Review of selected performance indicators of the NSW CTP Scheme 2016

State Insurance Regulatory Authority
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Contents

1. Executive summary

1.1 Introduction and purpose

EY has been requested by the State Insurance Regulatory Authority (SIRA) to review the performance of the NSW Compulsory Third Party (CTP) Scheme (the Scheme). EY is the independent Scheme actuary. We have performed the review by analysing key metrics that require actuarial determination as agreed with SIRA. Results of the review are documented in this report.

This is the fifth time that EY has conducted this review. The previous review is documented in a summary report "Review of selected performance indicators of the NSW CTP Scheme 2016" dated 18 May 2016 and is referred to as the "previous report". The previous report is available on the SIRA website.

This review uses data up to 30 June 2016 in calculating the key metrics. Key metrics relating to the scheme experience are shown starting from 2002 in order to provide sufficient history on which to assess trends. The profit margin, loss ratio and efficiency measures are shown starting from the accident year ending 30 June 2000 to approximately align with claims arising under the amended Motor Accidents Compensation Act 1999.

The Lifetime Care & Support (LTCS) scheme is excluded from the analysis since it is managed by Insurance & Care NSW (icare) instead of private insurers.

SIRA has adopted two key indicators to assess the performance of the Scheme:

► Affordability - the premium charged for a CTP policy relative to average NSW weekly earnings. The lower the premium as a proportion of average earnings, the more affordable premiums are considered to be

► Efficiency - the proportion of premiums returned to injured persons as claim benefits rather than service delivery costs and insurer profit. The higher the proportion, the greater the efficiency of the Scheme.

As agreed with SIRA, this report does not measure the affordability of premiums as this work is being undertaken by SIRA. However, our report does review measures of Scheme performance that impact premium affordability (e.g. claim frequency trends).

In addition to the above two key performance indicators of the Scheme, SIRA is also monitoring the fairness of the premiums paid by vehicle owners.

All of the results presented in this report are based on regular work that has been performed by the Scheme actuary for a number of years. These results include an analysis of the Scheme experience as well as actuarial projections of claims experience.

1.2 Structure of this report

We have analysed the main items of Scheme experience that impact the efficiency and profitability of the Scheme. These items include:

► Insurer risk premium (i.e. claims cost) in section 4, including:

    ► Claim numbers, claims frequency, propensity to claim and casualty numbers

    ► Average claims size and superimposed inflation

    ► Cost per policy which combines claim frequency and average claims size

- ► Experience by type of payment - legal costs and the remaining claims cost

  - ► Additional analysis of claim payment duration and the impact of changes in claims inflation and interest rates

► We have investigated insurer profitability in section 5. Profit loadings need to achieve a balance between an adequate return on capital for insurers to ensure a financially viable scheme and affordable premiums for vehicle owners. A major driver of the insurer profitability is the cost per policy and this is discussed in section 4. Loss ratios are also set out in this section. The loss ratio is the cost of claims (excluding claims handling expenses) divided by the insurer's premium collected (excluding GST and Levies). This is the first report in which this analysis is presented. It has been introduced following recommendation by the Board in the report titled "Reforming insurer profit in compulsory third party (CTP) motor vehicle insurance" dated March 2017

► We have investigated the efficiency of the Scheme in section 6 and included analysis of legal and investigation costs for claims of various sizes. In particular we have included analysis of legal costs using the Claims Cost Disclosure (CCD) data collected by SIRA since late 2015. Plaintiff lawyers provide the Claims Cost Disclosure data to SIRA which includes contracted out legal costs. For the first time this data provides full transparency of all legal costs in the Scheme.

In this report, we have provided high level commentary and insights into the movements in the above metrics over time.

1.3 Summary of results

The following is a summary of the major results of the review. Conclusions regarding data, methods, assumptions and results should be made only after studying this report in its entirety, as conclusions based solely on a section or selected sections may be incorrect or misleading.

Section 4 discusses the claims experience of the Scheme. The main observations are:

► While casualty numbers have continued to fall in recent years (from around 25,000 in 2008 to around 20,000 in 2016), the number of full claims (excluding workers compensation recovery claims) has increased from around 7,700 to over 14,000 (over the same period). This is driven by an increase in the propensity to claim which has increased from 31% to 72% over the last eight years

► Minor severity claims with legal representation, which have increased from around 3,200 in 2008 to around 9,600 in 2016, account for almost all the increase in claim numbers

► Average claim sizes for the claim severity groups other than minor severity claims have been stable after allowing for the effects of wage inflation

► For minor severity claims with legal representation in isolation, the average claim size has been decreasing in recent years. While the claim numbers for this segment have increased the nature of these new claims producing the increase is different to existing claims before the increasing trend. In particular the additional claims reports are almost all Whole Person Impairment (WPI) less than or equal to 10% cohort which has a significantly lower average claims size than claims with a WPI exceeding 10%. As a result the estimated average claims size for minor severity claims with legal representation has decreased by 18% since 2011 from $124,000 to $102,000 in 2016

► The combination of the increase in minor severity claims with legal representation offset by a lower average claim size of these claims, with the cost of all other claims being stable, has resulted in a disproportionate increase in the claims cost per policy for minor severity legally represented claims. The cost per policy in June 2016 dollar has increased from $97 in 2008 to $185 in 2016, an increase of 92%.

► Superimposed inflation (SI) is the increase in claim costs over time, over and above wage inflation. Our analysis of superimposed inflation at the scheme level shows there has been a small reduction in the finalised claim sizes (a small negative SI of -2% p.a.) from 2010 to 2016. The negative superimposed inflation is a function of:

  ► Stable numbers of moderate and serious claims and stable average claims size for these claims

  ► A very large increase in the number of minor severity legally represented claims which have a much lower average claims size than moderate and serious claims combined with a reducing average claims size for minor severity legally represented claims as noted above. The continuation or not of this trend will impact the emergence of superimposed inflation in future years and as a result there is considerable uncertainty around this assumption.

► For the 2016 accident year plaintiff legal costs excluding contracted out legal costs are estimated to be 11% of the cost per policy. Based on analysis of the Claims Cost Disclosure, contracted out legal costs account for 11% of the claims costs (including benefit payments and legal and investigation costs). As a result we estimate total plaintiff costs including contracted out costs to be 22% of the cost per policy for the 2016 accident year. Including contracted out costs doubles legal plaintiff costs for the scheme and indicates the significance of contracted out costs and legal costs in general on the scheme.

Section 5 discusses Scheme profitability which takes the difference between premiums and discounted claim costs and relevant expenses. Key findings are:

► Profit margins have been projected to be above the average filed profit margin of 8% across all accident years (ending 30 June) except 2009 and 2016. The average profit margin for the five years from 2002 to 2006 is estimated to be 25%, the average for the next five years (2007 to 2011) is estimated to be 15% and the average for the most recent five years (2012 to 2016) is estimated to be 14%

► Loss ratios have been projected to be below the target loss ratio of 75% (calculated based on an 8% profit margin and scheme average insurer expenses) across all accident years (ending 30 June) except 2016. The 2009 accident year is also broadly in line with 75%. The average loss ratio for the five years from 2002 to 2006 is estimated to be 57%, the average for the next five years (2007 to 2011) is estimated to be 67% and the average for the most recent five years (2012 to 2016) is estimated to be 70%

► The main driver of the higher than target profit margin and lower loss ratios in the Scheme has been the lower than expected level of superimposed inflation since 2010. If the superimposed inflation continues to be benign, then the actual profit margin/loss ratio arising from the most recent five accident years (2012 to 2016) is likely to be higher/lower than the estimates set out in this report.

Section 6 discusses Scheme efficiency which shows the proportion of the premium that goes to the claimant as benefit payments. Key findings are:

► Claims experience and efficiency varies across years, as a result efficiency should be assessed on a longer term basis. Projected average efficiency for the latest five accident years is 52% and over the lifetime of the scheme the average efficiency is estimated to be 48%. Efficiency for the accident year ending June 2016 is projected to be 58% and is the highest of the accident years since 2000.

► Efficiency is around 50% for claims above $200k and around 40% for claims below $200k. This shows that smaller claims tend to have lower efficiency, due to their higher average proportion of legal and investigation costs. Non-legally represented claims have approximately 58% efficiency across all claim sizes, while efficiency for legally represented claims range from 38% (<$100k) to

51% (>$1m). Legally represented claims consistently have lower efficiency than non-legally represented claims.

1.4   Uncertainty

There is significant uncertainty associated with actuarial estimates shown in this report. Estimates of future claims experience (such as claims numbers and payments) are uncertain because they depend on outcomes of future events which cannot be forecast precisely. These outcomes include future social, economic and legal environments. Therefore, actual claims experience may emerge at levels higher or lower than actuarial estimates. There is considerable uncertainty in the estimates for recent years because a significant portion of claims are unpaid and hence based on actuarial estimates. In particular there is additional uncertainty around minor severity represented claims for the three most recent accident years due to an apparent change in the mix of these claims towards smaller claims sizes. We have relied on the insurer case estimates to project this trend as only a small proportion of these claims have been paid so far. Further comments on uncertainty are included throughout this report; however the most important ones are outlined in section 6.

1.5   Reliance and limitations

In undertaking this review, reliance has been placed upon the data provided to us mainly by SIRA. We have also relied on supplementary information from Taylor Fry. The accuracy of SIRA data relies on the accuracy of insurer data that insurers have provided to SIRA.

It is essential that any reader of this report understands its qualifications and limitations. These are described throughout the report; however the most important ones are outlined in section 8.

Glossary

Term	Definition
Abbreviated Injury Scale	The Abbreviated Injury Scale (AIS) is an anatomical-based coding system created by the Association for the Advancement of Automotive Medicine to classify and describe the severity of injuries. It represents the threat to life associated with the injury rather than the comprehensive assessment of the severity of the injury.
Accident Notification Forms (ANFs)	The form provides for the early payment of reasonable and necessary medical expenses and/or lost earnings up to a maximum of $5,000. ANFs can be lodged by at-fault and not at-fault injured parties.
Accident year	Denotes the year in which the vehicle accident giving rise to the claim occurred. Accident years generally run from 1 July to 30 June (and 2016 would be the year ended 30 June 2016) if not specifically stated otherwise.
Acquisition expenses	Acquisition costs are the costs incurred by insurers to acquire and retain CTP business. These expenses include personnel costs and associated costs (e.g. rent, insurance premiums, etc.), IT costs, finance costs (e.g. accounting, audit, actuarial, etc.), stationery, marketing and advertising costs, commissions and other costs including overhead costs.
Affordability	Average premium (including levies but excluding GST) charged in the quarter divided by average weekly earnings in the quarter. This is consistent with the definition presented in SIRA's annual report and that adopted by other schemes. The higher this ratio the less affordable the premium.
Agents' commission	Refers to payments made to agents/brokers by insurers for writing CTP insurance on behalf of the insurer. The maximum commission payable for CTP insurance is 5 per cent of the insurance premium.
Bulk-Billing Arrangement	Under the Bulk Billing Arrangement, SIRA collects levies and pays quarterly lump sums to the NSW Ministry of Health for public hospital and ambulance services for motor accident injuries.
Casualty	Any person killed or injured as a result of an accident attributable to the movement of a road vehicle on a road, as recorded by Roads and Maritime Services.
Claims Cost Disclosure (CCD)	Mandatory disclosures of claims cost provided by the insurer and the claimants legal practitioner as mandated by the Motor Accidents Compensation Regulation Clause 23(2) 2015. The costs breakdown includes the award or settlement amount, (party/party) costs, other legal fees including barrister fees and previous lawyers' fees.
Claim frequency	Ultimate number of claims divided by the number of vehicles exposed.
Claims handling expenses	Refers to expenses related to managing and administering CTP claims. These expenses include costs of claims staff managing claims, rehabilitation staff, managers and support staff.

Term	Definition
Claim severity	The table below shows the claim severity level classifications. Specialised insurer staffs classify each claimant's injury severity based on the Abbreviated Injury Scale set by the Association for the Advancement of Automotive Medicine.

Claim severity level code	Description
1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Maximum
9	Unknown

We use "serious severity" to refer to claims for serious severity, severe severity, critical severity and maximum severity injuries under the Abbreviated Injury Scale. We use "minor severity" to refer to claims for minor severity and unknown severity injuries.

Term	Definition
Claim type	The claims in the NSW CTP scheme are split into full claims, ANFs and workers compensation recovery claims.
Contracted-out legal costs	Costs payable to the legal practitioner representing the claimant, by the claimant, under an agreed private arrangement i.e. those costs in excess of those specified in the SIRA Cost Regulation. These costs are not transparent to the insurer or in the data they submit to SIRA. Information on these costs are directly submitted by legal practitioners to the claims costs disclosure database.
Cost per policy	Total cost of claims divided by the number of insured motor vehicles in NSW.
Current value	Historical payments inflated to the current period based on a relevant price index.
Development year	This denotes the time elapsed since the year in which the accident occurred.
Green slips	The term 'Green Slip' dates back to the start of the NSW CTP scheme in 1989 where the CTP insurance invoice was a detachable green coloured slip.
Heads of Damage (HoD)	Common law awards or settlements are broken up into Heads of Damage (HoD) and include past and future loss of earnings, past and future treatment and care, general damages or non-economic loss and legal costs
Incurred But Not Reported (IBNR)	An actuarial term for the estimate of claims that will be received in the future in respect to accidents which have already occurred.
Incurred claims cost	Claim payments to date plus case estimates.
Inflated cost per policy	Sum of past claim payments, in original dollar values, and future claim payments, including future wage inflation and superimposed inflation, divided by the number of policies.
Lifetime Care and Support (LTCS) scheme	This scheme provides treatment, rehabilitation and attendant care services to people severely injured in motor accidents in NSW, regardless of who was at fault in the accident.
Loss ratio	The discounted claims costs as a proportion of the insurer's premium income and excludes GST and levies. The claims costs excludes claims handling expenses.

Term	Definition
Medical Care and Injury Services (MCIS) levy	Refers to a levy applied to the CTP insurance premium to fund the cover provided by the Lifetime Care and Support scheme, the SIRA costs associated with the regulating the CTP scheme and the Bulk Billing Arrangement for public hospital and ambulance services.
Net reinsurance cost	Refers to the net cost of reinsurance after allowing for recoveries (i.e. reinsurance claim payments).
Payment Per Claim Finalised (PPCF)	A standard actuarial model that assumes the average payments per finalised claim will progress broadly in line with historic experience regardless of accident year.
Personal Injury Register (PIR)	A database maintained by SIRA which collates and records CTP claims related data provided by insurers.
Profit margin	Refers to the proportion of premium in excess of all insurer claims and expenses. Levies and GST are excluded from assessing the profit margin.
Projected case estimate	A standard actuarial method that focuses on anticipated relationships between future claim payments and case estimates.
Propensity to claim	Ultimate number of claims divided by the number of road casualties.
Risk premium	Expected claim payout without expenses and profit margin.
Superimposed inflation	The increase in claim costs over time, over and above wage inflation, not reflected by other parameters in the actuarial model.
Underwriting year	The year ending 30 June (unless otherwise stated), in which the CTP policy is effective from.
Whole Person Impairment (WPI)	Whole person impairment is a methodology to quantify the extent that the permanent impairment of one or more body part/s, system/s or function/s impairs the whole person. The degree of whole person impairment is expressed as a percentage and used in compensation schemes to determine access to certain benefits. In CTP more than 10% WPI may enable access to non-economic loss head of damage."

2. Introduction

2.1 Introduction and purpose

EY has been requested by the State Insurance Regulatory Authority (SIRA) to review the performance of the NSW Compulsory Third Party (CTP) Scheme (the Scheme). EY is the independent Scheme Actuary. We have performed the review by analysing key metrics that require actuarial determination as agreed with SIRA. Results of the review are documented in this report.

This is the fifth time that EY has conducted this review. The previous review is documented in the summary report "Review of selected performance indicators of the NSW CTP Scheme 2015" dated 18 May 2016 and is referred to as the "previous report". The previous report is available on the SIRA website.

This review uses data up to 30 June 2016 in calculating the key metrics. Key metrics relating to the scheme experience are shown starting from 2002 in order to provide sufficient history on which to assess trends. The profit margin, loss ratio and efficiency measures are shown starting from the accident year ending 30 June 2000 to approximately align with claims arising under the amended Motor Accidents Compensation Act 1999. Changes in the key metrics are analysed and discussed in this report.

The Lifetime Care and Support (LTCS) scheme is excluded from the analysis since it is managed by Insurance & Care NSW (icare) rather than SIRA.

SIRA has adopted two key indicators to assess the performance of the Scheme:

► Affordability - the premium charged for a CTP policy relative to average NSW weekly earnings. The lower the premium as a proportion of average earnings, the more affordable premiums are considered to be

► Efficiency - the proportion of premiums returned to injured persons as claim benefits rather than service delivery costs and insurer profit. The higher the proportion, the greater the efficiency of the Scheme.

As agreed with SIRA, this report does not measure the affordability of premiums as this work is being undertaken by SIRA. However, our report does review measures of Scheme performance that impact premium affordability (e.g. claim frequency trends).

In addition to the above two key performance indicators of the Scheme, SIRA is also monitoring the fairness of the premiums paid by vehicle owners.

All of the results presented in this report are based on regular work that has been performed by the Scheme Actuary for a number of years. These results include an analysis of the Scheme experience as well as actuarial projections of claims experience.

2.2 Structure of this report

Section 3 of this report provides a summary of the data used and the methodology adopted.

The following figure sets out the underlying components of CTP premiums.

Figure 1: Components of the CTP Green Slip premium
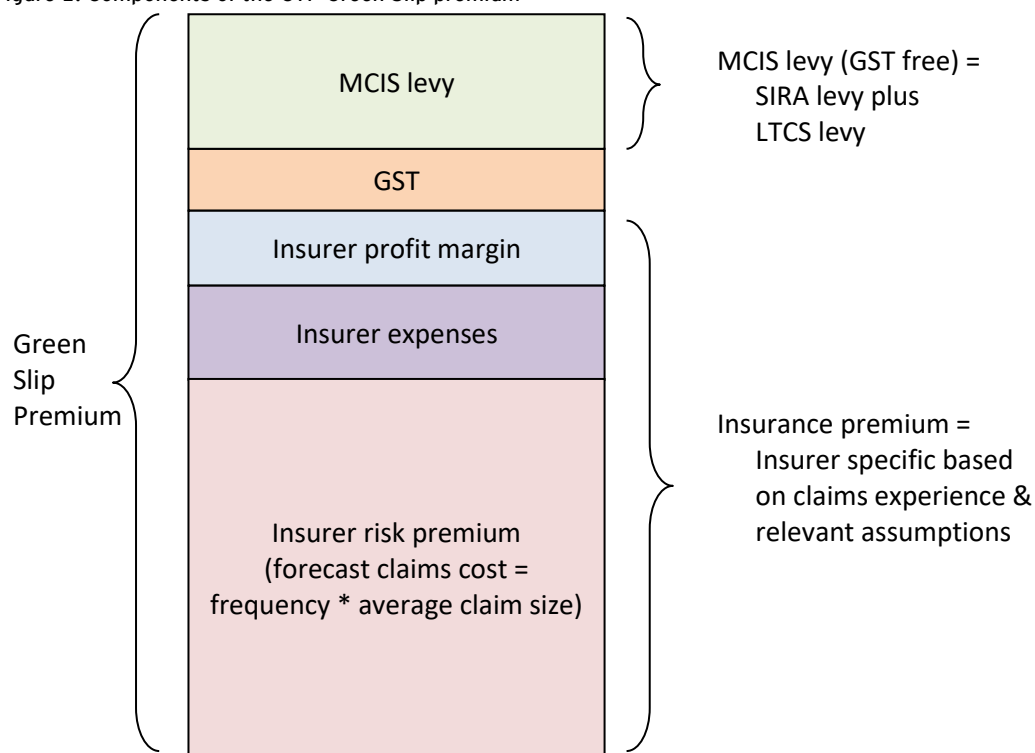
We have analysed the main items of Scheme experience that impact the efficiency of the Scheme. These items include:

► Insurer risk premium (i.e. claims cost) in section 4

  ► Claim numbers, claims frequency, propensity to claim, casualty numbers

  ► Average claims size and superimposed inflation

  ► Cost per policy, which combines claim frequency and average claims size

  ► Experience by type of payment - legal costs and the remaining claims cost

  ► Additional analysis of claim payment duration and the impact of changes in claims inflation and interest rates

► We have investigated insurer profitability in section 5. Profit loadings need to achieve a balance between an adequate return on capital for insurers to ensure a financially viable scheme and affordable premiums for vehicle owners. Once a premium is collected, insurer profits depend on emerging claims cost per policy. Loss ratios are also set out in this section. The loss ratio is the ration of the cost of claims (excluding claims handling expenses) divided by the insurer's premium collected (excluding GST and Levies). This is the first report in which this analysis is presented. It has been introduced following recommendation by the Board in the report titled "Reforming insurer profit in compulsory third party (CTP) motor vehicle insurance" dated March 2017

► We have investigated the efficiency of the Scheme in section 6 and included analysis of legal and investigation costs for claims of various sizes. In particular we have included analysis of legal costs using the CCD data collected by SIRA since late 2015. Plaintiff lawyers provide the CCD data to SIRA which includes contracted out legal costs. For the first time this data provides full transparency of all legal costs in the Scheme.

In this report we have provided high level commentary and insights into the movements in the above metrics over time.

3. Data and methodology

This section outlines the data, data adjustments and methodology used to perform the analyses shown in this report.

All results in this report exclude GST and exclude levies (unless otherwise stated).

Our analyses have been based on the following data:

▶ Insurer premium returns as at 30 June 2016

▶ Personal Injury Register information as at 30 June 2016

▶ Centre for Road Safety (CRS) Road Casualty data as at 28 October 2016

▶ Information from insurer premium rate filings as at 30 June 2016

▶ Claims Cost Disclosure (CCD) as at 1 August 2016.

3.1 Outstanding claims valuation of the Scheme

As the Scheme actuary, we have estimated the Scheme's outstanding claims liabilities as at 30 June 2016. This is our fifth outstanding claims valuation performed for the Scheme. The results of our valuation are documented in our valuation report "Outstanding Claims Liability Review of the NSW CTP Scheme as at 30 June 2016".

We have performed the valuation using unit record claims data as at 30 June 2016 provided by SIRA (i.e. from SIRA's Personal Injury Register).

For claims which are not ANFs and workers compensation recoveries, we have analysed the claims based on the maximum claim severity level recorded. The table below shows claim severity level classifications. Specialised insurer staff classify each claimant's severity based on the Abbreviated Injury Scale set by the Association for the Advancement of Automotive Medicine.

Table 1: Claim severity levels classification

Claim severity level code	Description
1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Maximum
9	Unknown

Throughout this report, "serious severity" refers to serious, severe, critical and maximum severities. "Minor severity" refers minor and unknown severities. For minor severity represented claims, we have split these further into "existing" and "additional" claims in our outstanding claims liabilities valuation as at 30 June 2016. This has been done by identifying the source of the additional claims and is discussed further in section 4.4.1.2. The remaining severities are "moderate."

We have separately analysed ANFs and full claims. We have separated out workers compensation recovery claims from full claims. The adopted claim categorisation is shown in the figure below.

Figure 2: Breakdown of claim categorisation
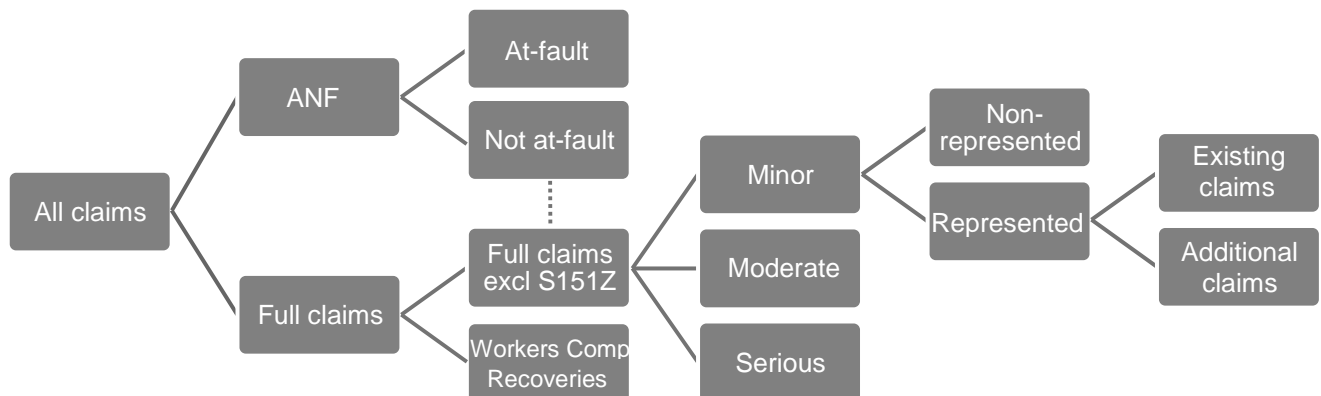
3.1.1 Claim numbers

Claim numbers for each accident quarter have been predominantly estimated using the chain ladder method. For recent accident quarters we have made assumptions on claim frequency for each period.

