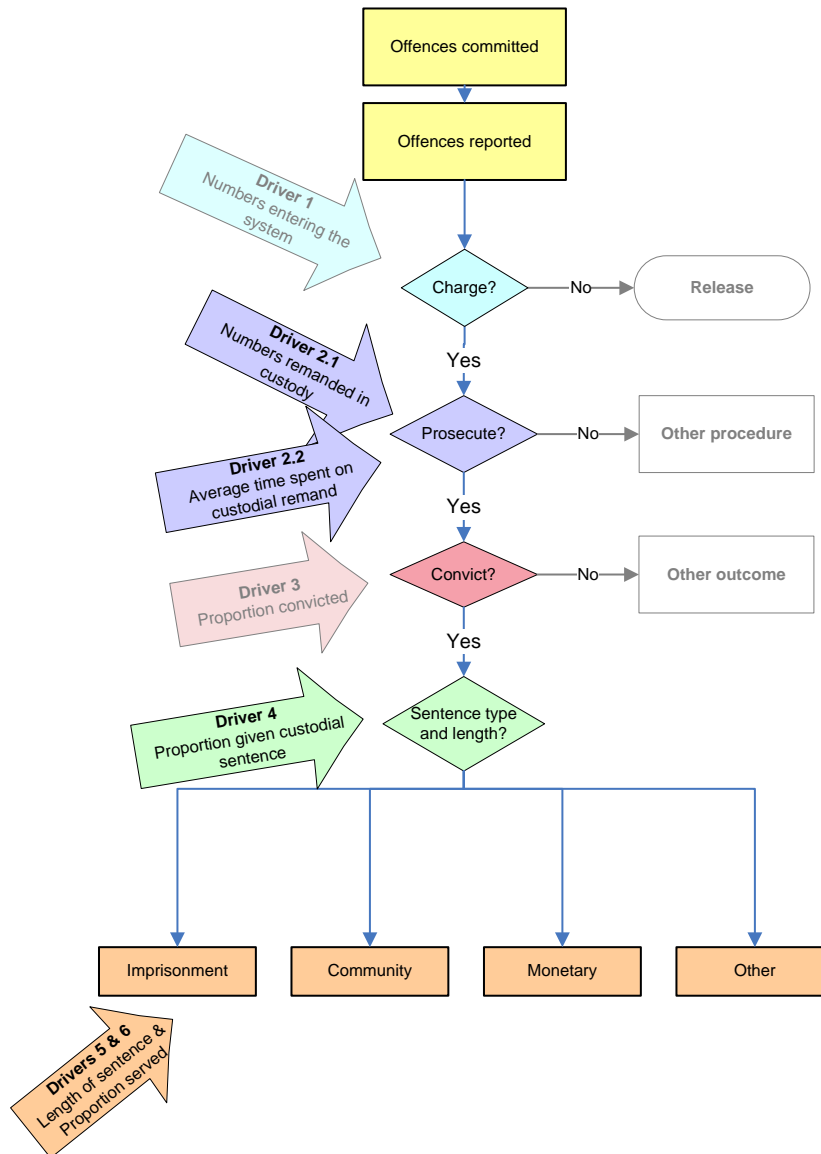
Figure 9: Changes in New Zealand total and prison populations, recorded crime and numbers charged, indexed to 1998 = 100



6. Basis of the forecast

The prison population forecast is prepared by forming assumptions about the future behaviour of key drivers of the population. The below illustrates, at a high level, the flows of offenders to prisons, and the points at which the drivers impact these flows.

Figure 10: Flows to prison and driver impacts



A summary of the assumptions underpinning the 2007 baseline forecast can be found in Section 8.

7. Forecasting limitations

A forecast is the projection of a future trend based on known conditions and current policy settings. Prison forecasts can never be expected to deliver consistently accurate predictions of prison population levels at specific times because it is impossible to anticipate all future conditions with certainty. A single event can result in significant divergence between the forecast and reality. Forecasts are an important input into planning, but need to be considered alongside other inputs and appropriate risk management tools applied.

8. Summary of assumptions

The prison population forecast is constructed by examining existing trends in the population and making assumptions about their future behaviour. These assumptions, wherever possible, are informed by knowledge of future legislative and operational events that might affect the flow of offenders through the system. Attempts are made to assess whether short-term behaviour represents the start of a new trend or whether it is simply an isolated episode after which the system will revert to its longer-term pattern.