We have adjusted our projection assumptions to be in line with emerging experience and our view of future experience.

3.1.2 Scheme claims cost

We have assessed the total claims cost for each claim category using a mix of standard actuarial models (mainly payments per claim finalised and projected case estimates models).

In addition we have also implemented a Heads of Damage (HoD) (e.g. loss of earnings, care, etc) model in parallel to the valuation model to provide more detailed understanding of trends in the Scheme's claims costs. This is discussed further in the next section.

We have adjusted our projection assumptions to be in line with emerging experience and our view of future experience.

We have adopted a set of rules to identify LTCS eligible claims and removed their related costs from historical payments for accident periods prior to the commencement of the LTCS scheme in 2007. We have removed these costs so that our analysis and conclusions reflect the current Scheme.

3.1.3 Head of Damage (HoD) model

The HoD model provides an analysis of each HoD claims cost by accident year. Each is analysed using the following segmentation:

► Minor severity claims with WPI ≤ 10%

► Minor severity claims with WPI > 10%

► Moderate and Major severity claims with WPI ≤ 10%

► Moderate and Major severity claims with WPI > 10%.

As part of our process, we have used the results of the HoD models to inform our assumptions in the valuation and this is discussed further in section 4.4.1.2.

3.2   Insurer profits and loss ratio

Insurer profits are defined as:

▶   Insurer premiums (excluding GST and treatment of levies is discussed below)

▶   Less cost of claims and all insurer expenses (discounted to when the premium is received).

The resulting profit is expressed as a percentage of insurer premiums (i.e. realised profit margin).

In addition to assessing profitability we have also calculated a loss ratio. This has been introduced following recommendation by the Board in the report titled "Reforming insurer profit in compulsory third party (CTP) motor vehicle insurance" dated March 2017.

The loss ratio has been taken as the ratio of:

▶   Projected ultimate discounted claims cost (excluding claims handling expenses); to

▶   Insurer's premium (excluding GST and treatment of levies is discussed below).

The loss ratios have been presented by accident year to ensure consistency with the insurer profitability results.

The table below shows the sources of the data that was used to perform the analysis of insurer profits and loss ratio.

Table 2: Sources of data

Item	Source
Premiums	Insurers' premium returns
Expenses	Insurers' rate filings
Bulk-Billed ambulance and hospital costs	SIRA up to 30 September 2006
SIRA levy and Roads and Maritime Services (RMS) commission	SIRA up to 30 September 2006
Past and projected future claim payments	SIRA and EY

For periods up to 30 June 2011, all data used was provided by Taylor Fry (SIRA's previous scheme actuary) in spreadsheets which summarise each of the components above by underwriting year. This data was originally provided to Taylor Fry by SIRA. For periods after 30 June 2011, all data used was provided to us by SIRA directly.

For policies written prior to 1 October 2006, insurers' CTP premiums included the SIRA levy and RMS commission. The SIRA levy aims to cover operating costs of SIRA related to the CTP scheme, the RMS commission and NSW Department of Health Bulk-Billed public hospital and ambulance costs related to motor accident injuries. As a result for these years we have also included the Bulk-Billed public hospital and ambulance costs in claims cost to ensure consistency with the premium measure.

For policies written thereafter, the SIRA and LTCS levies have been a separate cost paid by policyholders in addition to insurer premiums. Hence premiums and insurers' acquisition expenses exclude the SIRA levy, RMS commission, and LTCS levy for these years. As a result we have excluded Bulk-Billed public hospital and ambulance costs from the claims cost from 1 October 2006.

Note prior to 1 October 2006, the claims cost also includes the cost of claims that would now be managed by the LTCS. We have not adjusted for this since the premium for these years would have allowed for cost of these claims.

In this review we have continued to show insurer profitability results by accident year. Using an accident year basis allows results to be shown up to 2016 (ending 30 June), whereas using an underwriting year basis will only show results for policies attaching up to 2015 (ending 30 September). In addition using an accident year basis is consistent with the outstanding claims valuation.

3.3 Scheme efficiency

We have assessed Scheme efficiency by accident year from accident years 2000 to 2016.

To assess the historical efficiency of the Scheme, we have split historical premium for each accident year as follows:

1. Claim payments (both past and projected future) which are further split into:

    a. Loss of earnings, treatment (i.e. medical and related costs paid on claimant's behalf, etc), care and general damages (i.e. the amount paid to the direct benefit of the injured person). The ratio of this component to total premium represents Scheme efficiency (the proportion of premium claim payments received by the claimant)

    b. Legal, investigation and medico legal and contracted out legal costs which have been estimated based on SIRA data as part of the HoD modelling

2. Insurer expenses

3. Scheme expenses (SIRA and RMS)

4. Insurer profits.

We have assumed that:

►   Claim payments received by claimants include loss of earnings, general damages, treatment (medical and related costs paid on claimants behalf, etc), care, Bulk-Billing levy and miscellaneous costs (e.g. home modifications, travel)

►   Claim payments classified as legal expenses (plaintiff and defendant), contracted out legal costs, investigation expenses and medico legal costs, SIRA administration costs and RMS levy are not received by claimants.

The approach and source of information used to determine the value of each item are described in the table below.

Table 3: Approach/components and sources for splitting the premium

Item	Approach/components	Source
Premiums	For the efficiency calculation the 2007 to 2016 years have been adjusted to include Bulk-Billing, RMS and SIRA levies (as previous years included these items) Note premium written prior to 1 October 2006 covers the cost of claims that would now be managed by the LTCS. The premium and costs related to the LTCS are excluded from the analysis thereafter. No adjustment has been made to the older years to remove the LTCS equivalent premium and claims cost.	► Refer to section 3.2 for details ► Bulk-Billing and SIRA/RMS levies information was provided by SIRA
Total claims costs	Estimated Scheme claims costs	► Refer to section 3.1 for details
Split of claims cost	► Legal and investigation ► Other payments besides legal and investigation ► Includes Bulk-Billing levy	► Refer to section 3.1.3 for details ► Bulk-Billing levy and SIRA/RMS levies information was provided by SIRA
Legal and investigation costs	Split of legal costs into defendant and plaintiff	► Refer to section 3.1.3 for details
Contracted-out legal costs	Proportion based on policies finalising since October 2015. Proportion adjusted to allow for mix of claims in each accident year	► Claims Cost Disclosure data ► Refer to section for 4.7.1 details
Insurer and Scheme expenses	► Claims handling expenses ► Acquisition and policy expenses ► Reinsurance costs ► Commissions ► SIRA/RMS levies	► Refer to section 3.2 for details ► Bulk-Billing and SIRA/RMS levies information was provided by SIRA
Insurer profits	Residual item	

3.3.1 Claim size analysis

Scheme efficiency is also shown by claim size band based on an analysis of finalised claims. Legally and non-legally represented claims have also been separated.

We have assumed that the proportion of premium allocated to insurer and Scheme expenses, and insurer profits, are equal across all claim size bands. In our experience claim handling expenses are proportionately higher for smaller claims and therefore the efficiency results presented in this report for smaller claims are likely to be over-estimated and vice versa for larger claims.

3.4 Superimposed inflation

We have analysed superimposed inflation (SI) in the Scheme in this review. There are various definitions of SI and in this report we have defined SI as the increase in the average claims size of claims over time above wage inflation. For the purposes of measuring SI, we have defined claims cost as the total payments made at the time of claim payment, with each payment inflated by wage inflation to current (2016) dollar values.

In order to measure increases in the costs of similar claims over time, we have used various characteristics to segment the claims including WPI (greater than 10% and less than or equal to 10%), legal representation status and severity of the claim. We used the various segmentations to inform assumptions set at the claims severity and legal representation segment level used in the valuation.

4.   Scheme experience

4.1   Introduction

The NSW Scheme experience analysis shown in this section is predominantly based on results documented in our annual Scheme outstanding claims valuation report. We have also performed additional analyses where required.

This section covers:

► Actual claims experience in the year ended 30 June 2016 compared to our expected experience based on our previous annual Scheme outstanding claims valuation at 30 June 2015

► Trends in ultimate claim numbers, propensity to claim and claims frequency by claim severity, claim type and legal representation (for minor severity claims)

► Trends in average claims size by claim severity, claim type. For minor severity claims we have also looked at trends by legal representation and WPI to inform valuation assumptions.

► Trends in superimposed inflation

► Trends in Scheme claims cost per policy excluding the impact of interest rates and inflation, split by claim severity

► Trends in cost per policy by Head of Damage split by WPI and claim severity

► Impact of interest rates and inflation on insurer premiums

► Claim payment pattern and claim duration (the average time from accident to payment).

4.2   Actual versus expected experience

We performed a valuation of the Scheme's outstanding claims liabilities as at 30 June 2015. As part of the analyses we have performed, we formed a view on how claim numbers and claim payments, for accidents that have occurred prior to 30 June 2015, would develop in subsequent years. This view is based on the assumptions we have made in the valuation process and is also known as the expected development in the number of claims reported and expected development in the claim payments.

We have compared the actual experience in the year to 30 June 2016 with the expected experience from the 30 June 2015 valuation. Only accidents occurring up to 30 June 2015 are reflected in the comparisons (see tables 3 to 5 below).

The number of claims and ANFs reported in the year to 30 June 2016 was 4% lower than expected. This experience was primarily driven by minor severity claims with legal representation being 6% lower than expected, and serious severity claims being 11% lower than expected. This was partially offset by the higher than expected moderate severity claims being reported. Minor severity claims <u>without</u> legal representation were also lower than expected.

Actual claim payments in the year to 30 June 2016 were higher than expected by $111m or 8%. This was driven by most claim type groups, apart from minor severity claims <u>without</u> legal representation. Minor severity claims with legal representation payments were higher than expected by 7% despite the differences between actual versus expected claim numbers discussed above. Finalisation rates were 2% higher than expected and overall this suggests the average payment per finalised claims was higher than expected by approximately 5% for the period for minor severity legally represented claims.

Similarly moderate and serious severity claims payments were higher than expected to a greater extent than for finalisation rates, which similarly suggests that the average payment per finalised

claim was also higher than expected for the period for these higher severity groupings. Across the three major severity groups (minor with legal representation, moderate and serious) the greater than expected average finalised claims costs is about 6%. This highlights the uncertainty involved in assessing the claims size, particularly for minor severity claims with legal representation, where there have been changes in claimant behaviour. Section 4.4.1.2 provides more detail around the decreasing claim size of minor severity claims with legal representation.

Further details on actual and expected figures are shown in the tables below. For completeness the tables include ANFs and workers compensation recovery claims.

Table 4: Actual versus expected claim numbers reported in 2016 for prior accident years

Claim type group	Actual	Expected	Actual - Expected	Actual – Expected (%)
Minor severity (represented)	1,967	2,102	-135	-6%
Minor severity (not represented)	156	165	-9	-5%
Moderate severity	1,356	1,285	71	6%
Serious severity	633	713	-80	-11%
Subtotal	**4,112**	**4,265**	**-153**	**-4%**
*ANFs**	*-716*	*-663*	*-53*	*8%*
Workers compensation recovery	*244*	*192*	*52*	*27%*
Grand total	**3,640**	**3,794**	**-154**	**-4%**

The negative figures reflect the conversion of ANFs to full claims.

Table 5: Actual versus expected claim numbers finalised in 2016 for prior accident years

Claim type group	Actual	Expected	Actual - Expected	Actual – Expected (%)
Minor severity (represented)	5,835	5,742	93	2%
Minor severity (not represented)	1,076	1,164	-88	-8%
Moderate severity	1,983	1,931	52	3%
Serious severity	997	991	6	1%
Grand total	**9,891**	**9,829**	**62**	**1%**

Table 6: Actual versus expected claim payments (in $m) in 2016 for prior accident years

Claim type group	Actual	Expected	Actual - Expected	Actual – Expected (%)
Minor severity (represented)	628	587	41	7%
Minor severity (not represented)	18	19	-1	-5%
Moderate severity	434	398	37	9%
Serious severity	449	418	32	8%
Subtotal	**1,530**	**1,422**	**109**	**8%**
ANFs	*1*	*-1*	*2*	*-240%*
Workers compensation recovery	*15*	*14*	*1*	*8%*
Grand total	**1,546**	**1,435**	**111**	**8%**

4.3   Claim numbers and claim frequency trends

This section shows our estimated ultimate number of claims for accidents up to 30 June 2016. This includes incurred but not yet reported claims. We have included results from the previous report using data up to 30 June 2015 as a comparison.

Information is shown by accident year starting from the year ended June 2002, and is split by claim severity and claim type: minor severity claims (legally and non-legally represented), moderate severity claims, serious severity claims, ANFs (at-fault and not at-fault) and workers compensation recovery claims. References to years in this section are accident years ending 30 June.

Historically a large majority of claims for moderate severity claims and serious severity claims are legally represented. These proportions have been reasonably stable, unlike minor severity claims. Therefore we have not split moderate and serious severity claims into legally and non-legally represented categories.

4.3.1   Claim number trends

4.3.1.1   *Non-legally represented minor severity claims*

Figure 3: Ultimate number of claims for non-legally represented minor severity claims
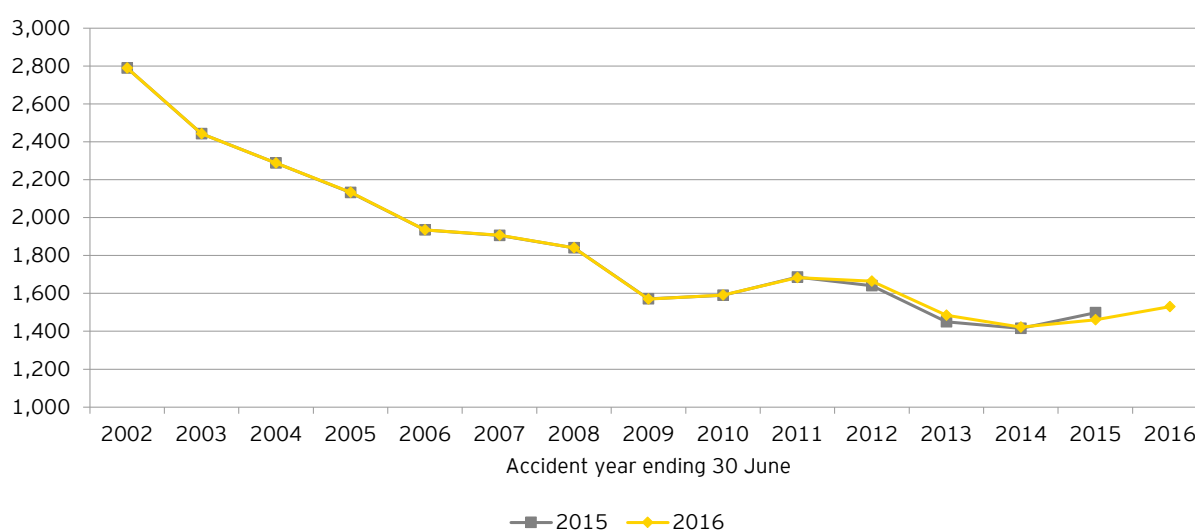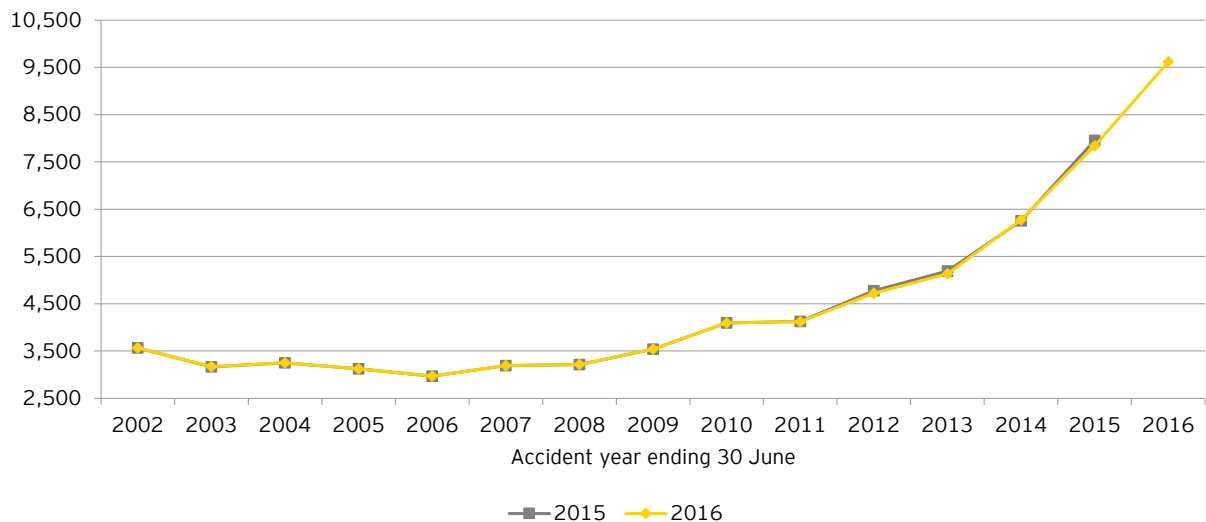
The number of minor severity claims without legal representation has decreased substantially since 2002, particularly from 2002 to 2009. Since 2009 the number of claims have been relatively stable except for a slight increase in 2011 and a general decrease since 2012, although the numbers have increased slightly in the last two years.

The ultimate number of claims for 2015 has reduced compared to the 30 June 2015 valuation, mainly due to lower than expected claim numbers reported during the year.

4.3.1.2 *Legally represented minor severity claims*

**Figure 4: Ultimate number of claims for legally represented minor severity claims**

The number of minor severity claims that involve legal representation decreased slightly from 2002 to 2003 and remained relatively stable until 2008. Claim numbers increased significantly thereafter, and have increased by 200% overall between 2008 and 2016. The increase in claim numbers was particularly significant in 2010 (554 or 16%), 2012 (602 or 15%), 2014 (1,139 or 22%) 2015 (1,566 or 25%) and 2016 (1,782 or 23%).

From 2002 to 2008 overall, claim numbers for minor severity claims with legal representation is approximately 1.5 times claim numbers for minor severity claims without legal representation. This ratio increased to 3.5 for 2013 and to 5.3 for 2015, and is 6.3 for 2016.

4.3.1.3 *Moderate severity claims*

**Figure 5: Ultimate number of claims for moderate severity claims**
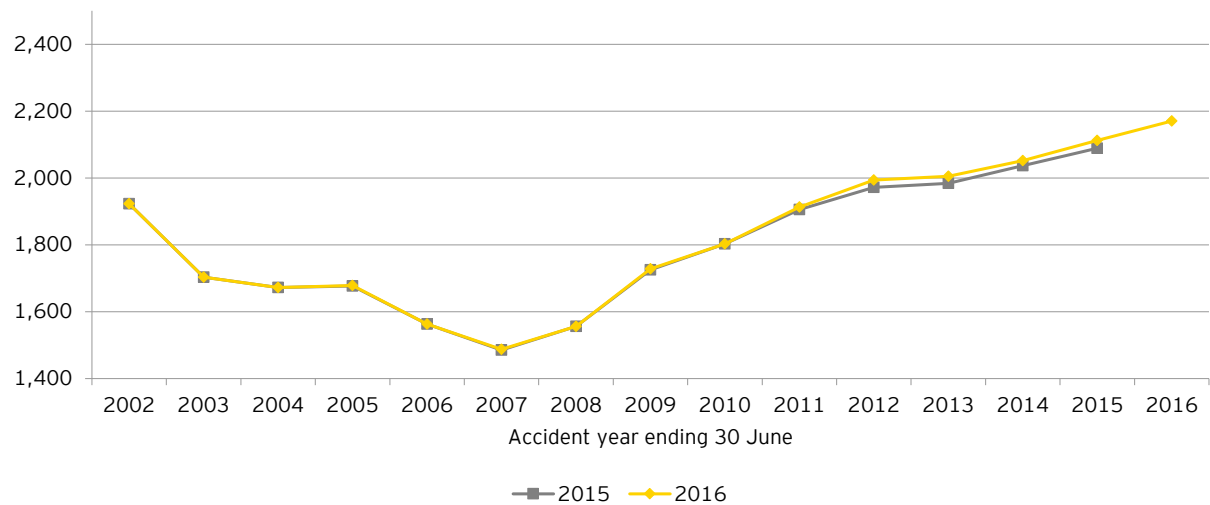
The number of claims for moderate severity claims reduced by 23% from 2002 to 2007. Since 2007 claim numbers have increased consistently every year although the rate of increase has been decreasing in the last four years. The overall increase from 2007 to 2016 is 46% based on the latest projection.

The ultimate number of moderate severity claims from 2011 to 2015 has increased compared to the 30 June 2015 valuation, mainly due to higher than expected claim numbers reported during the year.

4.3.1.4 *Serious severity claims*

**Figure 6: Ultimate number of claims for serious severity claims**
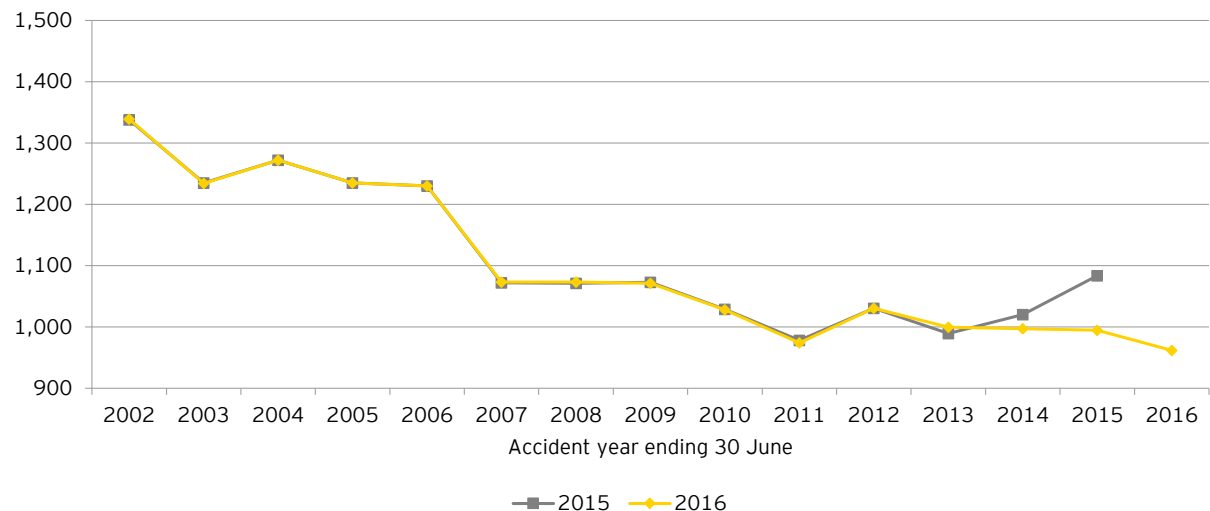
The number of serious severity claims reduced by approximately 28% from 2002 to 2016, reflecting falling casualty numbers.

Claim numbers for serious severity claims have been volatile, partly due to a low frequency compared to other severity types. Claim numbers were stable between 2007 and 2009 but decreased in 2010 and 2011 and then increased again in 2012. We have projected a year on year decrease for the number of claims from 2012 onwards. Compared to the previous valuation we have revised our projection downwards as reported numbers for 2014 and 2015 were lower than expected.

4.3.1.5 *Workers compensation recoveries*

**Figure 7: Ultimate number of claims for workers compensation recoveries**
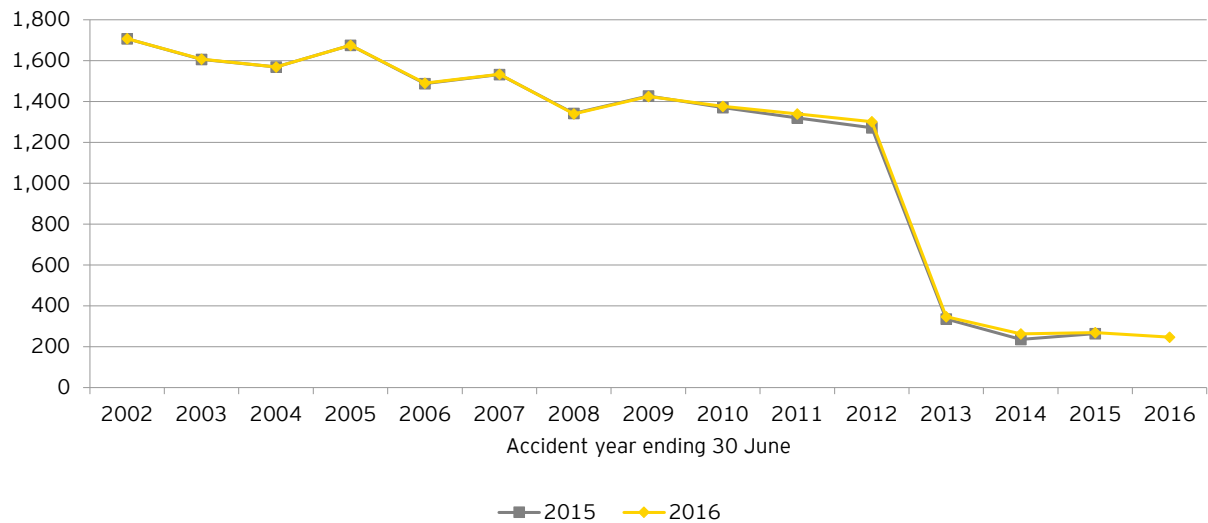
There has been a general reduction in the ultimate number of workers compensation recovery claims from 2002 to 2012. This is consistent with the reduction in casualty numbers over the same period.

There was a substantial 73% decline in workers compensation recovery claim numbers from 2012 to 2013, reflecting the legislative changes to NSW workers compensation journey claims implemented in 2012. From 2013 onwards projected claims numbers have stabilised at a lower level. There was very little change in our estimates for the majority of the accident years before 2016 compared to the 2015 valuation.

4.3.1.6 *ANFs*

Figure 8: Ultimate number of claims for ANFs
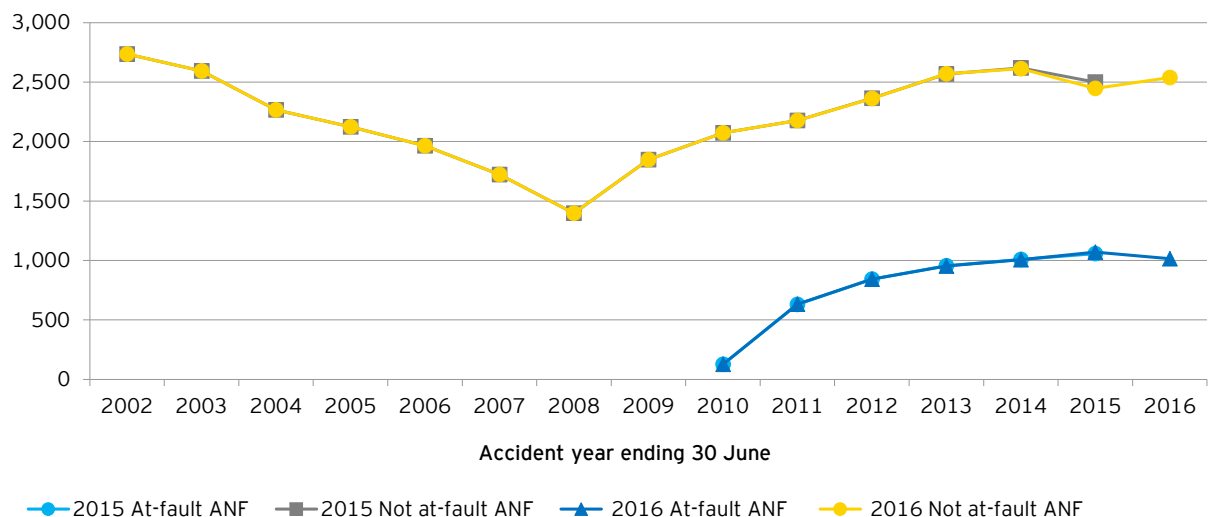
The chart above shows the ultimate number of claims that remain and settle as ANFs (i.e. do not convert to full claims) split by at-fault and not at-fault claimants.

The ultimate number of not at-fault ANFs reduced between 2001 and 2008, but increased thereafter with the increase in the ANF maximum benefit from $500 to $5,000. Claim numbers increased by 82% overall from 2008 to 2016 although the rate of increase has slowed markedly in the last three years with a decrease in the 2015 year.

The ultimate number of at-fault ANFs has been increasing since they were introduced in 2010 till 2015 however reduced in 2016.

There have been minimal changes in our projections prior to 2016 since the last valuation.

4.3.1.7 Ultimate number of full claims and ANFs

The following figure combines claim numbers from various claim severities and claim types shown in sections from 4.3.1.1 to 4.3.1.6.

Figure 9: Ultimate number of full claims and ANFs
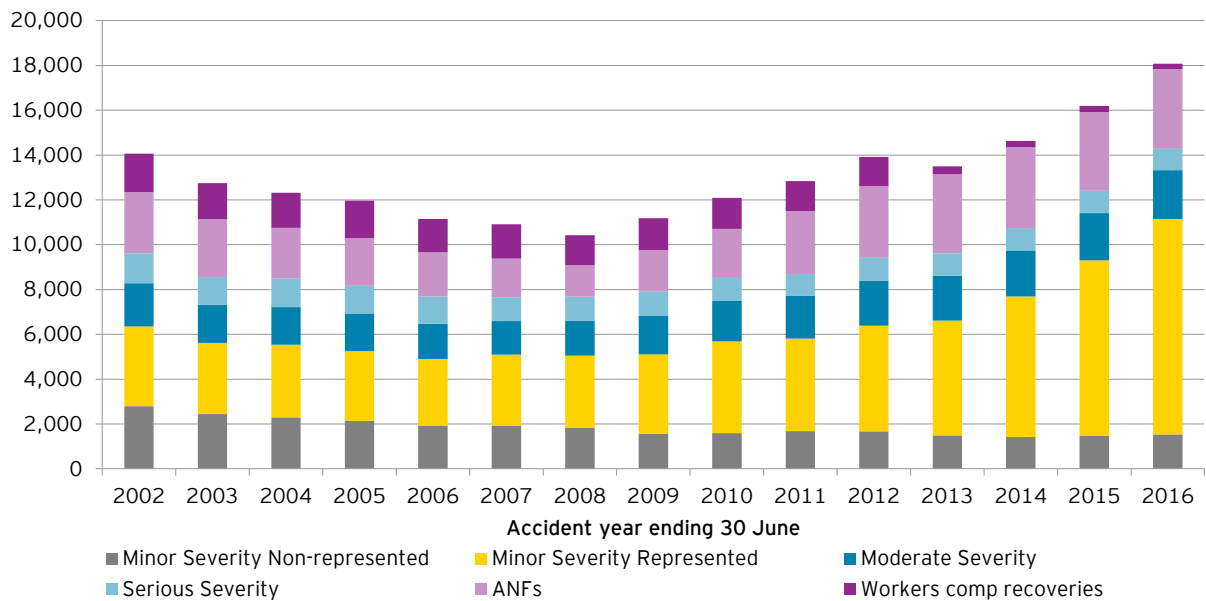
The total number of claims (including workers compensation recovery claims and ANFs) reduced between 2001 and 2008, and has been increasing thereafter. While the overall number of claims seem to have reduced in 2013, it was driven by legislative changes made in 2012 to NSW workers compensation journey claims. The increase in claim numbers resumed from 2014 onwards reaching an historic high in 2016. The overall increase between 2008 and 2016 was 74%.

The recent increase was almost solely driven by an increased number in legally represented minor severity claims.

4.3.1.8 Mix of claim numbers by severity and type

The following figure shows the mix of claim numbers by claim severity and claim type. Claim numbers in sections from 4.3.1.1 to 4.3.1.6 are expressed as a percentage of the total.

Figure 10: Mix of claim numbers by claim severity and claim type
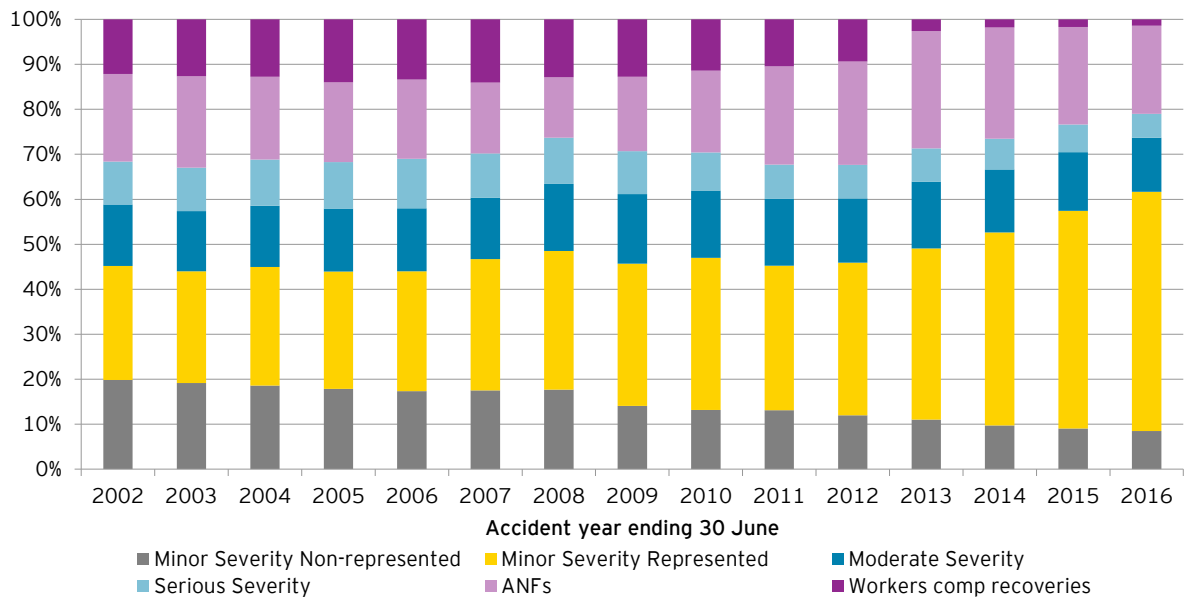
The proportion of legally represented minor severity claims has been increasing in recent years and represents over 50% of total CTP claim numbers in 2016 compared to an average of about 26% between 2002 and 2007. In contrast the mix of minor severity claims without legal representation has declined from approximately 18% of claims between 2002 and 2007 to 8% of claims for 2016.

The reduction in the proportion of workers compensation recovery claims in 2013 to 2016 is noticeable reflecting the legislative changes to NSW workers compensation journey claims.

The proportion of ANFs increased from 2010 to 2013 with decreases in the last three years resulting in ANFs being 20% of total CTP claim numbers in 2016. Most of the ANFs are not at-fault as shown above.

The proportion of moderate and serious severity claims has remained relatively stable over time, but has reduced more recently with the increase in numbers of minor severity represented claims.

4.3.2 Casualties

The following figures show the number of casualties and casualty frequency (per 10,000 registered vehicles exposed) by accident year ending 30 June, since 2002. Casualties in this context are defined as individuals having been treated in the hospital system following the accident.

Due to the data entry delay of casualty data, where up to four months is required to process the casualty data from a particular accident quarter, casualty numbers for the latest two quarters are typically projected based on what has been processed so far. Projections from both 30 June 2016 and 30 June 2015 valuations are shown.
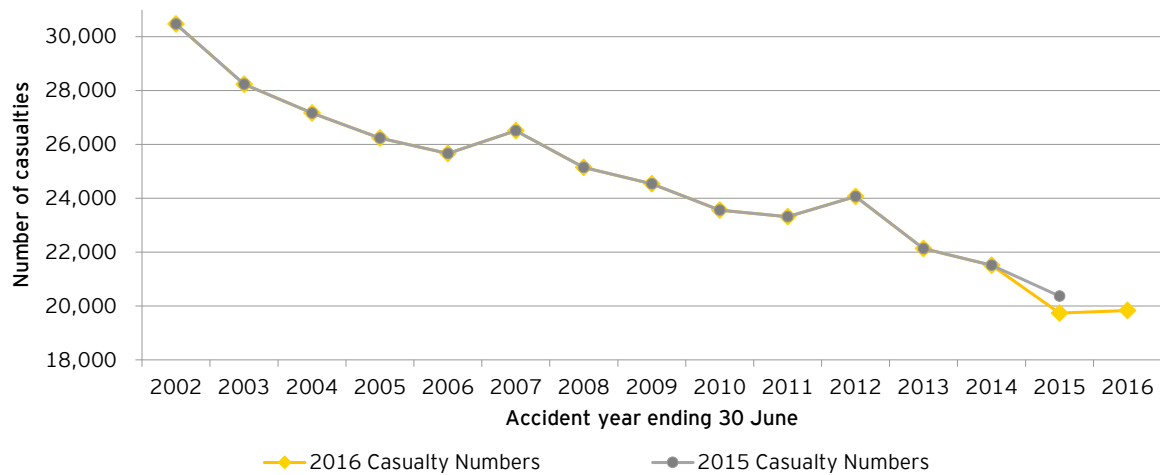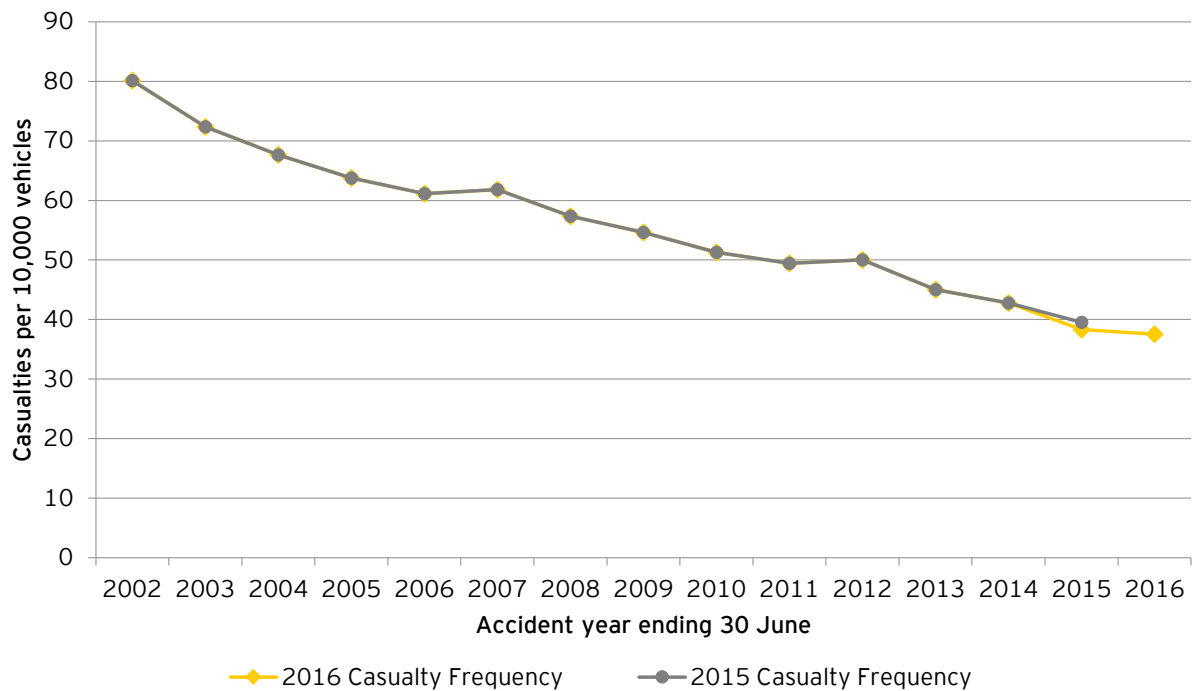
Casualty numbers have generally been decreasing since 2002. Up to 2014 the annual reduction was about 2%p.a. but incorporating the big drop in 2015 increases the long term average closer to 3%p.a. We also note there have been some years which have observed spikes in the casualty numbers, such as 2007 and 2012.

The spike in 2012 may be related to a change in the casualty data collection process which affects accident years 2010 to 2012. SIRA has been notified by the RMS of a change in the injury recording process of casualties from the middle of 2010 to the end of 2011. The injury recording process post calendar year 2011 had reverted to the process in place prior to the middle of 2010. We have adjusted the number of casualties in these affected years to remove the impact of the change to the injury recording process based on the information provided by RMS; however, a spike remains in the casualty numbers for the accident year ending 30 June 2012.

In addition, casualty numbers in the 2015 accident year have reduced in our latest valuation as the actual number of casualties for this accident year is lower than the initial estimate as at 30 June 2015. There is increased uncertainty around the number of casualties for the 2015 and 2016 accident years due to changes in the reporting process for these years, in particular the effect of self-reporting. The impact of self-reporting is unclear and may distort numbers. We have assumed a development pattern for this year based on historic experience before the change to project this year.

Figure 12: Casualty frequency

Similar to casualty numbers, casualty frequency (number of casualties per 10,000 registered vehicles) has been generally decreasing at a rate of about 5% p.a.

4.3.3 Propensity to claim

Propensity to claim is the ultimate number of claims divided by the number of road casualties. The figure below shows the propensity to claim since 2001 for:

▶ CTP claims excluding workers compensation recovery claims and ANFs

▶ All CTP claims.

Note that the number of casualties includes both at-fault drivers and all not at-fault injured persons (not at-fault drivers, passengers and pedestrians).

Figure 13: Propensity to claim
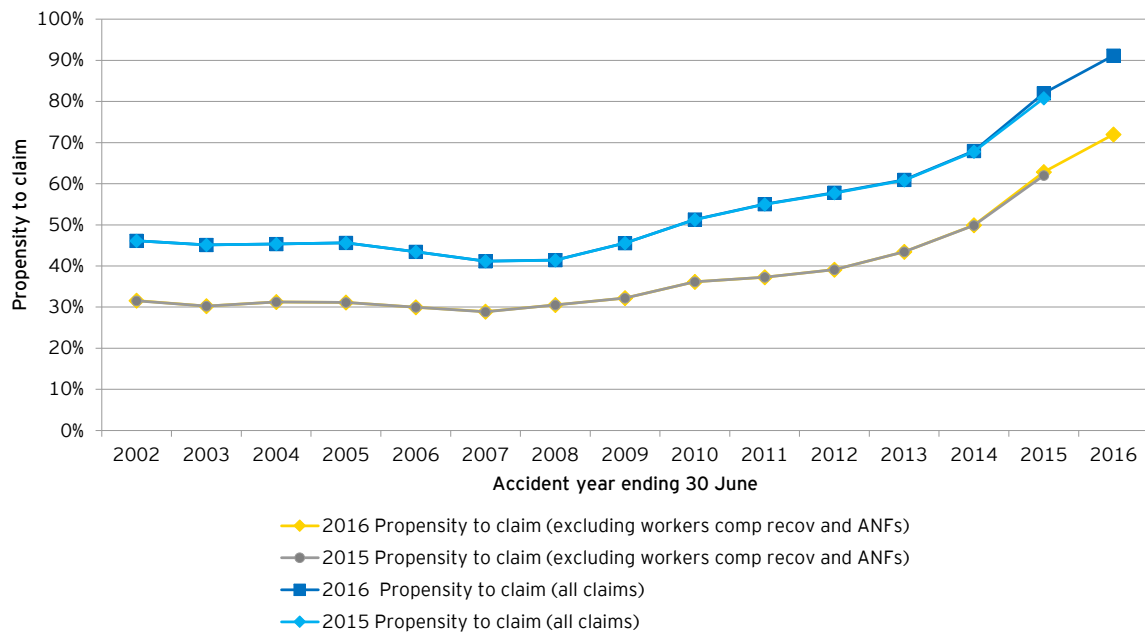
The overall propensity to claim (all claims) was fairly stable between 2002 and 2008 for both all claims and claims excluding ANFs and workers compensation recovery claims. The propensity to claim has been steadily increasing since 2008. The propensity to claim for 2016 is 91%, an average increase of 10% per year between 2008 and 2016. We note that if at-fault ANFs and at-fault casualties were excluded from this analysis then the resulting propensity to claim would exceed a 100% in 2015 and 2016. Our current estimates of the propensity to claim at June 2016 are generally similar to our estimates at previous 30 June 2015 valuation.

While casualty numbers have continued to fall in recent years (from around 25,000 in 2008 to around 20,000 in 2016), the number of full claims (excluding workers compensation recovery claims) has increased from around 7,500 to around 14,000 (over the same period). This is driven by an increase in the propensity to claim which has increased from 30% to 70% over those seven years as shown by the graph above. As noted above, excluding at-fault casualties in this analysis would result in a propensity to claim greater than 100% in 2016.

Overall, people injured in motor vehicle accidents are increasing likely to lodge a CTP claim (either ANF or a full claim).

4.3.4 Claim frequency

4.3.4.1 *Claim frequency by severity*

The figure below shows claims frequency since 2002 for CTP claims split by severity. Claims frequency is defined as number of claims divided by the number of policies exposed.

Figure 14: Claim frequency by severity
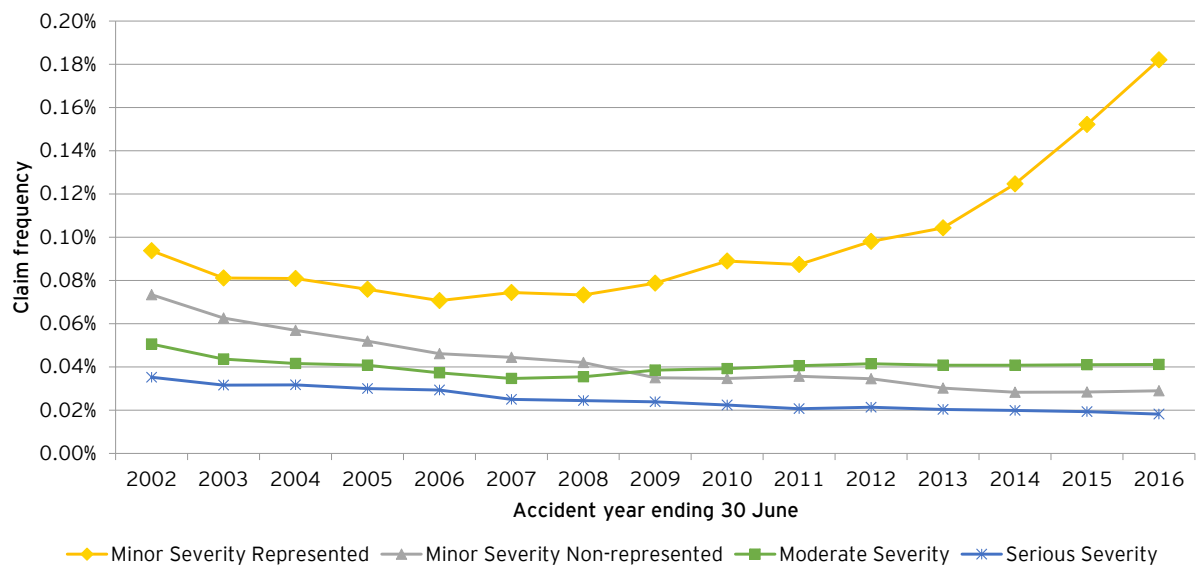
Claim frequency for minor severity claims without legal representation, moderate severity, and serious severity claims have decreased substantially since 2002, particularly from 2002 to 2009 but have generally stabilised since 2009. Over the period since 2009, there has been a further slight decrease in claim frequency for minor severity claims without legal representation and serious severity claims. Whereas for moderate severity claims, the frequency has increased slightly. Claim frequency for these three severity groups have remained relatively stable in the past four accident years.

This contrasts with minor severity claims with legal representation frequency where the claims frequency has increased significantly since 2011 resulting in a 108% increase since 2011. In particular there has been a 46% increase from 2013 to 2015 and a further 20% since 2015. The following section is a more detailed analysis into the frequency of this claim severity group.

The large increase in numbers for minor severity claims with legal representation is driving down the overall average claim size since the more recent claims are assumed to be lower than the current scheme average. This is discussed later in section 4.4.1.2.