Table 4 lists the assumptions underpinning the current forecast. The forecast starts by considering the broadest possible drivers of the population. For example, we know that, if nothing else changes, an increase in the numbers of people entering the system would result in an increase in the prison population. The 'broad drivers' represent the key 'settings' of the system in so far as it affects the prison population.

Sometimes we can make an assumption about how the broad driver will change, but in other instances it is necessary to identify and understand what underpins change in the "broad drivers". In the second column we set out those sub-drivers.

The third and fourth columns identify the existing trends and the assumptions made about their behaviour over the forecast period. These assumptions are the 'core' assumptions.

It is prudent to consider alternative assumptions for some drivers – this is particularly important where trends are volatile or new and untried developments in policy or operations are anticipated. The final column lists alternative assumptions for those drivers where appropriate. Combinations of the alternative assumptions have been used to generate two possible alternative scenarios. These scenarios are outlined in the next section.

Table 4: 2007 prison population forecast drivers and summary of assumptions

Broad drivers	Driver	Existing trend	Assumption	Alternative Assumptions ²
Numbers entering the system	1. Number of instances of an individual being charged with one or more offences on a single occasion (charging events)	Growing at around 6% per year, based on the last two years. Previously relatively stable, at around 140,000 individuals being charged on a single occasion per year.	The rate of increase will be 6% for the 2007-08 financial year (to around 165,000 per annum), and then 0% for the rest of the period of the forecast.	
Remands in custody	2.1 Numbers being remanded in custody	Growing at approximately 4.5% over the last financial year and equivalent to 8% per year for the last three months. The average over the last 8 years is 6% per year.	Numbers being remanded in custody will grow for 3 years at 6% (the average of the growth over the last 8 years) then will grow at 4.5% for the remaining five years of the forecast.	<ul style="list-style-type: none"> • Growth of about 4% per year [2.1a] • Growth of just over 8% per year [2.1b]
	2.2 Average time spent on custodial remand	The trend based on the most useful data is 10% increase per year over the latest 9 months but the form of the data means that this is 12 months old. Other related data suggest that this might be levelling off. The average growth over 8 years is 4.2% per year and 6.1% per year for the 2002-2006 period.	The average time spent on remand will grow at 6.1% per year for the first four years (the 2002-06 average), then at 4.2% per year (the 1998-2006 average) for the final four years of the forecast period. The eight year average represents an increase from 35 days in 1999 to 52 days in 2007.	<ul style="list-style-type: none"> • 0% (i.e. levelling off immediately) [2.2a] • Growth continues at 6.1% for the entire 8 year period [2.2b]
Proportion convicted	3. Proportion of people convicted	There is a wide range of variability at the offence level. The overall trend is stable at around 70% convicted.	The proportion of people charged and who go on to receive convictions will remain stable at about 70%.	
Proportion given custodial sentences	4.1 Offenders given sentences other than solely fines or discharges	Growing at 3.6% per year, based on the last five years. Growing at 8.6% over the last year.	The number of offenders who will be given sentences (other than solely a fine or discharge) will increase by 3.6% for the first year, and then level off at around 76,000 for the duration of the forecast period.	

² The two scenarios presented in the next section involve the application of a combination of the alternative assumptions. In scenario one alternative assumptions 2.1a and 2.2a are applied and in the case of scenario two alternative assumptions 2.1b and 2.2b are applied.

Broad drivers	Driver	Existing trend	Assumption	Alternative Assumptions²
	4.2 Proportion of offenders given custodial sentences	Declined from 15.1% to 14.1% of all convicted last year. The previous 3 years have been relatively stable at about 15% (around 10,000).	This proportion is affected by the introduction of Home Detention (HD) and Community Detention (CD) sentences. The assumption is that the new sentences will be used in place of short-term prison sentences at the rate of 300 per calendar month. This rate will save 650 prison places. This is equivalent to about 50% of offenders currently being given sentences of 2 years or less being transferred to the new sentences.	
Length of sentence imposed ³	5. Length of sentence imposed	There has been no significant change in sentence lengths imposed over the last 10 years.	Until further details of the timescale for the introduction of sentencing guidelines become available, there is no justification for assuming any change in the average length of sentences imposed.	
Proportion of sentence served (excluding remand) ³	6. Proportion of sentence served (excluding remand)	Complex with variations according to sentence length but it is converging to approximately 60% for sentences of more than 2 years.	The proportion of sentences served will converge to approximately 60%.	