4.3.4.2 Legally represented minor severity claims

The figure below shows the claims frequency for minor severity represented claims and compares the current projection to the 2015 projection.

Figure 15: Claim frequency for legally represented minor severity claims
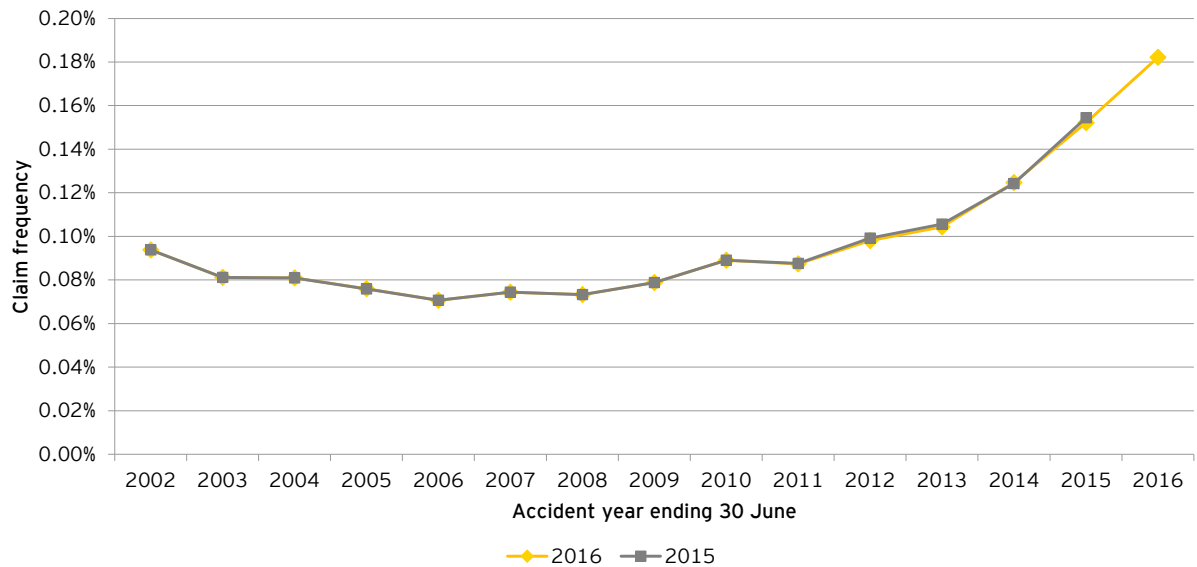
The claim frequency for minor severity claims that involve legal representation decreased from 2002 to 2006 and remained relatively stable until 2008. Claim frequency climbed significantly thereafter, and has increased by 149% overall between 2008 and 2016. The increase in claim frequency was particularly significant in 2014 (19%), 2015 (22%) and 2016 (20%).

As part of the heads of damage modelling, we also considered the claims frequency for the minor severity claims split by WPI greater than 10% and WPI less than or equal to 10%. This segmentation did not split by legal representation. The claims frequency using this segmentation is shown below.

Figure 16: Claim frequency for minor severity claims split by WPI
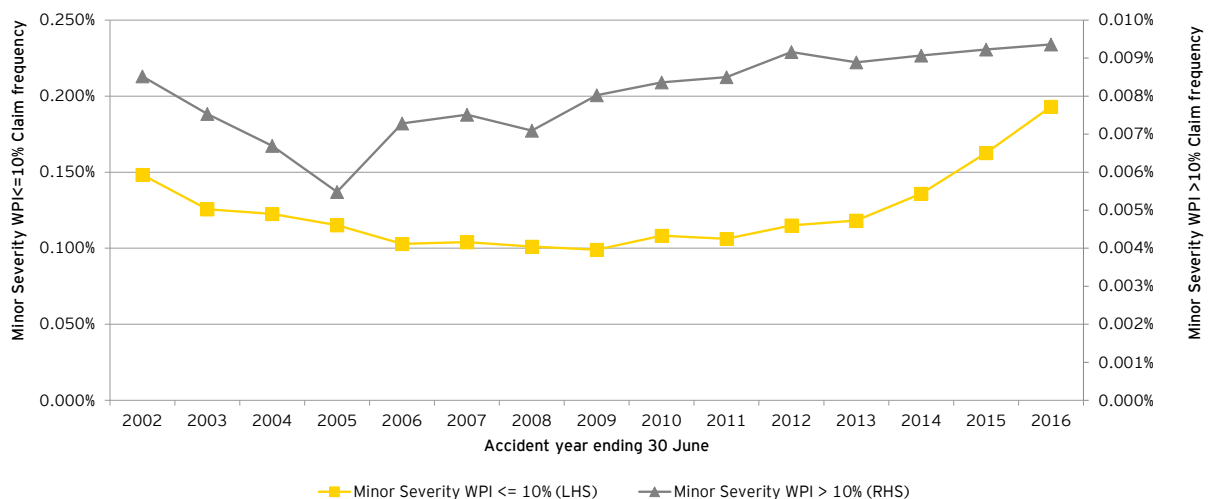
The graph above indicates that the source of the increase in claims for minor severity since 2012 (in addition to being from legally represented claims) is almost all from claims with WPI less than or equal to 10%. These claims have shown significant increases in 2014 (15%), 2015 (20%) and 2016 (19%). As a result we consider the source of the increase to minor severity claims to be from minor severity legally represented claims with WPI less than or equal to 10%. This is of particular importance to the average claims size assumption discussed in section 4.4.1.2, where we set different average claims size assumptions for existing claim and the minor severity legally represented claims with WPI less or equal to 10% that are producing the frequency increase.

The figure below shows the quarterly claims frequency for minor severity legally represented claims since 2012 Q2 and highlights a stronger increasing frequency trend since 2014 Q1 to 2015 Q2. Since 2015Q2 the trend in frequency increase seems to have stabilised although given the immaturity of the most recent two quarters, there is still considerable uncertainty in the projection.

Figure 17: Quarterly claims frequency for minor severity represented claims
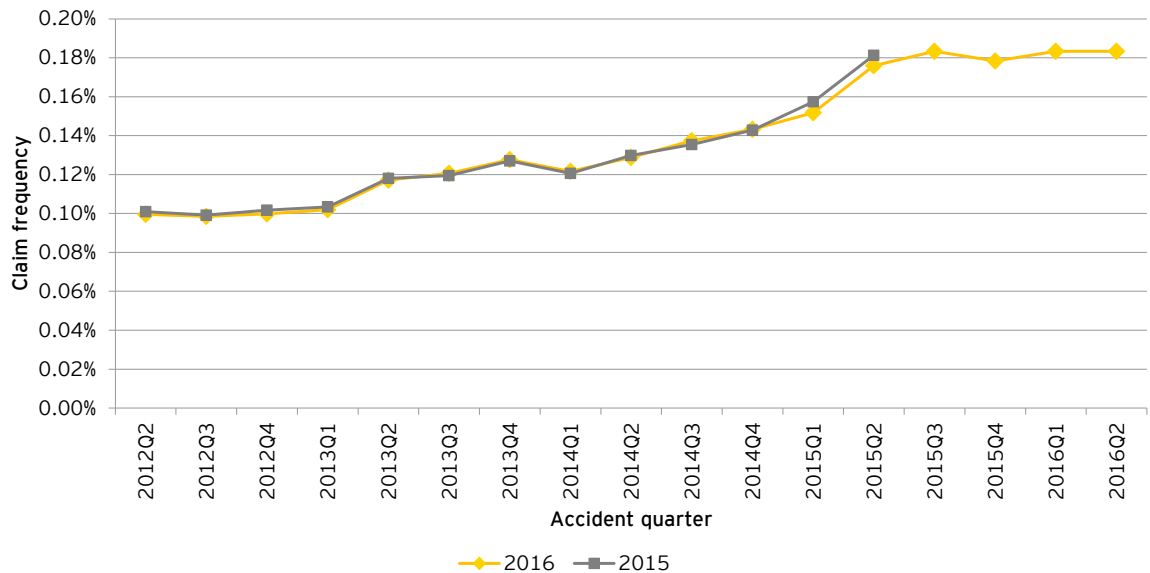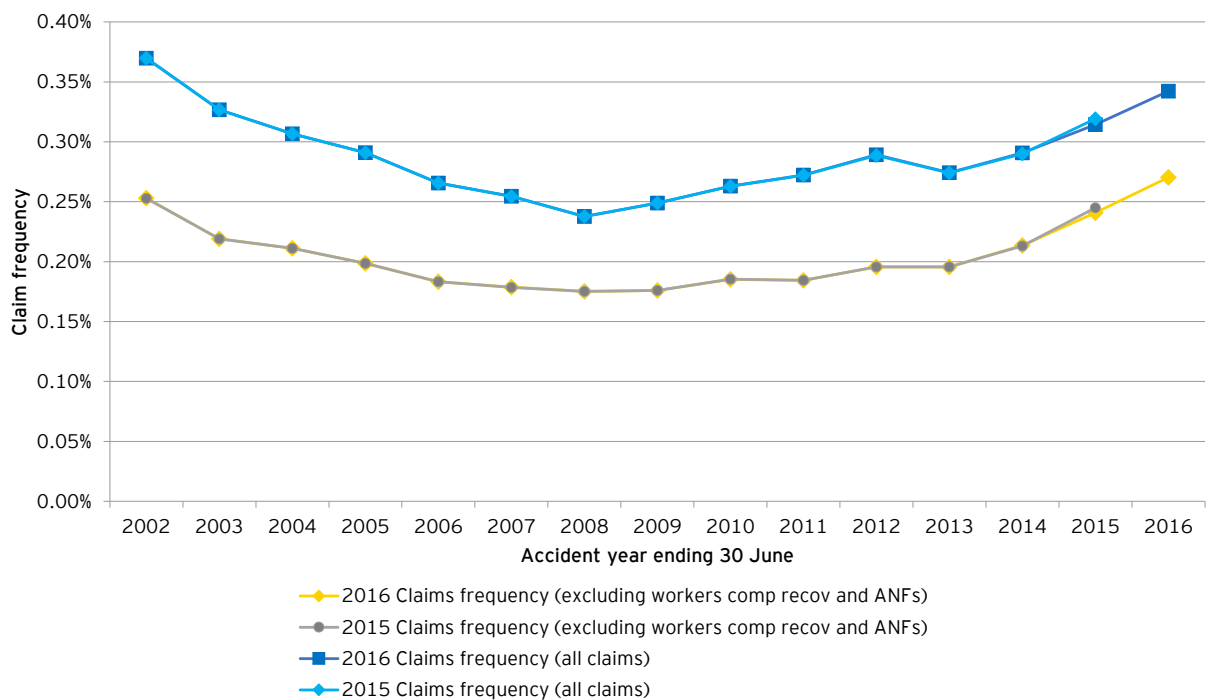

4.3.4.3 *Claim frequency for all claims*

The figure below shows claims frequency since 2002 for:

► CTP claims excluding workers compensation recovery claims and ANFs

► All CTP claims.

Figure 18: Overall claim frequency

Overall claim frequency (all claims) reduced steadily between 2002 and 2008, and has been increasing thereafter except for a slight reduction in 2013 reflecting the legislative changes to NSW workers compensation journey claims. The increase in recent years is contributed to by the legally represented minor severity claims. There has been no material change in our projected claims frequency between our estimates at 30 June 2015 and 2016 at the overall level although it is noted that the mix of claims has changed.

Claim frequency excluding workers compensation recoveries and ANFs has also been increasing in recent years at a higher rate.

The recent increase in claim frequency is mainly contributed by an increasing propensity to claim, rather than the frequency of road accidents and casualties. These two components were discussed in the previous sections.

4.4   Scheme average claims size

This section shows the average claim size by claim severity and claim type.

To ensure comparability across accident years, average claim sizes are all shown at 30 June 2016 values i.e. past claim payments have been adjusted to 30 June 2016 values using the Full-time Adult Ordinary Time Earnings (AWOTE) index.

Average claim sizes are gross of Input Tax Credits (ITC) and Decreasing Adjustment Mechanism (DAM).

Due to the uncertainty around superimposed inflation in the future no allowance for superimposed inflation on future claim payments has been made in the average claim sizes shown below.

The results for average claim sizes, particularly for minor severity claims, are to some extent influenced by:

► Delays in first assigning a severity level to a claim due to the change in the Abbreviated Injury Scale in 2008

► Changes in the Scheme in recent years including:

   ► The increase to the maximum compensation for not at-fault-ANFs in 2008 from $500 to $5,000

   ► The introduction in 2010 of compensation for at-fault ANFs to a maximum of $5,000

   ► Changes to NSW workers compensation legislation in 2012 for journey to work claims.

4.4.1 Results

In the figures below, we have included results from the 30 June 2016 and 30 June 2015 outstanding claims liability valuations. We have inflated results from the 30 June 2015 valuation to 30 June 2016 values using wage inflation for the year to 30 June 2016.

References to years in this section are accident years ending 30 June.

Differences between results as at 30 June 2015 and 30 June 2016 valuations reflect a combination of claims experience in the latest year and changes to our view of future claims frequency and settlement values. Differences are greater for more recent accident years where significant claim amounts are unpaid and thus based on actuarial estimates which are more heavily influenced by emerging claims experience and changes in our views.

4.4.1.1 *Non-legally represented minor severity claims*

Figure 19: Average claim size (in 30 June 2016 values) for non-legally represented minor severity claims
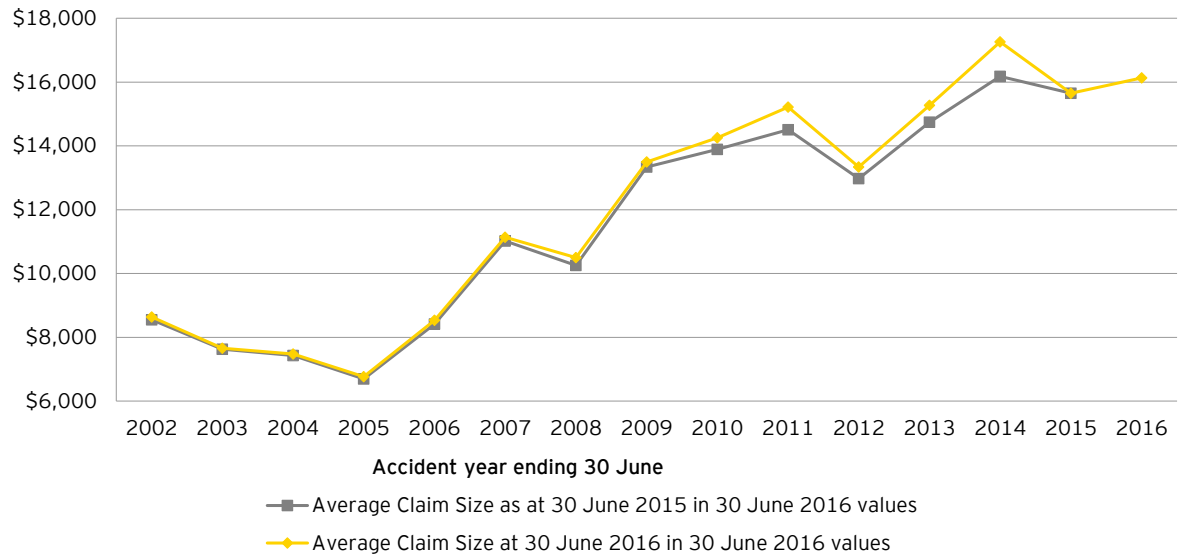
The average claim size for minor severity claims that are not legally represented has increased substantially from $ 7,000 in 2005 to $16,000 in 2016 (in 30 June 2016 values).

Average claim sizes have increased compared to the 30 June 2015 valuation due to higher than expected average claim payment experience in the past year.

4.4.1.2 *Legally represented minor severity claims*

Figure 20: Average claim size (in 30 June 2016 values) for legally represented minor severity claims
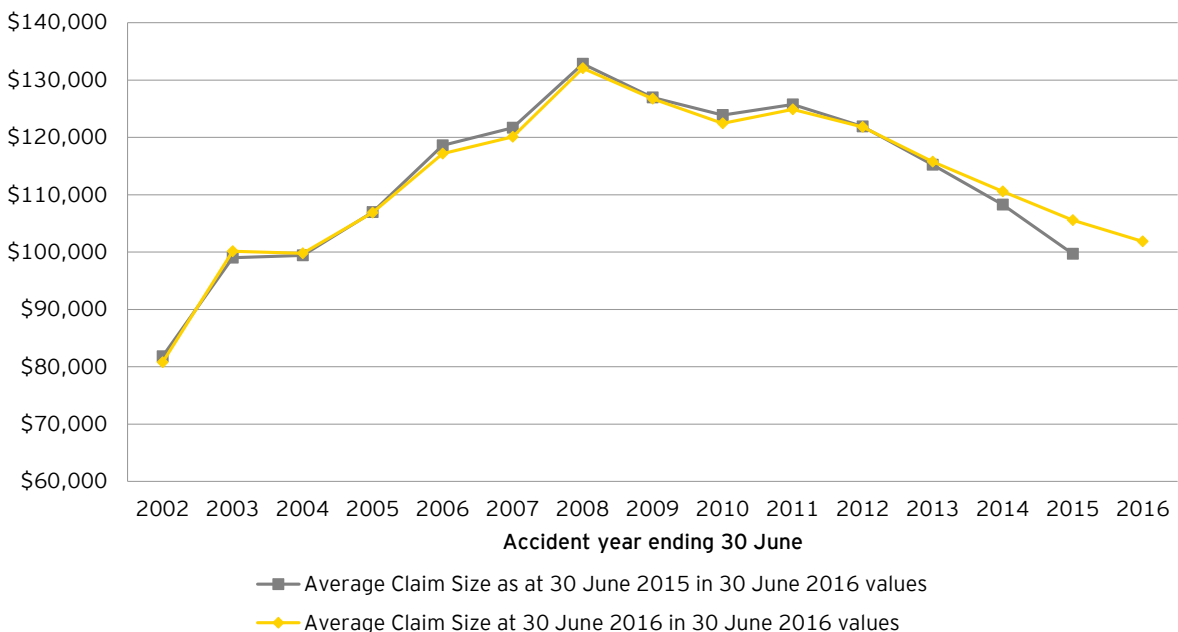
Average claim size for minor severity claims that involve legal representation increased significantly from 2002 to 2008 but have trended downwards from 2008 to 2010. From 2011 onwards, average claim size has reduced significantly with the significant increase in the number of minor severity claims with legal representation and WPI less than or equal to 10%. As a result the increase in claims numbers has mainly been driven by an increase in the number of claims with lower claim sizes resulting in the proportion of smaller claims increasing and the average claims cost decreasing.

The decrease from 2011 to 2016 was 18%. Our estimates of average claims size takes the change in mix of claims towards smaller claims with WPI less than or equal to 10% into account. From 2013 onwards, average claim sizes have increased compared to the 30 June 2015 valuation due to higher than expected average claim payments experienced in the past year being reflected in the assumptions selected for the 2016 valuation. Similar to the previous valuation, we modelled the average claims size for minor severity claims with legal representation as follows:

▸ Existing claims with similar profile to those incurred in accident quarters to the end of March 2013

▸ Additional claims from the June 2013 accident quarter onwards which have been generated as a result of behaviour changes by participants and service providers in the scheme, which therefore have a different profile to the existing claims.

As discussed in the minor severity legally represented frequency section (4.3.4.2), the additional claims are almost all from claims with WPI less than or equal to 10%. As a result we have considered this subset of claims to set the average cost assumption for the additional claims. As the WPI assessment is only available on finalised claims we have considered claims by accident year with the development delay representing the delay to finalisation.

The following chart shows the progression of the cumulative average payment per finalised claim against finalisation delay for different accident years. As the finalisation delay increases more claims finalise and are included in calculation of the average. As a result each curve eventually develops to the average cost per finalised claims for all claims for a particular accident year.

The resulting development chart for the average payment per finalised claims by accident year is shown below.

Figure 21: Cumulative average payment per cumulative finalised claims – Minor severity WPI <= 10% Represented
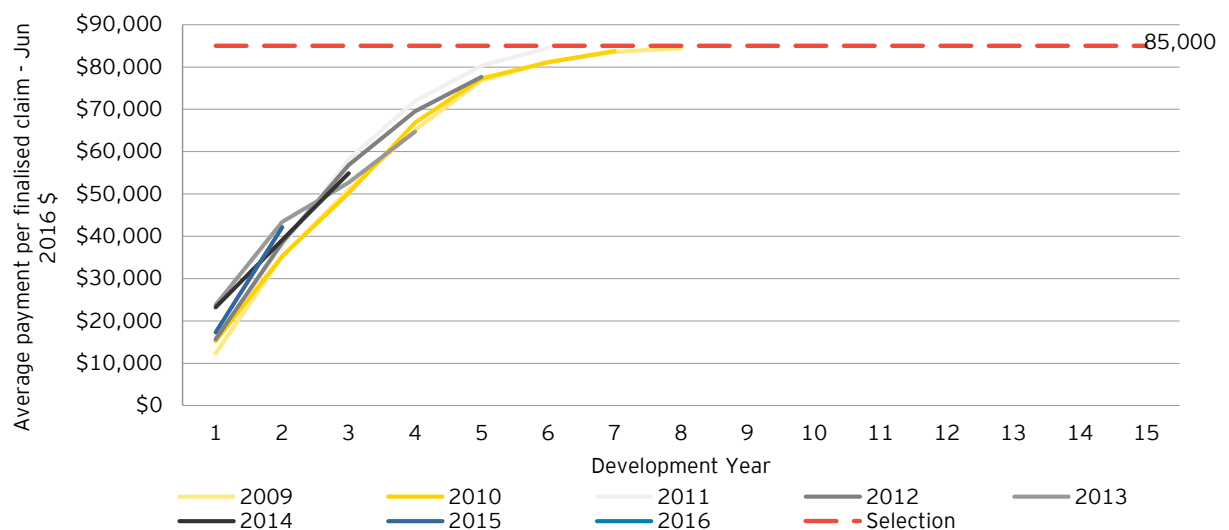
Considering the historic development, we have projected an average claims cost of $85,000 (in June 2016 dollars) for claims in this subset, shown by dashed red line above. This assumption has been applied to the additional minor severity claims with legal representation that are driving the increase in minor severity legal representation claims.

Figure 22: Existing and additional assumed average claims size for minor severity claims

Legend: Existing average claim size — Additional average claim size — Resultant weighted average claim size

This compares to existing claims which follow the historic claims size profile and have a claims size of $116,000 in 2016 dollars based on our outstanding claims valuation at June 2016. Combining these two assumptions with our projected claims numbers produces an overall average claims size for all minor severity claims with legal representation for accident year 2016 of $102,000 in 30 June 2016 values.

Given that the average claim size for minor severity claims with legal representation is close to six times that for minor severity claims without legal representation, the recent increasing prevalence of legal representation amongst minor severity claims has contributed to an increase in overall Scheme claims cost.

4.4.1.3 *Moderate severity claims*

Figure 23: Average claim size (in 30 June 2016 values) for moderate severity claims

Legend: Average Claim Size as at 30 June 2015 in 30 June 2016 values — Average Claim Size at 30 June 2016 in 30 June 2016 values
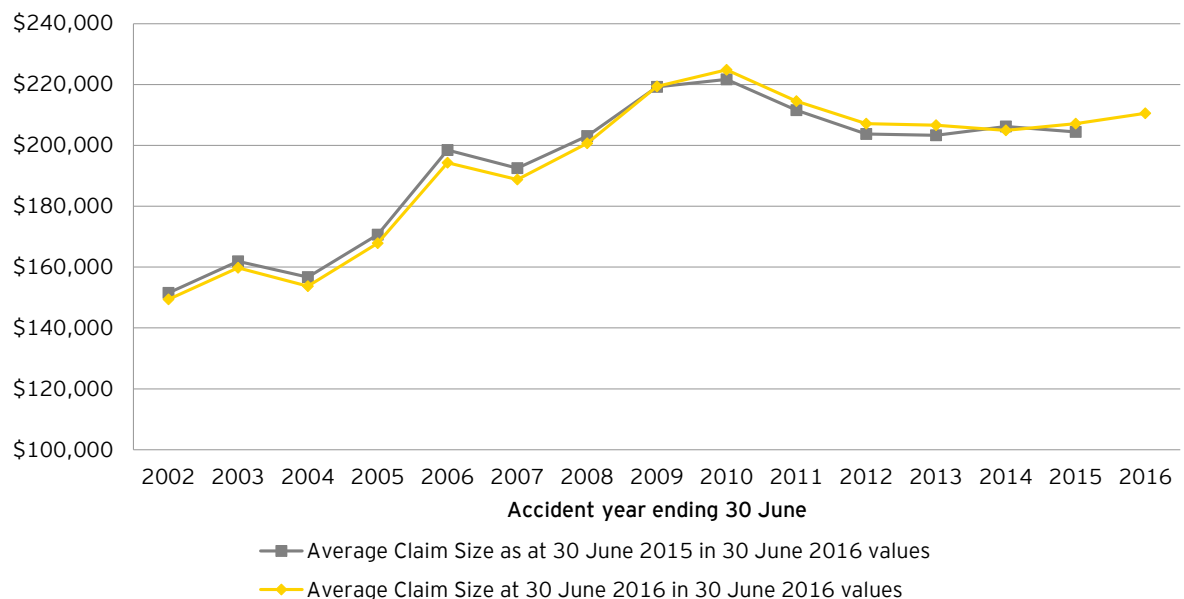
The average claim size for moderate severity claims has increased from approximately $149,000 in 2002 to $225,000 in 2010, an increase of 50% overall or approximately 5% p.a. The average claim size reduced and stabilised thereafter, and is $210,000 for 2016. Our estimates of average claim size at 30 June 2016 are generally higher than our estimates at 30 June 2015 due to higher payments per claim emerging during the year.

4.4.1.4 *Serious severity claims*

Figure 24: Average claim size (in 30 June 2016 values) for serious severity claims
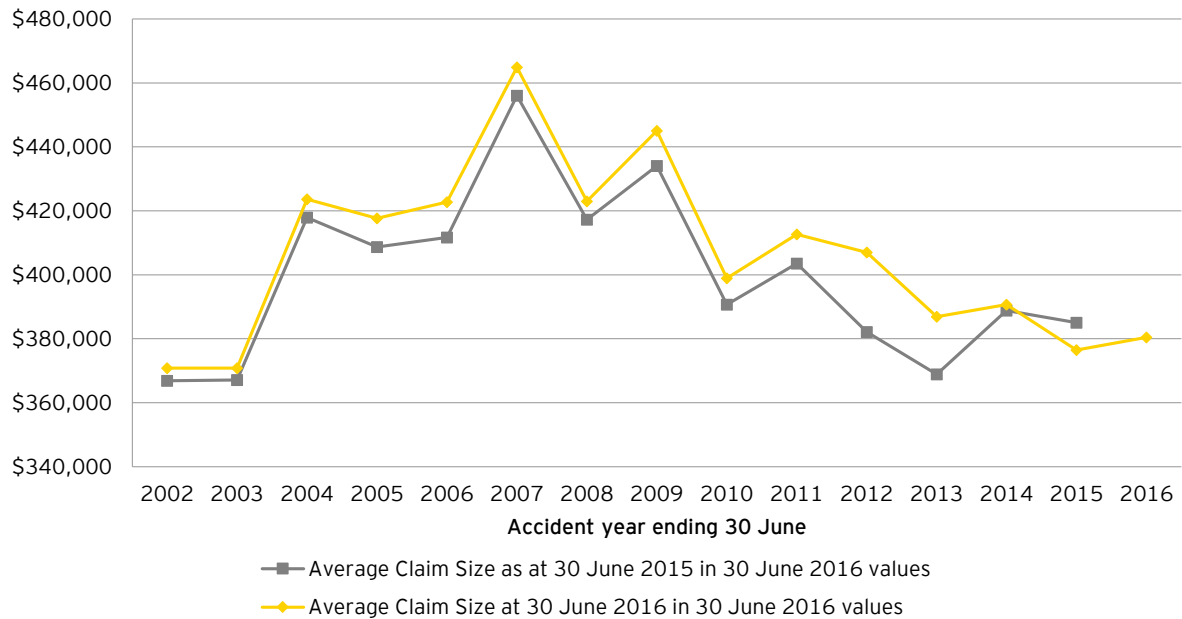
Average claim sizes for serious severity claims are more volatile than other claim severities due to lower claim frequency, as well as greater projection uncertainty due to "lumpy payments."

There is an increasing trend from 2002 to 2007 and this appears to have been reversed since. The average claim size is $380,000 for 2016. Our estimates of average claim size at 30 June 2016 are generally higher than our estimates at 30 June 2015.

4.4.1.5 *Overall average claim size*

Figure 25: Average claim size (in 30 June 2016 values) for all claims excluding ANFs and workers compensation recovery claims
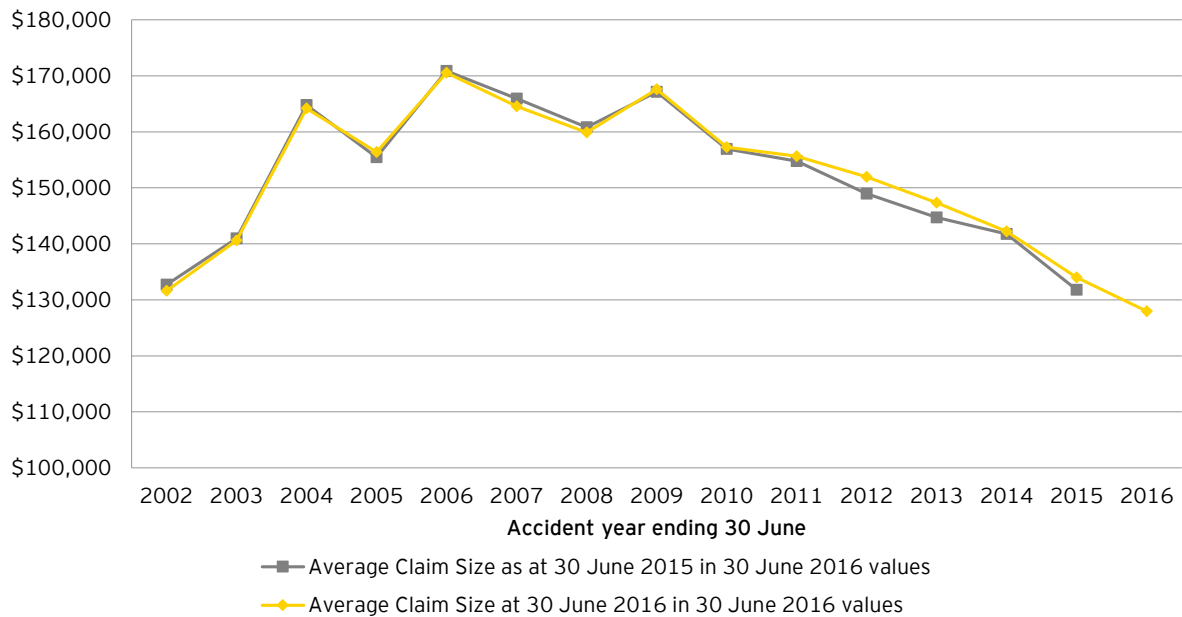
Overall average claim sizes (excluding ANFs and workers compensation recovery claims) have been relatively stable from 2004 to 2010. There is a steady downward trend thereafter of 4% p.a. This trend is mainly driven by the increase in the prevalence of minor severity claims with legal representation with an increased proportion of these claims being of smaller claims sizes.

4.5 Superimposed inflation

Superimposed inflation has been a long-term feature of personal injury schemes in Australia over many decades especially in those with common law type benefit structures. Superimposed inflation is an increase in claims cost above normal inflation (usually wage inflation) and is usually caused by a combination of legal, judicial, social, medical and other external factors. In our work we have defined superimposed inflation to be the increase in the average claims size above wage inflation.

Superimposed inflation tends to be volatile over time. NSW CTP and workers compensation schemes have experienced very high levels of superimposed inflation for a number of years and also periods of benign or negative superimposed inflation.

During the operation of the privatised NSW CTP Scheme since 1989, various actuaries have assessed the levels of superimposed inflation by generally adopting similar underlying actuarial methods to the methods we have adopted. The results from those assessments are relatively consistent.

Based on the assessment of superimposed inflation by the previous Scheme actuary, insurer actuaries and EY, since the early 1990s the levels of superimposed inflation have been:

▶ For the previous Scheme for accidents up to September 1999 the average superimposed inflation from 1992 to 1996 was approximately 14% p.a. and around 3% from 1997 to 2003 (note before 1992 there was limited claims experience to measure superimposed inflation)

▶ It was difficult to measure the superimposed inflation in the early 2000s for the current Scheme because there were limited numbers of claims finalised. Assessments of the experience to 2004 for the current Scheme indicates negative superimposed inflation for some severity levels

- ▶ For the current Scheme the average superimposed inflation was around 6% from 2004 to 2009 based on assessment made by various actuaries. It has been benign since then and has been approximately zero or negative since 2008.

## 4.5.1 Analysis of superimposed inflation

The average superimposed inflation since 2003 has been approximately 1%. Superimposed inflation in claim sizes has been benign for the last seven years and has been approximately zero from 2010 to 2012, negative in 2013 to 2015 and 2% for 2016. Overall there has been a small reduction in the finalised claim sizes (a small negative SI of -2% p.a.) from 2010 to 2016.

As a result at an overall scheme level, it appears that superimposed inflation has been relatively benign since the 2010 payment year. However considering the result at an overall scheme level is misleading since it masks the impact of changes in the claims mix that have occurred over this time. This is particularly relevant to the CTP scheme, which has experienced an increase in minor severity legally represented claims with WPI less than or equal to 10%. There has been a shift in the mix of claims towards these claims. Since these claims have a lower average claim size than the rest of the scheme then the average claims size for the scheme has been decreasing as a result of this mix change. This is reflected in negative or benign superimposed inflation at the overall scheme level.

Analysing the superimposed inflation at a more granular level indicates that superimposed inflation is still prevalent in the scheme. As a result for this valuation we have set superimposed inflation assumptions at a claim severity and legal representation level as opposed to an overall scheme level. The overall scheme superimposed inflation is then driven by the projected mix of claims costs in the future from the valuation. This approach removes the need to implicitly allow for mix changes in the selected overall superimposed inflation assumption.

In order to inform our superimposed inflation selections by claim severity and legal representation, we have considered the development of the average cost per finalised claim by claim severity and WPI segments. The following graphs show the development of the average cost per finalised claim by accident year for these segments. Average costs have been inflated to 2016 dollars. As a result, any changes in the ultimate average cost per finalised claim is as a result of superimposed inflation. Positive superimposed inflation is shown in the charts by a general moved of the development curves upwards as the accident year increases.

Figure 26: Average payments per finalised claim ($) for minor severity WPI less than or equal to 10% (inflated to 30 June 2016 dollars) for accident years ending 30 June
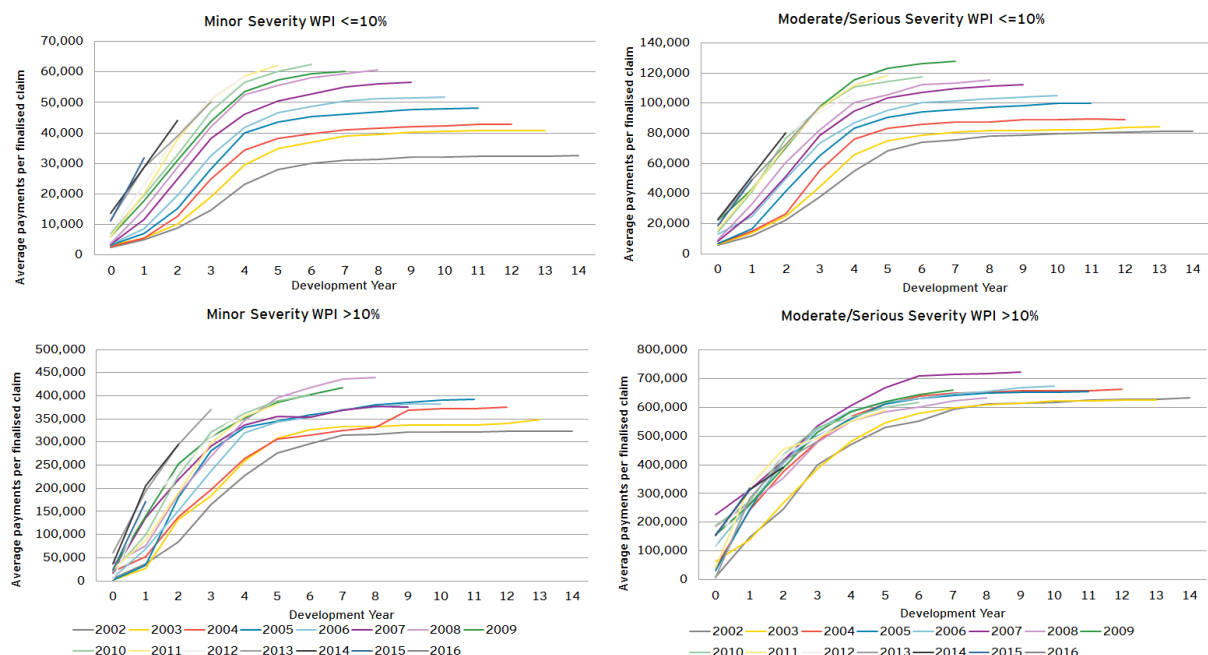
Considering the charts above indicates that the minor severity segments continue to show strong positive superimposed inflation. In addition the moderate and serious severity claims with WPI less than or equal to 10% also show positive superimposed inflation, although for more recent accident years it may have stabilised. There is limited evidence of positive superimposed inflation for moderate and serious severity claims with WPI greater than 10% and there are indications that superimposed inflation for these claims may be slightly negative.

We have supplemented this analysis by also considering the mix of finalised claims by accident year for minor severity claims with WPI less than or equal to 10% split by legal representation. The development of this mix by accident year is shown in the figure below.

Figure 27: Proportion of legally represented finalised claims for Minor Severity Claims with WPI <= 10%
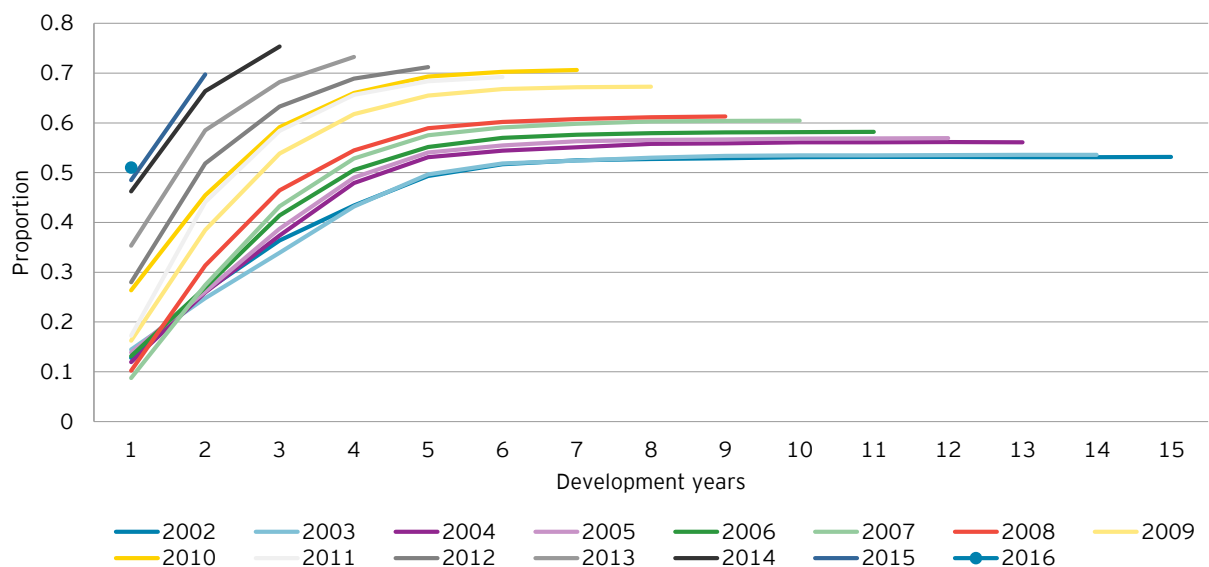
The chart shows that the mix of claims for this segment is changing with a move towards claims with legal representation. Since these claims have a higher average cost than minor severity claims without legal representation then the average cost per finalised claim is increasing for this segment. Therefore this mix change is a driver of the positive superimposed inflation observed for minor severity claims with WPI less than or equal to 10%.

The chart below, of minor severity legally represented claims with WPI less than or equal to 10% in isolation, shows limited evidence of superimposed inflation since 2008 for this segment. The remaining non-represented claims make up only a small and reducing proportion of minor severity claims with WPI less than or equal to 10% (projected to be 15% for the 2016 accident year). This indicates that the change in mix is the largest driver of positive superimposed inflation observed at the aggregate minor severity (WPI less than or equal to 10%) level since 2008.

Prior to 2008 there has been strong superimposed inflation for this cohort of claims as shown in the chart below.

Figure 28: Average payment per finalised claims for Minor Severity legally represented claims with WPI <= 10%
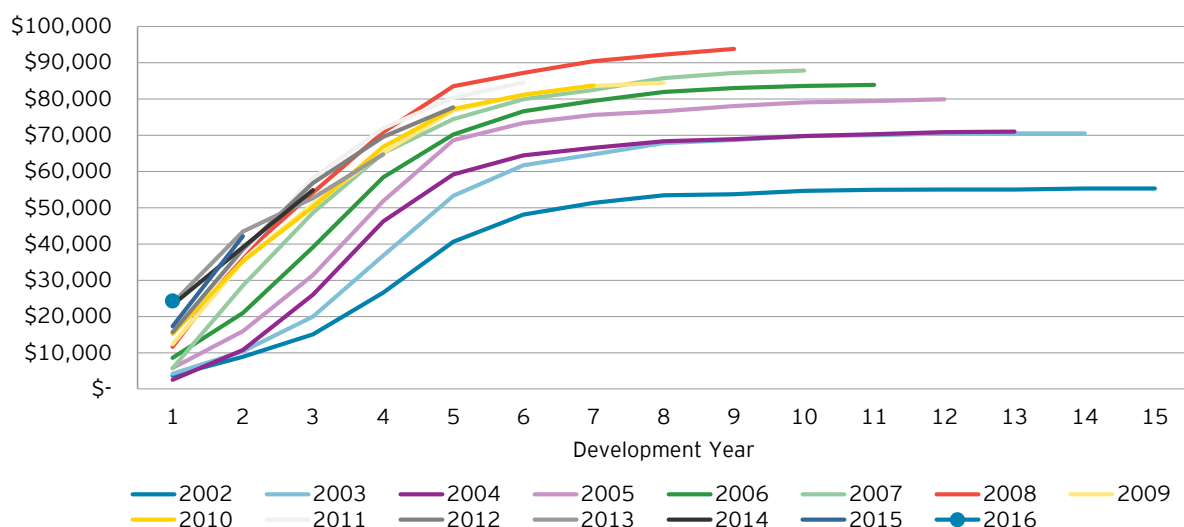
Finally we have also considered historic superimposed inflation on a payment year basis (the above analysis relates to accident years) using statistical modelling. In the valuation model superimposed inflation assumptions are applied by payment year. This analysis indicated that:

▶   From 2009 onwards minor severity claims (both legally represented and non-represented together) with WPI less than or equal to 10% have experienced around 3% p.a. superimposed inflation with a much larger level of superimposed inflation prior to 2009 of around 20% p.a.

▶   For moderate and serious severity claims with WPI less than or equal to 10% superimposed inflation occurred at a rate of 1% p.a. from 2011 onwards with much larger levels historically prior to 2011 of around 15% p.a.

Considering these different analyses in conjunction has resulted in the following superimposed inflation assumption selections by claim severity and WPI segments.

Figure 29: Superimposed Inflation assumptions by claim severity and WPI

	WPI > 10%		WPI <= 10%		
	Minor Severity	Moderate/Serious Severity	Minor Severity	Moderate/Serious Severity	Scheme Overall
Selected SI	2.5%	0%	2.4%	2.0%	1.65%

We have converted the WPI basis (Figure 29) to the claim severity and legal representation basis (Figure 30) by making selections consistent with the analysis above. We have ensured consistency between the overall scheme superimposed inflation of 1.65% p.a. implied under both bases. This compares to the previous overall assumption of 1.75% p.a. used in the 30 June 2015 valuation.

Figure 30: Superimposed inflation assumptions by claim severity and legal representation

	Minor Severity Not Represented	Minor Severity Legally Represented	Moderate Severity	Serious Severity	Scheme Overall
Selected SI	0%	2.5%	2.0%	-1.00%	1.65%

Assuming this level of superimposed inflation for future claims payments increases the average claims size for the 2016 accident year from $128,000 to $134,000, which is an increase of $6,000 as a result of superimposed inflation. As discussed, the results in Figure 25 include superimposed inflation.
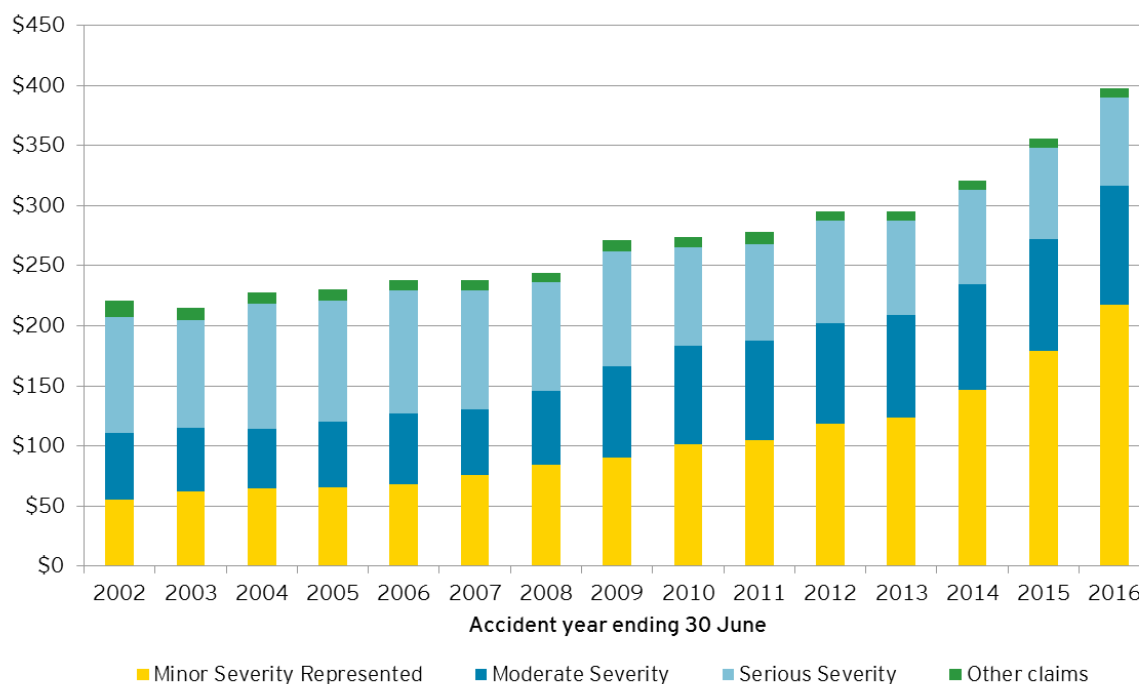
4.6   Claims cost per policy

The figure below shows the cost per policy for all Scheme claims, including ANFs and workers compensation recovery claims, by accident year ending 30 June since 2002. The cost per policy is the estimated total cost of claims divided by the number of insured motor vehicles in the Scheme.

The claims cost is calculated by adding past claim payments and projected future claim payments allowing for wage inflation and an assumed level of future superimposed inflation.

Figure 31: Cost per policy for all claims and ANFs

Note: The numbers in the figure are gross of ITC and DAM. The Other claims segment includes non-legally represented minor severity claims, ANFs and workers compensation recoveries.

Overall cost per policy was been relatively stable showing a gradual increase until 2008 and has increased significantly thereafter. The cost per policy in 2016 is projected to be $398, compared to $212 in 2002. Of the $398, the highest contributor is legally represented minor severity claims ($218 or 55% of the total), followed by moderate severity claims ($99 or 25% of the total), and serious severity claims ($73 or 18% of the total). The percentage annual average increase in cost per policy from 2008 to 2013 was 4% p.a. and the increase from 2013 to 2016 was 11% p.a.