³ For the purposes of the 2007 forecast it is assumed that the sentencing guidelines and parole eligibility changes expected to come into force in mid 2009 will have a neutral impact on the prison population.

9. Possible alternative scenarios

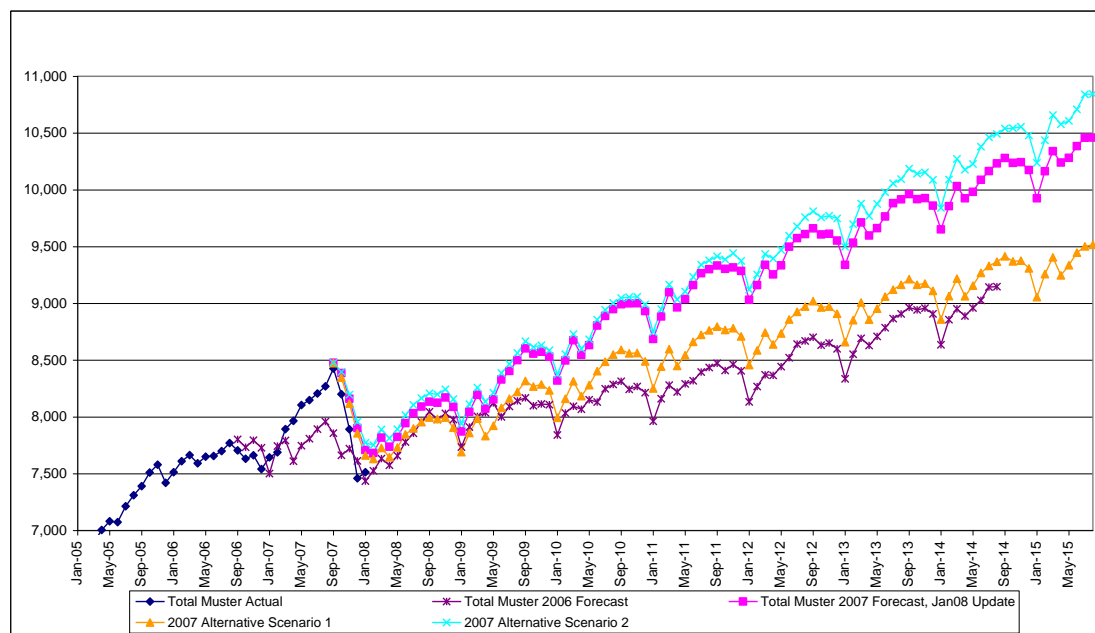
As with all forecasts they are based on the best information available at the time they are produced. The justice system is dynamic and new policy changes (including operational changes) implemented over the forecast period may impact the prison population. Given the discretionary nature of many decisions within the justice sector, we also recognise that incidents and events arising can impact behaviour and in turn the actual prison muster numbers.

To provide some sense of the range within which the actual prison muster might fall we have developed two scenarios. The first considers what would happen to the prison population if remand pressures ease over the forecast period (scenario one) and the second provides a view of how the population will change if remand pressures continue at a higher level (scenario two).

These scenarios will be used to inform decisions around capacity planning and management of forecast risk.

We will monitor the actual data for each of the core assumptions so that we can identify whether or not actual trends are departing from those assumed in the baseline forecast and enable us to identify which of the alternative scenarios is emerging as a better predictor of future trends.

Figure 11: Alternative scenarios compared to 2007 forecast



Alternative scenario one: Remand pressures ease

This scenario is based on the assumption that numbers remanded in custody will grow at 4% per annum over the forecast period. The core assumption is that the numbers remanded in custody will grow at 6% per

annum for three years and then at 4.5% for the remainder of the forecast period. The scenario also assumes that the average time spent on custodial remand does not grow over the forecast period. The assumption in our core forecast is that the average time will grow at 6.1% for four years and then at 4.2% for the remainder of the period. Under this scenario the prison population reaches 9,448 by June 2015, 937 lower than the core forecast.

Alternative scenario two: Remand pressures continue at a higher level

Scenario 2 is based on the assumption that the numbers remanded in custody grow at just over 8% per year (this is consistent with the three months to the end of June 2007, rather than the longer term trend). We also assume that the average time spent of custodial remand continues to grow at 6.1% during the forecast period. Under this scenario the prison population reaches 10,709 by June 2015, 324 higher than the core forecast. The divergence from the core forecast increases later in the forecast period for this scenario.