In general the cost per policy for minor severity claims with legal representation have been increasing over time since 2002. This is the main driver of the increasing overall cost per policy (across all segments) since 2002. The increase in the cost per policy from 2002 to 2008 was gradual and was a result of an increasing average claims size for minor severity legally represented claims.

From 2008 to 2016 the increase in the cost per policy has been more significant particularly since 2013. This has been driven by an increase in the frequency of minor severity legally represented claims. Overall since 2002 the claims cost per policy for these claim has increased by 292%.

Claims cost from serious and moderate severity injuries have fluctuated upwards and downwards in recent years. There are no clear signs of a longer term trend, although moderate severity claims increased slightly in 2009 and 2010 and have remained at this level since. Other claims (workers compensation recovery claims, non-legally represented minor severity claims and ANFs) represent less than 2% of the claims cost for 2016.

There is considerable uncertainty in the estimates for recent years because a significant portion of claims are unpaid and hence based on actuarial estimates. In particular there is additional uncertainty around minor severity represented claims for the three most recent accident years due to an apparent change in the mix of these claims towards smaller claims sizes. We have considered the source of these smaller claims to be from claims with WPI less than or equal to 10%. As a result we have analysed finalised claim payment information for these claims to project the resulting trend overall in claim size. Given only a small proportion of claims have finalised for the recent accident years then there is considerable uncertainty around this result. Actual claim payments may be higher or lower than the actuarial estimates.

4.7   Composition of claims payments by head of damage

The following figure shows a split of claims costs by head of damage from 2002 to 2016. This is based on the head of damage model discussed in section 3.1.3. Contracting out legal costs have been included in the legal and investigation category and all other heads of damage have been reduced proportionally as discussed in section 4.7.1.

Information is shown by accident year ending 30 June. The Other category includes death and interstate claims.

There has been no obvious trend in the split since 2002. Economic loss and legal and investigation costs form the highest proportions of the claim costs (both around 30%). The composition of the claim payments has remained relatively stable over the history shown.

Figure 32: Mix of claims cost by head of damage
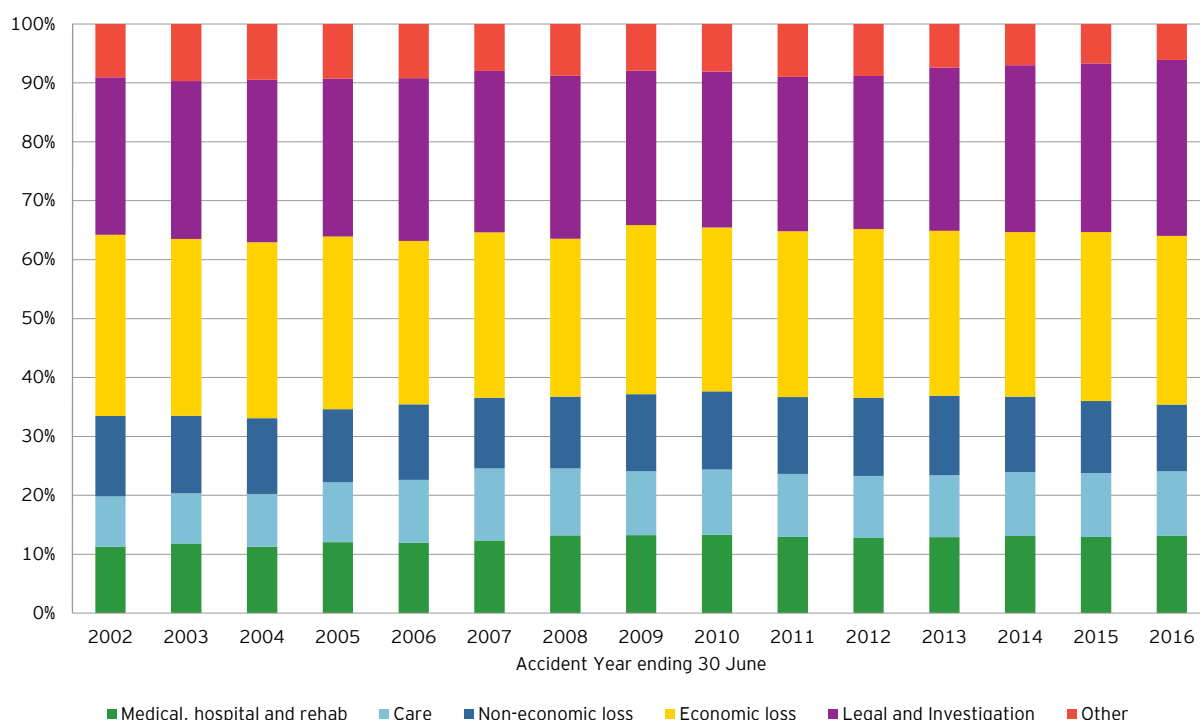
The following figure shows the cost per policy split by head of damage. The cost per policy excludes the cost of ANFs and workers compensation recovery claims. In addition future claim payments allow for expected wage and superimposed inflation. Information is shown by accident year ending 30 June starting from 2002.

Figure 33: Cost per policy split by head of damage (excluding ANFs and workers compensation recovery claims)
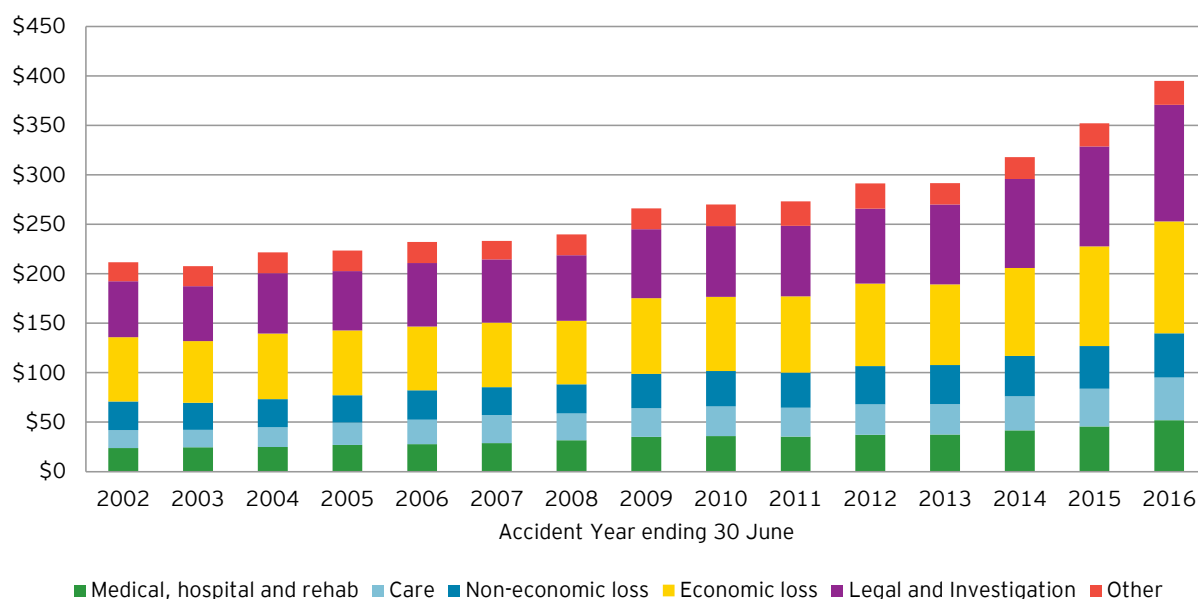
Overall the cost per policy for each head of damage has generally increased at a similar rate to the overall increase for the total cost per policy. This has resulted in the stability in the split of claims cost by head of damage shown in Figure 32: Mix of claims cost by head of damage (Mix of claims cost by head of damage).

4.7.1 Legal and investigation costs per policy

To assess efficiency in a largely common law Scheme we have analysed the legal and investigation costs per policy. Over 90% of the legal and investigations costs are legal costs.

We have adjusted legal costs to allow for contracted out legal costs. Contracted out legal costs are not identified separately in the PIR data as they are not visible to insurers. They are instead implicitly included in the claims payments for all other heads of damage. This overstates the claims payments for the other heads of damage from the PIR data, as a portion of these cost will relate to contracted out legal expenses. In order to reallocate these payments back to legal costs we have considered the CCD, which identifies the legal costs related to contracting out.

This is a change to the 2014 version of this report, where contracted-out legal costs were not allowed for. This results in an increase in legal costs and is based on information on contracted out legal costs contained in the CCD data. We have analysed the CCD data to estimate the additional costs relating to contracting out for finalised claims for the following WPI segments:

► Minor severity claims with WPI≤10%

► Minor severity claims with WPI>10%

► Moderate and Major severity claims with WPI ≤10%

► Moderate and Major severity claims with WPI>10%.

These are the same segments as used in the Heads of Damage (HoD) model discussed in section 3.1.3. The resulting proportions of total claims benefit payments and legal and investigation costs that relate to contracting out by the above segments are shown below. We have also included the regulated legal costs proportion from the CCD and the resulting total plaintiff legal cost from the CCD. In addition we compare this to the legal plaintiff cost for the 2016 accident year from the HoD model, which does not include contracted out costs and is hence comparable to the CCD regulated costs column.

Table 7: Contracted Out legal costs % by claim severity and WPI

WPI, Severity	CCD Regulated Cost Fee%	CCD Contracted Out Fee %	Total Legal (Plaintiff) Fee %	2016 AY HoD Model Plaintiff Legal Costs (pre-contracted out adjustment)
WPI <10%, Minor Severity	15%	15%	31%	14%
WPI <10%, Moderate and Serious Severity	13%	12%	25%	11%
WPI >=10%, Minor Severity	8%	9%	17%	7%
WPI >=10%, Moderate and Serious Severity	8%	7%	15%	8%
Total	11%	10%	22%	11%

The CCD only contains information on the contracted out costs for claims finalised since October 2015. As a result, to convert these assumptions to an accident year basis for years since 2000, we have applied the following approximation:

▶ The non-contracted out legal plaintiff cost proportion has been calculated from the CCD data (the second column in the table above). This has been compared to the projected legal plaintiff cost proportion by accident year and segment in the HoD model (fifth column in the table above).

▶ Dividing the accident year plaintiff cost proportion from the HoD model (column 5 above) by the legal plaintiff cost from the CCD data (column 2 above) produces a scaling factor for the 2016 accident year by segment. Similar calculations produce similar factors for the remaining accident years

▶ The resulting scaling factors have then been applied to the contracted out fee assumptions by segment (third column in the table above) to produce a contracted out proportion assumption by accident year and segment for the HoD model.

▶ The remaining heads of damage costs have been reduced proportionally to reflect the cost that is assumed to relate to contracting out (as calculated above). Prior to the adjustment this cost was captured as a benefit payment in the HoD model.

This is a simplified approach and produces the following cost per policy for contracting out. Future claim payments allow for expected wage and superimposed imposed inflation.

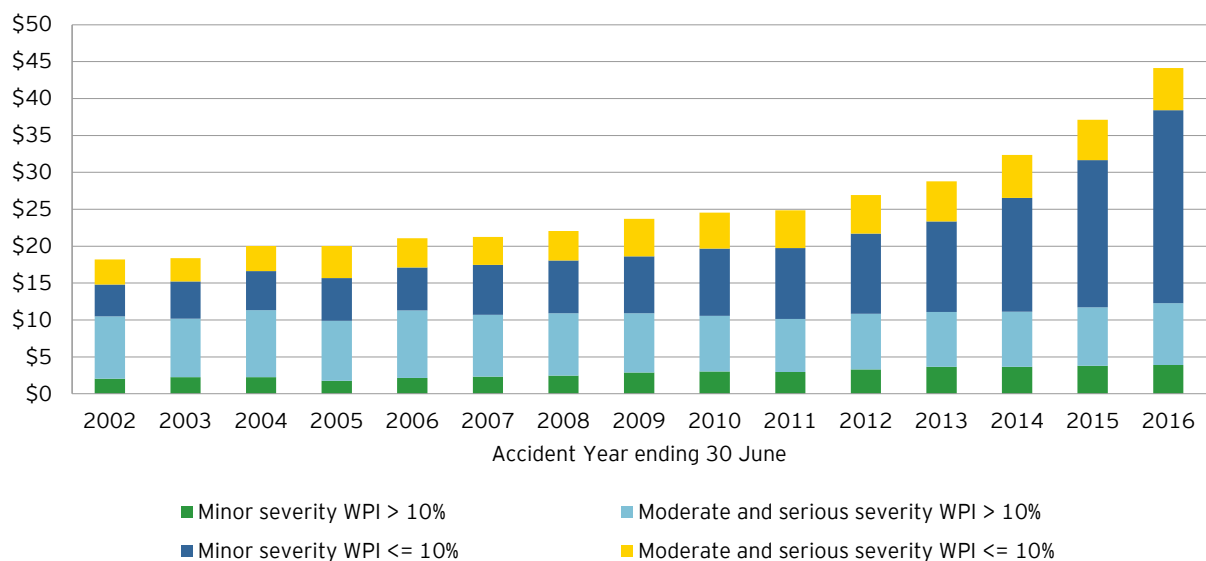Figure 34: Contracted out legal costs per policy

Figure 35 below shows our estimated total legal and investigation cost per policy for claims excluding non-legally represented minor claims, workers compensation recoveries and ANFs. The excluded

segments will have a zero legal cost (non-legally represented minor claims and ANFs) or a negligible cost (workers compensation recoveries). The legal and investigation costs include contracted out legal costs. Future claim payments allow for expected wage and superimposed inflation. Information is shown by accident year ending 30 June starting from 2002 up to 2016.

Figure 35: Total legal and investigation costs per policy
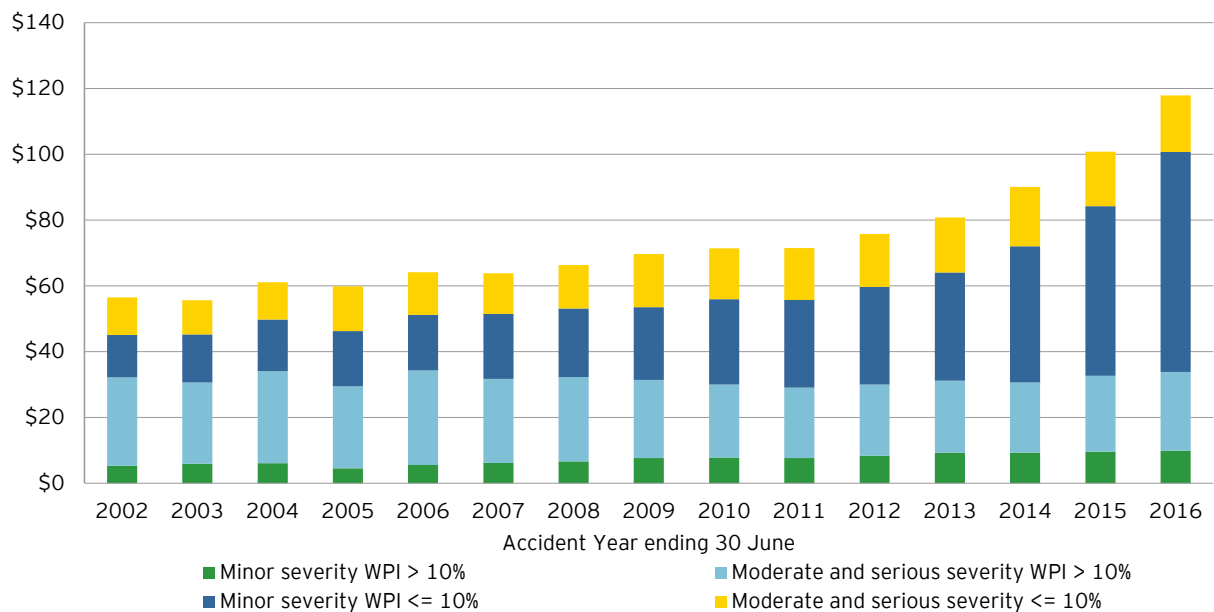
The total legal and investigation cost per policy remained relatively stable showing a gradual increase until 2011 but have shown a significant upward trend since. This increase in cost has been driven by increased costs for minor severity claims with WPI less than or equal to 10% linked to the increase in frequency of these claims as shown in section 4.3.4.2.

The overall increase between 2013 and 2016 is 46%, and the increase in 2016 alone is 17%. For 2016, minor severity claims made up 65% of the overall legal and investigation costs. The remaining legal and investigation costs are larger for moderate and serious severity claims with WPI greater than 10%. In contrast, minor severity claims contributed 41% or less of the legal and investigation costs prior to 2009.

4.7.2 Claims cost per policy excluding legal and investigation costs

The figure below shows the estimated claims cost per policy excluding legal, contracted out legal and investigation costs for full claims excluding workers compensation recoveries and ANFs. Future claim payments allow for expected wage and superimposed inflation. Information is shown by accident year ending 30 June starting from 2002.

Figure 36: Claim costs per policy excluding legal and investigation costs
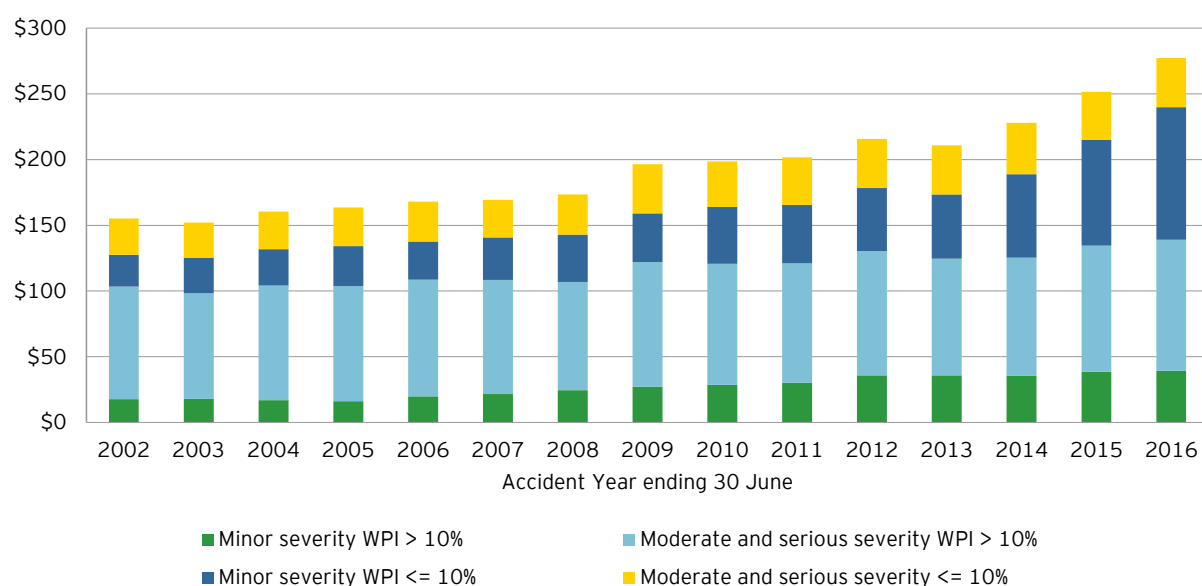
Similar to legal and investigation cost per policy, non-legal and investigation costs per policy remained relatively stable showing a gradual growth up to 2008. 2009 showed a step increase from 2008 and from 2009 to 2013 there was a return to the stable gradual upward trend. Between 2013 and 2016, there has been a significant increase in the cost per policy of 31%. The increase is mainly attributable to minor severity claims with WPI less than or equal to 10%.

4.8 Impact of interest rates and inflation on average Scheme premium

Insurance premiums are collected to pay future claims. Premiums are collected upfront and therefore earn an investment return which partly covers future claim payments. Interest rates affect investment returns and hence the premium amount charged by insurers. For instance, when interest rates are low, insurers earn less investment return on premiums, in turn putting upward pressure on premiums required to be charged (everything else equal).

In addition Scheme claim payments are typically linked to inflation. Hence future wage and superimposed inflation (although superimposed inflation at the scheme level has been zero in recent years) are important drivers of premium, with higher inflation increasing premium and vice versa.

The following analyses the impact of recent changes in interest rates and inflation on the average Scheme premium. The sensitivity of the average Scheme premium to future changes in interest rates and inflation is also analysed. Average Scheme premium is the average premium charged per policy written under the Scheme excluding GST and MCIS levy.

The weighted average interest rate reduced from 2.5% in the previous valuation (June 2015) to 1.8% in the current valuation (June 2016), while the average wage inflation expectation decreased, from 3.0% to 2.8%. The estimated impact of these changes on average Scheme premium relies on the following assumptions:

► Payment pattern based on the historic and projected payments for the 2016 accident year (refer to next section)

► Average insurer premium of $449 excluding GST and MCIS levy (based on 2015 underwriting year)

► All premium components (including expenses) are impacted by wage inflation

- ► Only claim payments and claim handling expenses are paid after premium collection and hence affected by interest rates

- ► No change in insurers required return on capital.

The impact of the recent reduction in interest rates is a 2.5% or $11 increase in the average premium (excluding GST and MCIS levy), while the impact of the decrease in wage inflation expectation is a 0.6% or $3 decrease.

The following table shows the approximate change in average premium (excluding GST and MCIS levy) of $449 as a result of future changes in interest rate, wage inflation and superimposed inflation although future premiums are likely to be higher due to inflation and claims experience deterioration. The current assumption for overall scheme superimposed inflation is 1.65%, based on the June 2016 outstanding claims valuation as discussed in section 4.5.

Table 8: Sensitivity of average premium to changes in interest rate and inflation

Factor	Scenario (absolute change)	Percentage change in average premium	Dollar change in average premium
Interest rate	Increase by 1%	-3.9%	-$18
	Decrease by 1%	4.2%	$19
Wage inflation	Increase by 1%	4.2%	$19
	Decrease by 1%	-3.9%	-$18
Superimposed inflation	Increase by 1.65%	6.9%	$31
	Decrease by 1.65%	-6.4%	-$29

For example if interest rates fell by 1% the average premium would increase by 4.2% or about $19 (assuming an average premium of $449) before MCIS levy and GST and $21 assuming a fixed MCIS levy and GST. A similar calculation applies to other sensitivities in the above table. Adding GST would increase the above impact by a further 10%.

Also note there could be a combination of scenarios occurring, for example an increase in interest rate and wage inflation. In this case the overall impact is calculated by adding the above sensitivities although note that results are approximate.

4.9   Claim payment pattern and duration

The following figure shows the assumed payment patterns from the 2016 and 2015 outstanding claims valuations for the Scheme. Payment pattern refers to the timing of the cashflows leaving the Scheme for a cohort of claims rather than when the claims are finalised. Information is shown by payment year, and is in current values (June 2016 dollars) so excludes the impact of future wage inflation, superimposed inflation and is undiscounted. The payment pattern relates to a cohort of claims from the most recent accident year.

Figure 37: Proportion of claim payments made in various years
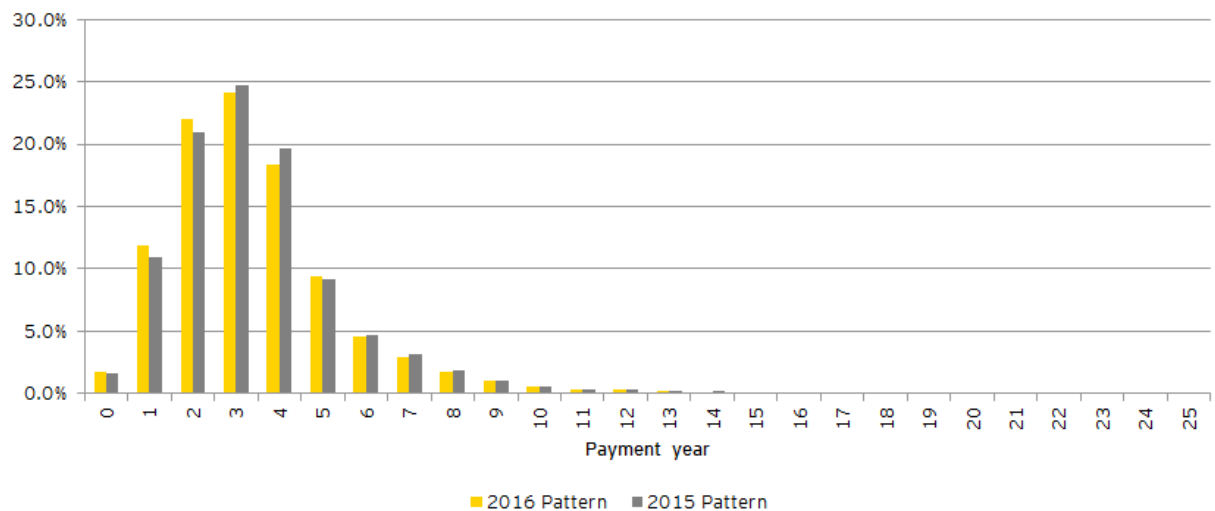
Compared to the 2015 payment pattern, the 2016 payment pattern assumes a higher proportion of claim payments are made in earlier years after the date of accident. This is reflected in a reduction in implied average payment term (2016: 3.50 years, 2015: 3.55 years). The reduction is observed across most of the claim severities except for minor severity claims.

4.10 Discounted Claims Cost

Claims cost are discounted to the start of the accident year using an assumed rate of investment return and this is discussed further in the next section. The resulting discounted cost per policy is shown in the figure below and this forms the basis of the profit assessment discussed in section 5. Information is shown by accident year ending 30 June starting from 2002.

Figure 38: Discounted cost per policy by accident year
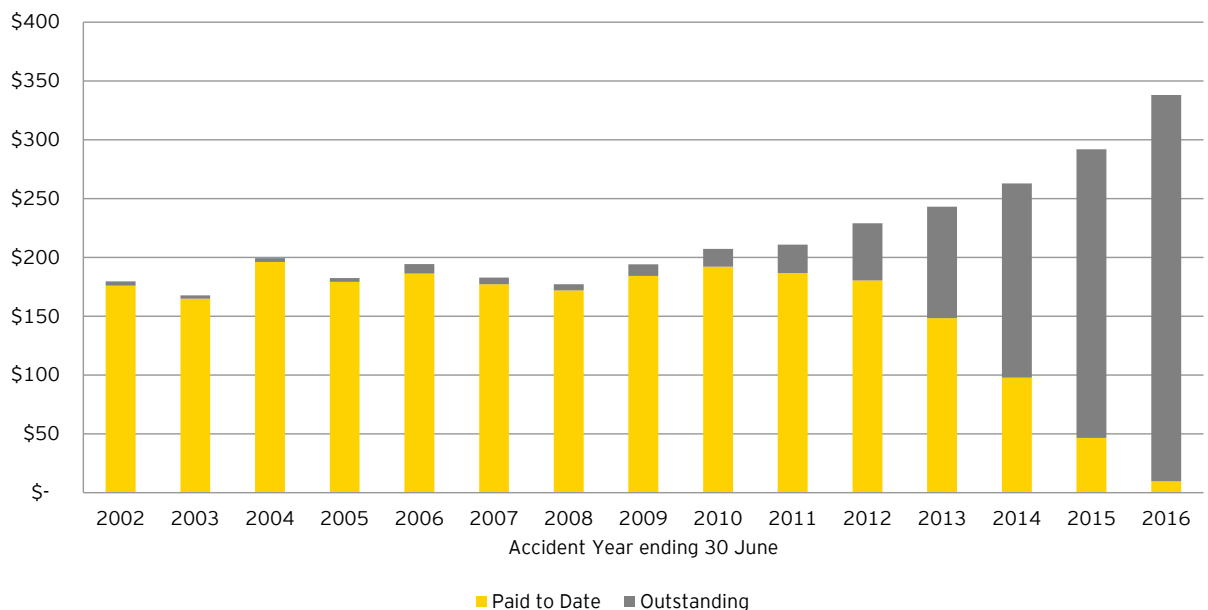
The cost per policy above has been split by the cost relating to payments made to date (actual payments) and payments for outstanding claims (estimated future payments). For the more recent accident years from 2012 onwards a significant portion of the claims cost relates to estimated costs for outstanding claims, which given the nature of estimates may underestimate or overestimate the

costs. As a result there is significant uncertainty around the discounted claims cost for these periods and this results in a corresponding level of uncertainty in the profit estimates for these years.

5.   Insurer profits

5.1   Introduction

This section provides estimates, based on analysis of Scheme claims data as at 30 June 2016, of the profitability of CTP policies underwritten by insurers since the Scheme commenced in October 1999. We have also expressed the results as a loss ratio consistent with the recommendation of the Board report titled "Reforming insurer profit in compulsory third party (CTP) motor vehicle insurance".

The profitability of CTP policies is estimated as:

>   Premium income

> plus   Investment income on premiums

> less   Insurers' expenses excluding claim handling expenses

> less   Claim payments (which include plaintiffs' and defendants' legal costs and claim investigation costs)

> less   Insurers' claim handling expenses.

Since the previous report, we have revised the approach to discounting the claim payments to allow for the investment return on premium income. As a result the historic profit estimates (representing the profit assessment in older reporting years) have been restated to be in line with the revised methodology and these are shown in this report. These estimates will differ from those published in previous reports but are on a consistent basis with the latest profit as assessed at 30 June 2016 shown in this report.

Claim payments and claims handling expenses are discounted from the time of payment to the start of each accident year using the relevant risk free interest rate available at the time. This allows for investment income earned on the residual premium after deducting expenses, between the date the premium is received and the payment date. We have assumed that insurers' investment income returns are equal to the 5 year Treasury bond yield prevailing at the time at when the premium was received.

This discounted claims payment estimate is also used to determine the loss ratio for CTP policies. In particular the loss ratio of the CTP policies has been estimated as:

$$\frac{\text{Discounted Claim Payments (excluding claims handling expenses)}}{\text{Insurers premium income (in original dollars)} excluding\ GST\ and\ levies}$$

Note the SIRA levy and RMS commission is implicitly included in the premium measure for accident years from 2000 to 2006 as this was previously directly received by the insurers. As a result for these accident years, the bulk billed public hospital and ambulance costs are also included as part of the discounted claims payment when calculating the loss ratio.

The above profit and loss ratio calculations assume that:

▶   The expenses excluding claims handling expenses were paid by insurers at the same time as the corresponding premiums were received

▶   Premium is written and earned uniformly across the year

▶   Policies are for an annual term

This approach is intentionally somewhat simplistic and is used for reporting purposes. It estimates profits or losses made by insurers without allowing explicitly for the cost of insurers' capital held in order to support the business.

The estimation of profit and loss ratios is uncertain and complicated by the fact that CTP claims take a number of years to settle, due to the involvement of medical, legal and judicial outcomes. Hence it can be many years before the profit earned and resulting loss ratio on a CTP policy can be estimated with certainty. Assessment of profit and the loss ratio (especially for the more recent accident years) is largely based on actuarial models and assumptions on expected future claims experience. Actual claim outcomes may be materially different to the expected outcomes. As actual claims experience gradually replaces the estimates from the models over time, the hindsight assessment of profit and the loss ratio may change as a result.

Premium written, estimates of insurers' acquisition costs and net cost of reinsurance, bulk-billed NSW Health public hospital and ambulance costs, and discount rates for past underwriting years are assumed to remain unchanged over time. Therefore changes over time in profit or loss ratio estimates are entirely attributable to changes in projections of claim payments.

5.2 Premium

The industry premium income excluding the MCIS levy and GST is shown in the following table. These premium figures are earned by accident year.

Table 9: Industry premium income for accident years ending 30 June

Accident year ended 30 June	Premium income* ($m)
2000	1,499
2001	1,321
2002	1,322
2003	1,355
2004	1,423
2005	1,474
2006	1,446
2007	1,387
2008	1,192
2009	1,207
2010	1,380
2011	1,574
2012	1,717
2013	1,841
2014	2,053
2015	2,157
2016	2,264

2000 – 2007: includes SIRA levy

2008 – 2016: excludes SIRA and LTCS levies

Premium income increased by 5% between 2001 and 2007. In 2008 there was a decrease of 14% due to the impact of the separation of the SIRA and LTCS levies from the premium. These were previously included in the written premium prior to 1 October 2006. From 2008 onwards premiums increased to 2016 at a rate of 8.3% p.a.

5.3 Expenses excluding claims handling expenses

Insurer expenses excluding claims handling expenses (CHE) include business acquisition expenses and the net cost of reinsurance. These expenses are estimated based on the weighted average of insurers' expenses submitted in the insurers' rate filings for each year.

Acquisition expenses are expenses incurred by insurers to acquire and retain CTP business. These expenses include personnel costs and associated costs (e.g. rent, insurance premiums), IT costs,

finance costs (e.g. accounting, audit, actuarial), stationery, marketing and advertising costs, commissions, reinsurance and other costs including overheads.

The following table shows the adopted business acquisition expenses, commission and net cost of reinsurance in estimating profitability of the Scheme.

Table 10: Insurers' business acquisition expenses and net cost of reinsurance by accident year ending 30 June

Accident year ended 30 June	Insurers' acquisition expenses excluding commission and reinsurance* ($m)	Commission ($m)	Net cost of reinsurance ($m)	Insurers' acquisition expenses and net cost of reinsurance* ($m)	Year on year change (%)	Percentage of earned premium (%)
2000	117	42	20	179		12%
2001	130	30	17	177	-1%	13%
2002	135	26	19	181	2%	14%
2003	137	27	24	187	4%	14%
2004	144	26	35	205	9%	14%
2005	155	26	42	223	9%	15%
2006	159	24	40	223	0%	15%
2007	144	24	35	203	-9%	15%
2008	126	23	26	176	-13%	15%
2009	128	24	20	171	-3%	14%
2010	139	27	18	185	8%	13%
2011	152	32	18	202	9%	13%
2012	164	34	18	216	7%	13%
2013	171	37	13	221	2%	12%
2014	180	40	9	229	4%	11%
2015	190	42	10	242	5%	11%
2016	202	41	11	253	5%	11%

2000 – 2006: includes SIRA levy, RMS commission

As a percentage of earned premiums, expenses excluding CHE increased from 12% to 15% between 2000 and 2005, and then remained steady until 2008. The expense percentage started to decrease from 2009, and is currently 11% of premium.

The composition of expenses varies by insurer due to different operational structures and different mechanisms for acquiring new business. Insurers may also report expenses on different bases, partly due to their different approaches to internal expense reporting.

Bulk-billed NSW Health public hospital and ambulance costs, which are part of the SIRA levy, have been paid by SIRA after 30 September 2006. Therefore, no cost has been assumed for accident years associated with underwriting year 2007 and onwards.

5.4   Claim payments

We have estimated the discounted value of claim payments which consists of:

▶   Actual claim payments made up to 30 June 2016 – claim payment information is provided by SIRA

▶   Estimated outstanding claim payments as at 30 June 2016 based on our outstanding claims valuation as at 30 June 2016. These are intended to be central estimates in the sense that they

represent the average outcome of future claims experience with no bias to over or under estimation.

For each accident year the table below shows our estimate of claim payments discounted to the start of each accident year (in dollar values and as a percentage of earned premium) and the proportion of the claim payments that are attributable to actual payments made up to 30 June 2016.

Table 11: Discounted value of claim payments by accident year ending 30 June

Accident year ended 30 June	Discounted claim payments* ($m)	Percentage of premium (%)	Proportion attributable to claim payments up to 30 June 2016
2000	758	51%	100%
2001	656	50%	99%
2002	683	52%	98%
2003	654	48%	98%
2004	801	56%	98%
2005	750	51%	98%
2006	816	56%	96%
2007	785	57%	97%
2008	777	65%	97%
2009	872	72%	95%
2010	953	69%	93%
2011	995	63%	88%
2012	1,103	64%	79%
2013	1,196	65%	61%
2014	1,323	64%	37%
2015	1,504	70%	16%
2016	1,786	79%	3%

*Discounted to the start of each accident year using prevailing interest rates. This is to allow for investment income earned by insurers on premium after deducting acquisition expenses.

Total discounted claim payments have been increasing steadily since the beginning of the Scheme. Discounted claim payments are $1,786m for accident year 2016.

Claim payments as a percentage of insurer premiums have also been increasing. This proportion ranged from 50% to 52% from 2000 to 2003, and generally increased thereafter (although with volatility in the intervening periods). Claim payments were 64% to 80% of insurer premium for the past five accident years up to 2016.

For recent accident years, a smaller proportion of estimated claim payments have been paid by 30 June 2016. In particular only 3% of estimated claim payments for accident year 2016 have been paid and the remaining 97% is outstanding. This implies that the estimated claim payments for recent accident years are relatively more uncertain and may change subsequently as claims experience emerges.

Further information and commentary on the Scheme's claims experience are found in section 4.

5.4.1 Claims handling expenses

We have calculated claims handling expenses (CHE) as a percentage of total risk premium and then applied the selected percentage to discounted claim payments.

The following table shows the adopted CHE percentage allowance and discounted CHE amount (in dollar values and as a percentage of earned insurer premium).

Table 12: Adopted CHE percentage allowance, CHE amounts by accident year ending 30 June

Accident year ended 30 June	Adopted CHE allowance (%)	Discounted CHE ($m)	Percentage of earned premium (%)
2000	6.5%	49	3%
2001	6.5%	43	3%
2002	6.5%	44	3%
2003	6.5%	43	3%
2004	6.5%	52	4%
2005	7.3%	55	4%
2006	7.3%	60	4%
2007	7.3%	57	4%
2008	7.3%	57	5%
2009	7.3%	64	5%
2010	7.3%	70	5%
2011	6.5%	65	4%
2012	6.5%	72	4%
2013	6.0%	72	4%
2014	5.7%	75	4%
2015	5.3%	79	4%
2016	5.0%	89	4%

The discounted CHE percentage (of claims) was 6.5% from 2000 to 2004 and then increased to 7.3% in 2015 and remained at that level until 2010. Since then the percentage has decreased down to 5.0% for 2016. When expressed as a percentage of earned premium, CHE increased from 3% in 2000 to 5% in 2008 and is currently 4% for 2016.

5.5 Profit and loss ratio results

Based on the above results, the estimated insurer profitability and loss ratios for CTP policies from 2000 to 2016 accident years ending 30 June is shown in the following table. Note this assessment excludes the MCIS levy and GST in the assessment of premium and profits and the loss ratio. This differs to profit margin assessment in the NSW Government's March 2016 document titled "On the road to a better CTP scheme Options for reforming Green Slip insurance in NSW", which includes the MCIS levy in the assessment and this is discussed further below.

Table 13: Estimate of profitability of past NSW CTP premiums written by licensed insurers, by accident year ending 30 June

Accident year ended 30 June	Premium earned (a)	Estimate of insurers' acquisition expenses and net cost of reinsurance (b)	Bulk-Billed ambulance and hospital costs (c)	Estimated discounted value of:		Estimate of discounted value of profit/(loss) for insurers:		Loss Ratio (h)
				Central estimate of claim payments (d)	Insurers' claims handling expenses (e)	Profit (f)	Percentage of premium (g)	
	($m)	($m)	($m)	($m)	($m)	($m)	(%)	(%)
2000	1,499	179	36	758	49	478	32	53
2001	1,321	177	36	656	43	409	31	52
2002	1,322	181	36	683	44	378	29	54
2003	1,355	187	39	654	43	432	32	51
2004	1,423	205	42	801	52	323	23	59
2005	1,474	223	41	750	55	404	27	54
2006	1,446	223	42	816	60	305	21	59
2007	1,387	203	0	785	57	342	25	57
2008	1,192	176	0	777	57	183	15	65
2009	1,207	171	0	872	64	101	8	72
2010	1,380	185	0	953	70	173	13	69
2011	1,574	202	0	995	65	312	20	63
2012	1,717	216	0	1,103	72	326	19	64
2013	1,841	221	0	1,196	72	352	19	65
2014	2,053	229	0	1,323	75	426	21	64
2015	2,157	242	0	1,504	79	332	15	70
2016	2,264	253	0	1,786	89	135	6	79

(a)   Refer to section 5.2.

(b)   Refer to section 5.3.

(c)   Refer to section 5.3.

(d)   Refer to section 5.4.

(e)   Refer to section 5.4.1.

(f)   (a)-(b)-(c)-(d)-(e)

(g)   (f)/(a)

(h)   ((c)+(d))/(a)

There have been two accident years which have a profit margin close to or below 8% (2009 and 2016) and another accident year with a profit margin between 9% and 13% (2010). Note that the average premium profit margin filed by insurers since 2000 has been approximately 8%.

The equivalent loss ratio under an 8% profit margin is 75% assuming scheme average insurer expenses. In general all the accident years have been below this level with the exception of 2016 which is above the 75% level. There are three further accident years with loss ratios between 69% and 75% (2009, 2010 and 2015). In general, accident years with lower profit margins correspond to accident years with higher loss ratios.

It is noted that the 2016 accident year is the most immature of the years shown and is predominantly based on projected costs. As a result this year is subject to the largest uncertainty and the estimated profit and loss ratio for this year is likely to change as actual experience emerges in the next few years.

The subsequent table compares estimated profit:

▶ By accident year ending 30 June using data up to 30 June 2015 and restated to allow for the revised discounting approach. Note as a result of the restatement the profits shown below will differ from those shown in the previous report

▶ By accident year ending 30 June using data up to 30 June 2016.

Table 14: Comparison of profit by accident year ending 30 June

Accident year	Profit by accident year using June 2015 data			Profit by accident year using June 2016 data		
	Profit	Profit margin	Loss Ratio	Profit	Profit margin	Loss Ratio
	($m)	(%)	(%)	($m)	(%)	(%)
2000	476	32	53	478	32	53
2001	408	31	52	409	31	52
2002	377	29	54	378	29	54
2003	430	32	51	432	32	51
2004	324	23	59	323	23	59
2005	406	28	54	404	27	54
2006	309	21	59	305	21	59
2007	340	25	57	342	25	57
2008	176	15	65	183	15	65
2009	100	8	72	101	8	72
2010	175	13	69	173	13	69
2011	322	20	63	312	20	63
2012	349	20	63	326	19	64
2013	371	20	64	352	19	65
2014	424	21	65	426	21	64
2015	310	14	70	332	15	70
2016				135	6	79
Total	5,298	22	61	5,410	20	63
Total excluding 2016	5,298	22	61	5,275	22	61

The table above shows that the estimate of insurer profit on accident years prior to 2016 have decreased since the previous valuation. In particular this is the case for the 2013, 2012 and 2011 accident years where the projected profits are $19m, $23m and $10m lower respectively for these years. This produces a small decrease in the profit margin for these years of around 1%. The reduction in the assessment of profit for these accident years is partially offset by the 2015 accident year, where the projected profit has increased by $21m. This produces a 1% increase in the profit assessment for the 2015 accident year. Overall the profit assessment this year is generally consistent with the

previous valuation as shown by the 22% projected profit margin for all accident years prior to 2016 which is unchanged from the previous valuation.

It should be noted that the total profit margin figure of 20% shown above based on the 2016 analysis is calculated on a different basis to the profit margin quoted in the NSW Government's March 2016 position paper titled "On the road to a better CTP scheme Options for reforming Green Slip insurance in NSW". The position paper considers premiums including the MCIS levy and bulk billing costs whereas it is excluded from this analysis. The updated assessment of scheme profitability including these additional components would result in a profit margin of 19%.

In terms of loss ratios, these are broadly consistent with the assessment using data to 30 June 2015. There are minor changes from accident year 2012 onwards. In particular, loss ratios for accident years 2012 and 2013 have increased by 1% reflecting the increase in the discounted claims cost for these years using data to 30 June 2016. For the 2015 accident year there is a reduction in loss ratio by 1% reflecting a reduction in the discounted claim estimate over the year. In aggregate the overall scheme loss ratio assessment for accident years prior to 2016 is unchanged at 61%.

5.6   Sensitivity of results

In the estimate of outstanding claims liabilities the major uncertainty is the average claims size as it takes many years for all claim payments to be made under the NSW CTP Scheme (i.e. over 10 years). One measure of the impact of variations in average claims size have on the level of outstanding claims liabilities and hence insurer profits is the change in the level of superimposed inflation as we have defined it. Future variations in the number of late reported claims will have a relatively small impact on the level of outstanding claims liabilities and hence insurer profits.

The following illustrates the variability in profit and the loss ratio for accident years 2009 to 2016 if superimposed inflation were to unexpectedly improve or deteriorate compared to the current overall assumption of 1.65%.

Profit and loss ratios are presented under five scenarios:

1.   Superimposed inflation reduces to -1.65% p.a.

2.   Superimposed inflation reduces to 0% p.a.

3.   Superimposed inflation remains at 1.65% p.a.

4.   Superimposed inflation increases to 3.30% p.a.

5.   Superimposed inflation increases to 4.95% p.a.

The following figure shows the profit margin under each of the above five scenarios. Recent accident years are expected to have larger profit variability as a significant portion of claims cost is unpaid. For accident year 2016, profit margin varies by approximately 4% for every 1.65% change in superimposed inflation.

Figure 39: Expected profit margin under different superimposed inflation scenarios
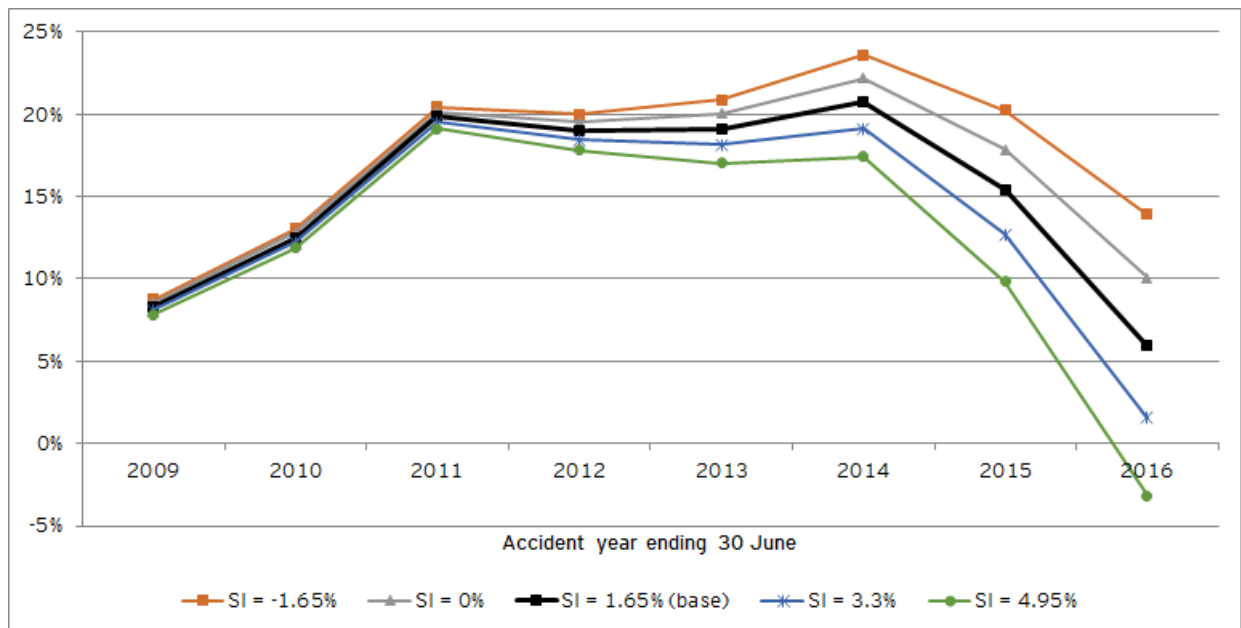
The following figure shows the loss ratio under each of the above five scenarios. Recent accident years are expected to have larger loss ratio variability as a significant portion of claims cost is unpaid. For accident year 2016, the loss ratio varies by approximately 4% for every 1.65% change in superimposed inflation.

Figure 40: Expected loss ratio under different superimposed inflation scenarios
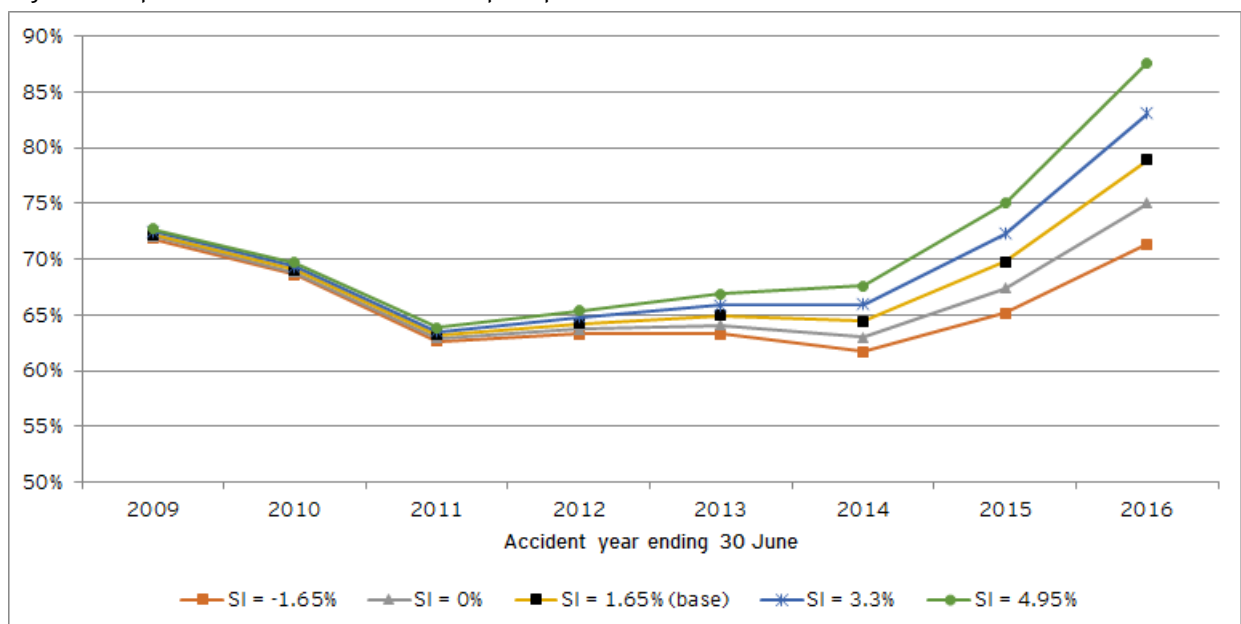
5.7　History of insurers' profit and loss ratio

The figures below shows the hindsight development of profit margins and loss ratio for each accident year ending 30 June from 2000 to 2016. The hindsight assessment is made for each reporting year starting from 2001.

For a given accident year, premiums earned, acquisition costs, net cost of reinsurance, bulk-billed NSW Health public hospital and ambulance costs and discount rates are assumed to remain unchanged in subsequent reporting years. Hence changes in profit margins and loss ratios for a given accident year

over time are entirely attributed to the transition from projected outstanding claim payments to actual claim payments and claim handling expenses.

For older years, the profit estimates are based on SIRA's Annual Report except for reporting years from 2004 to 2006. For reporting years from 2004 to 2006, SIRA's published profit estimates allow a 15% margin on the central estimate of outstanding claims liabilities. Therefore, for these reporting years, we have used profit estimates from a letter prepared by Taylor Fry titled "Hindsight estimates of insurers' profit referred to in submissions to the Standing Committee on Law and Justice from the Australian Lawyers Alliance ("ALA") and the NSW Bar Association ("NSW BA")", dated 10 June 2010.

For the reporting years from 2001 to 2011, the loss ratio estimates are based on work carried out by Taylor Fry covered in their reports produced annually titled "Estimates of profitability of past NSW compulsory third party premiums written by insurers".

For 2012 to 2016 reporting years, profit margins and loss ratios by accident year are calculated ground-up by assuming a uniform earning pattern of premium, acquisition costs and other initial expenses. For earlier reporting years, we estimated the profit margin and loss ratio on an accident year basis as a weighted average of the result from the relevant underwriting year assuming a uniform writing and earning profile.

The SIRA levy and RMS commission is implicitly included in the premium measure for accident years 2000 to 2006 as this was previously directly received by the insurers. As a result for these accident years, the bulk billed public hospital and ambulance costs are also included in the claims cost and the loss ratio as these costs are supported by this portion of the premium. Overall this does make a material difference to the loss ratio assessments for these years.

The average filed profit margin since 2000 is also shown. The profits for older reporting years have also been restated to allow for the revised discounting methodology as discussed earlier. This is to ensure they are on a consistent basis with the 2016 reporting year.

Figure 41: History of CTP profit for each accident year
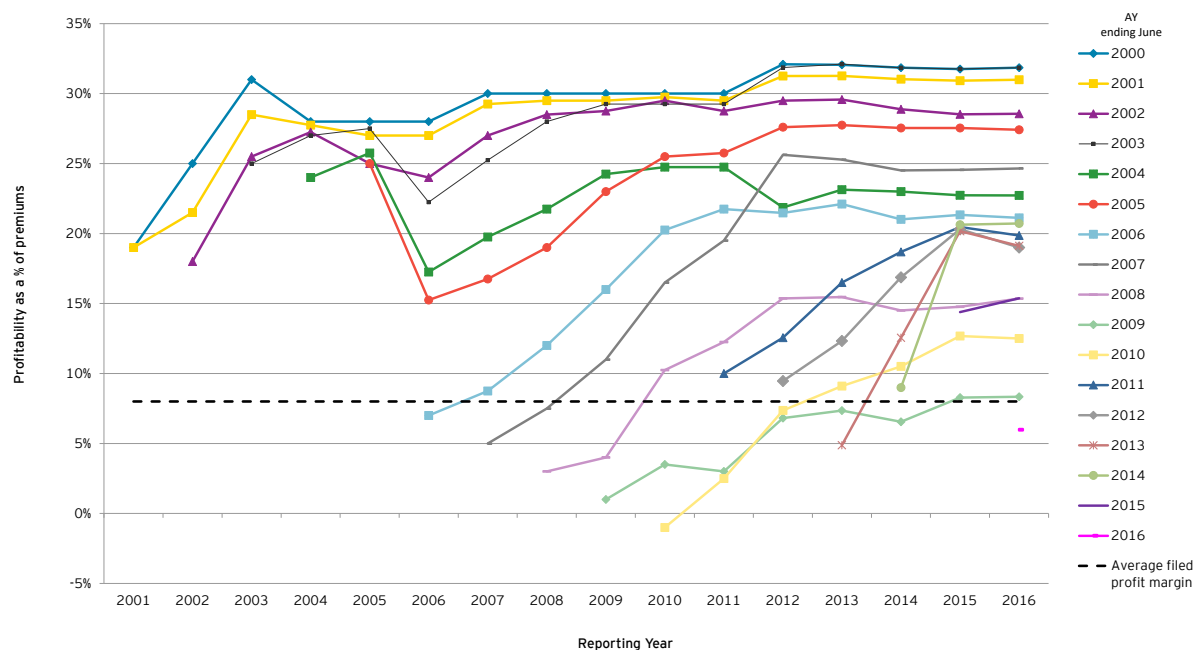
It can be seen from the figure above that the profit margin was very high for accident years 2000 to 2005 i.e. the first five years of the MACA scheme, but it is not without precedent. Premiums written during the first two years of the amended Motor Accidents Act 1988 (the Old Act) produced very high profits for insurers. This is because premium rates were fixed for the first two years and actual claims costs turned out to be much lower than projected before the Old Act commenced. There was a

reduction in claim frequency after MACA came into effect due to a range of arguably non-recurring factors. This appears to have led to the high profitability in the first five years since MACA commenced.

Profit margins for more recent accident years are lower and closer to the average filed profit margin of 8% but on average still significantly above 8% with the exception of the 2016 accident year. The lower level of profit for the 2016 accident year in part reflects the impact of the trend in increased claim numbers of minor severity legally represented claims which has not been fully reflected in the premiums rates filed by insurers.

In addition, the figure below shows the hindsight development of the loss ratios (excluding claims handling expenses) for each accident year ending 30 June from 2000 to 2016. The hindsight assessment is made for each reporting year starting from 2001. We have also shown the average filed loss ratio since 2000 based on the average filed profit margin of 8% and average insurer expenses and claims handing expenses from the scheme experience.

Figure 42: History of CTP loss ratio for each accident year
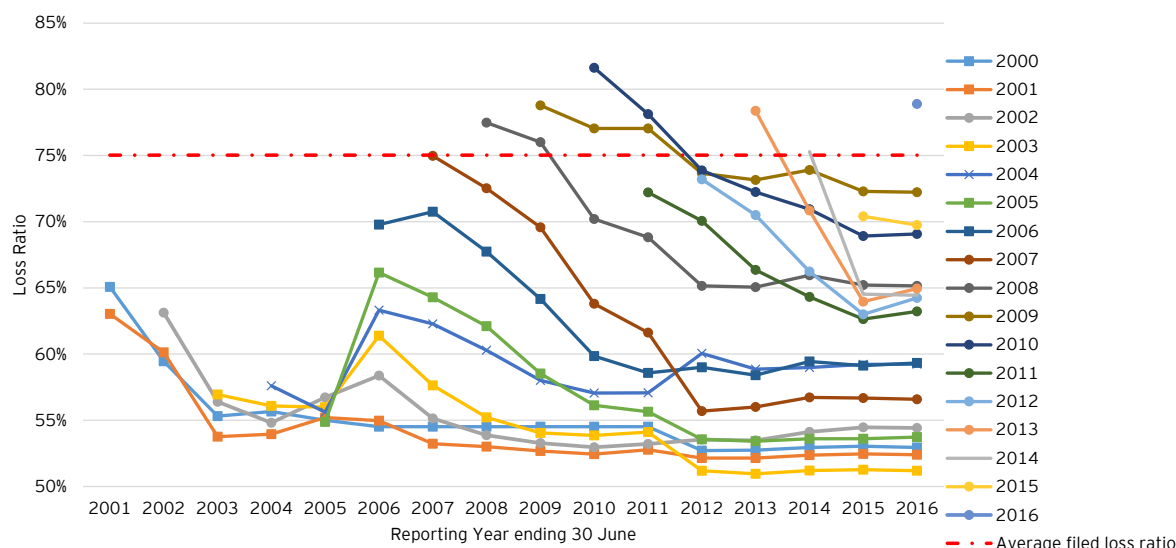
It can be seen from the figure above that the loss ratio was very low for accident years 2000 to 2007 and considerably lower than the average filing assumption. For accident years from 2008 to 2016 loss ratios have been higher although still in general below the average filing assumption. There is considerable volatility between years and the current loss ratio assessment for accident years 2009 and 2016 are closer to or above the filing assumption compared to older accident years. Although in some cases (e.g. 2011 to 2014) the difference to the target is still considerable.

Over time the loss ratio assessments have in general improved as claim projections are replaced with claims payments and the assessment is revised. This is consistent with the profit margin chart (Figure 41) which shows the reduction in loss ratio seen above transferring to an increase in the profit margin assessment over time. Overall, loss ratios have consistently emerged below the average filing assumption and the causes of this are the same as the drivers of the increases in profit margin and are discussed below.

We have explored the reasons for the high profits and low loss ratios, significant variability in profits and loss ratios between accident years and variable assessments of insurers' profits and loss ratios over time. Our insights at a high level of the drivers of the results are summarised below. We have divided our comments for the five underwriting years from 2000 to 2004 and from 2005 and later as the patterns of the emerging profits are different.

For accident years 2000 to 2004 there are three key reasons for the high profits and low loss ratios emerging. It is not possible to separately quantify the impact of each as there are significant interaction impacts:

▶ For a number of years since 1999, the basis of premiums for the current Scheme was the previous Scheme claims costs (i.e. pre 1999) adjusted to allow for the changes under the reforms. As a result the actuarial assumptions of superimposed inflation in the early years of the current Scheme were on average about 4% to 4.5% p.a. Superimposed inflation experience for both the previous and current Scheme from late 1999 until 2003 was benign. As a result actual experience was much less than assumed and the absence of superimposed inflation reduced the hindsight assessment of the cost of claims over time.

   The difference between the assumptions for average claim size and superimposed inflation in the premium basis and our current assessment of the actual experience has contributed significantly to the additional insurer profits and low loss ratios for the first five years of the scheme. Relatively small changes in assumptions and changes in the superimposed claims experience over a few years can have a significant impact on premiums, outstanding claims liabilities and emerging insurer profits.

▶ In insurer premium rate filings from 1999 for up to five years, insurers generally assumed the 1999 legislative changes would only be about 80% to 85% effective. This resulted is high premium assumptions for this period. As the experience of the Scheme emerged it became apparent the legislative reforms were more effective than had been assumed by insurers and allowed for in premium rate filings and in the initial costing of the reforms in 1999.

   This is not unusual as costing of legislative reforms is very difficult and the results are much more uncertain than normal premium rating assessments of an established scheme with considerable past claims experience.

   This reform effectiveness assumption made a significant contribution to the additional profits and reduced loss ratios in the first five years of the Scheme and we consider some of material assumptions below.

▶ In the original costings for the current Scheme in 1999, claims frequency was assumed to be at a level similar to the recent experience of the previous Scheme since claimants were still entitled to economic loss and medical and associated benefits under the current Scheme. However experience emerged at a much lower level in the current Scheme compared to 1999 as detailed in the "Review of selected performance indicators of the NSW CTP Scheme 2015" report. The claims frequency did not reduce to a new level at the start of the current Scheme, nor align with casualty numbers. Instead it continued to reduce from 1999 for four years and during that time it nearly halved. The reduction in claims frequency was substantially more than the reduction in casualties during this period. The causes of the reduction in claim frequency are unclear.

   In personal injury schemes, delays in reporting of claims defer the understanding of emerging claims experience for a significant period. Consequently, except for some small reductions, it took about two years for insurers to recognise the significance of the reduction in claims frequency and adjust assumptions in rate filings (note there is up to a nine month delay between an insurer analysing claims experience to the date new premium rates are effective). However the continued reduction in claims frequency resulted in claims frequency assumptions being too high for a number of years in insurer's premium rate filings.

   Additional uncertainty is associated with a significant reduction in claims frequency as the impact on average claims size can be unclear for many years. In absence of contrary evidence, in situations where a significant reduction cannot be explained by a corresponding reduction in casualties, it is logical for actuaries to assume the reduction in claims is due to minor severity claims not being reported. The reasoning is that these claims forgo little benefits by not reporting a claim compared to moderate and serious severity claims.

For accident years from 2005 to 2015 the main reasons for the high profits and low loss ratios emerging and the increase in assessed profits and the reduction in assessed loss ratio over time are noted below. It is not possible to quantify the impact of each source of additional profits and loss ratio reduction as there are significant interaction impacts:

► For accident years 2005 to 2007 the main reasons for high profits and low loss ratios were:

   ► The decline in claims frequency continued from 2004 until 2007 and was greater than insurers and actuaries anticipated

   ► The benign levels of superimposed inflation in the first six years of the new scheme also contributed to higher profits in the 2005 and 2006 accident years but to a lesser extent than earlier accident years due to decreases in the assumed superimposed inflation in premium filings

► For accident years 2008 to 2015 - The benign level of superimposed inflation since 2010 is the main contributor to the higher profits and low loss ratios. Each year of superimposed inflation experience that was less than that assumed when the business was written increased the estimated profit and reduced the loss ratio. This resulted in the upward slope of the profit lines and downwards slope of loss ratio lines in the above chart as each year's expected superimposed inflation did not emerge and claims cost were lower than expected.

   In addition, as the claims experience emerges and superimposed inflation is lower than expected, then the actuaries adjust the assumed superimposed inflation down for future outstanding claims. This increases the estimated profit and reduces the loss ratio in the year in which the assumption is changed. As noted above the impact of this experience over time is significant on premiums and insurer profits and loss ratios.

   There is also a significant increase in the profit estimate for the 2013 and 2014 accident years (and to a lesser extent for older accident years) in the 2015 reporting year. This is as a result of the payment experience that emerged over the 2015 year. In particular the average claims size from the experience for the 2013 and 2014 accident years was significantly lower than that assumed in the 2014 reporting year for these periods. This resulted in a decrease in the average claim size assumptions for the 2015 reporting year resulting in a significant reduction in the discounted claims cost and a corresponding increase in the profit for the 2013 and 2014 accident years. This reflected the emerging experience of lower cost minor severity legally represented claims driving the increase in claims frequency overall.

Offsetting the impact of superimposed inflation has been the increased claims frequency, in particular for claims with legal representation since 2008.

For accident year 2016 the main reason for the reduced level of profit and high loss ratio for the 2016 accident year is the continued increase in claims frequency, which the insurers have been slow to reflect in their filed premiums rates. This is partly offset by lower levels of superimposed inflation than assumed in insurer rate filings.

6. Scheme efficiency

6.1 Introduction

Scheme efficiency is a key measure of the Scheme performance and can be viewed by stakeholders as an indicator of value for money. Efficiency is defined as the proportion of premium paid as claims cost.

The LTCS scheme is excluded from the efficiency analysis since it is not managed by the insurers.

We have adopted the above definition of efficiency as it is consistent with definitions adopted by other accident compensation schemes in Australia. GST is also excluded from the calculation. As discussed in section 4.7.1, contracted out legal costs have been allowed for in the results shown below based on analysis of the CCD data. This is a change to the previous time that this analysis was presented ("Review of selected performance indicators of NSW CTP Scheme 2014").

6.2 Introduction

6.2.1 Overall Scheme efficiency results

The following figure shows the split of premium for accident years 2000 to 2016 (ending 30 June). The yellow bars indicate the efficiency of the Scheme in each accident year i.e. the proportion of premium paid out as claims.

Figure 43: Split of premium (adjusted for contracted-out legal costs)
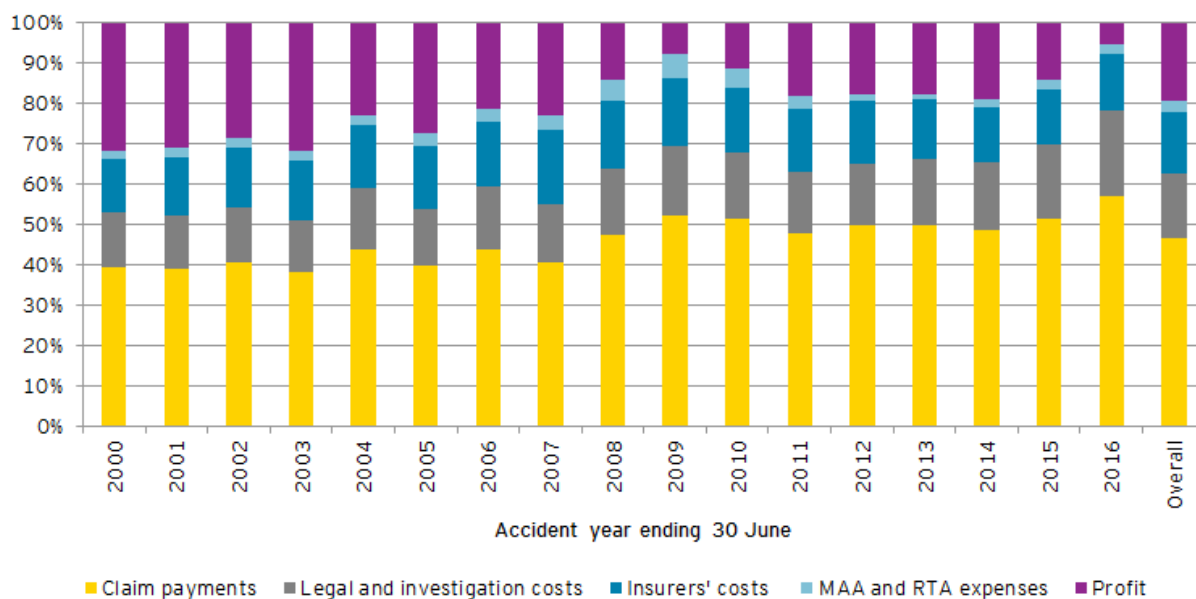
Scheme efficiency was less than 50% up to 2008 and since then has been varying between 49% and 60%. Efficiency for the accident year ending June 2016 is projected to be 57% and is the highest of the accident years shown above. Although as noted earlier, 2016 is the most immature year and is predominantly based on projected costs. As a result it is subject to the largest uncertainty and could change as more experience emerges.

Claims experience and hence efficiency varies across years, as a result efficiency should be assessed on a longer term basis. Projected average efficiency for the latest five accident years is 52% and over the lifetime of the scheme the average efficiency is estimated to be 47%.

Note this is higher than the 45% efficiency figure quoted in the NSW Government's March 2016 position paper titled "On the road to a better CTP scheme Options for reforming Green Slip insurance in NSW". Updating the 45% for the inclusion of the 2016 accident year and the experience during the

last 12 months would produce an overall scheme efficiency of 46%. However we have further refined the approach to the assessment of the contracted out legal costs for the scheme and this in addition to the profit restatement described in section 5 results in an increase to the overall scheme efficiency to 47%.

The increase in efficiency is as a result of a refinement to the calculation of the contracted out legal cost of the scheme. For the position paper assessment the contracted out costs were assumed to be in line with the CCD experience for the lifetime of the scheme. However the CCD only contains information on claims finalised since October 2015 and in recent years the cost to the scheme of contracting out has increased. As a result this approach overestimates the contracting out cost particularly for older accident years.

With more CCD experience now available, we have refined this approach as discussed in section 4.7.1, by adjusting the contracting out cost for older years to be more in line with the mix of claims in these older accident years. Older accident years would have a lower proportion of legally represented claims and as a result this reduces the calculated contracting out cost to scheme. This increases the efficiency to 47% and this is considered to be a more accurate reflection of the scheme efficiency.

There is considerable uncertainty in the results for recent years because a significant portion of claims cost is unpaid and based on actuarial estimates. Actual claim payments may emerge either higher or lower than the actuarial estimates. Historical movements in estimated claims and the impact on profit for a particular accident or underwriting year are shown in section 5.

6.2.2 Efficiency results by claim size band

The following table shows efficiency results by claim size band. Providing the split by claim size band illustrates the relative efficiency of small and large claims. These results are based on finalised claims from accident years 2000 to 2016. ANFs are excluded.

Table 15: Scheme efficiency results by claim size band

Claim size band	After Adjustment for contract-out legal costs
<$50k	38%
$50k - $100k	38%
$100k - $200k	40%
$200k - $500k	46%
$500k - $700k	49%
$700k - $1m	50%
> $1m	50%

Efficiency is around 50% for claims above $200k and around 40% for claims below $200k. Smaller claims tend to have lower efficiency, due to their higher average proportion of legal and investigation costs.

6.2.1 Efficiency results by legal representation

The following table shows the efficiency results by claim size band and legal representation. Results are again based on finalised claims from accident years 2000 to 2016, and ANFs are excluded.

Table 16: Scheme efficiency results by legal representation

Claim size band	With legal representation	Without legal representation
<$50k	38%	57%
$50k - $100k	37%	58%
$100k - $200k	40%	58%
$200k - $500k	45%	58%
$500k - $700k	49%	58%
$700k - $1m	50%	58%
> $1m	50%	57%

As expected, legally represented claims consistently have lower efficiency than non-legally represented claims. Non-legally represented claims have approximately 58% efficiency across all claim sizes, while efficiency for legally represented claims range from 38% (<$100k) to 51% (>$1m).

7.   Uncertainty

There are several sources of uncertainty within this report.

7.1   Actuarial estimates

There is significant uncertainty associated with actuarial estimates. Estimates of future claims experience (claims numbers and payments) are always inherently uncertain because they depend on the outcome of future events which cannot be forecast precisely. Examples of factors that impact claims experience that are particularly challenging to forecast include changes to social, economic and legal environments. This uncertainty is higher for more recent accident periods, which are more heavily reliant on actuarial projections. In particular there is additional uncertainty around minor severity represented claims for the three most recent accident years due to an apparent change in the mix of these claims towards smaller claims sizes. We have relied on the insurer case estimates to project this trend as only a small proportion of these claims have been paid so far. Therefore, actual claims experience may emerge at levels higher or lower than the actuarial estimates.

8. Reliance and limitations

In undertaking this review, reliance has been placed upon the data provided to us by SIRA. With regards to SIRA data we are specifically relying on the accuracy by which insurers have provided their data and classified appropriate payment types and claim severity coding and that this allocation has been accurate over time. We note that because claim payments are made as a lump sum to claimants the amounts that insurers allocate to a particular payment type doesn't necessarily reflect the eventual use of the money. For example, claimants may use more or less than the allocated amount of medical payments for medical services as per their needs.

We have also made judgements and estimates where the information provided here was not part of the analysis conducted as part of the review. In general, reliance was placed on but not limited to the information provided. Except where indicated, the information has been used without independent verification. However, it was reviewed where possible for reasonableness and consistency.

We have performed the work assigned and have prepared this document in conformity with its intended utilisation by persons technically familiar with the areas addressed and for the stated purposes only. Judgements based on the data, methods and assumptions contained in the report document should be made only after studying the report in its entirety, as conclusions reached by a review of a section or sections on an isolated basis may be incorrect. EY staffs are available to explain or amplify any matter presented herein.

We have described certain limitations of our analysis throughout this report.

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