

NSW Treasury

Independent Review of icare - Financial Sustainability

12 March 2021



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Executive Summary

We have been engaged by NSW Treasury in accordance with RFP-10035622 to review the financial sustainability of the NSW Workers Compensation Nominal Insurer. Our review is intended to contribute to a broader Independent Review of Insurance and Care NSW (icare) being undertaken by the Hon Robert McDougall QC (the Independent Reviewer).

This report and attachments sets out the findings of our review, in terms of the Scope of Work.

Part A – Review of 30 June 2020 valuation

We have reviewed the valuation of the outstanding claims liability of the Nominal Insurer performed as at 30 June 2020 by Finity. We have also had regard to the external peer review of that valuation undertaken by PWC, as well as the views of stakeholders that we have met or received submissions from as part of our broader review. Having carried out the review as described in this report, nothing has come to our attention that would lead us to believe that Finity's valuation results are unreasonable.

Part B - Assessment of material drivers of recent financial underperformance

The proposed level of premiums within the December 2019 submission of icare to SIRA of 1.52% included allowance for the trajectory of a return to an acceptable capital position for the Nominal Insurer, and appeared to be a reasonable premium in the circumstances. However that premium submission was withdrawn and a lower rate prevailed for 2020/21. The decision to forego premium increases for 2020/21 meant the premiums would be loss making and would contribute to the deterioration of financial strength of the NI. The level of future premiums is the major driver of long term financial stability of the NI.

With hindsight, the premiums charged for 2017/18 and 2018/19 were also insufficient to meet the associated claims costs and expenses, so are loss making.

Amongst claim outcomes, significant contributors to recent financial underperformance include:

- Poor Return-to-Work (RTW) rates, meaning more workers remain in receipt of weekly and medical benefits for longer periods. An underlying reason for poor RTW experience was the disruption to the claims management function in the period 2017-2019: The number of claims managers was dropped from five to one; a new claims management model was introduced; and then Guidewire was introduced. This manifested in a number of ways – for example, the number of Work Capacity Assessments performed by claims managers dropped very significantly through this period. While there are signs of improved performance in recent periods, the flow-on effects of this period of disruption will remain for some time;
- Growth in medical costs, due to over-inflation increases in unit costs of medical services, increased utilisation of medical services and an increased number of claimants remaining in the scheme due to poor return-to-work rates;

It is clear that the financial sustainability of the scheme is inextricably linked to appropriate ongoing application of tools such as WCAs in claims management, as well as appropriate application of medical spending to achieve claimant and scheme outcomes.

Part C - Review of NI financial forecasts and assessment of key drivers and dependencies for improvement in financial performance

We have reviewed the financial forecasts of icare and the Nominal Insurer (NI). We have conducted a scenario analysis to identify the key sensitivities and risks in the business plan.

In broad terms the major items that shall affect the long term financial position of the NI are, in order of importance, the amount of premiums that shall be collected by the NI, the investment return on financial assets, the level of claims costs (both existing obligations and emerging from future underwriting), and other expenses of the NI.

While we cannot say that any of the underlying assumptions that make up the projected financial statements are unreasonable, there are identifiable areas of uncertainty which have a significant influence on the financial projections.

The level of premium income, and the scope for increases in premium rates are a primary driver of the long term financial sustainability of the NI. We should also be aware of the possibility of some employers exiting the NI, and choosing to self-insure.

Investment returns in the long term are the second major driver of long term financial sustainability. While the assumed returns are in line with expectations for the current SAA of the NI, the focus on the accounting funding ratio is potentially constraining the SAA in ways that may be forsaking higher long term returns on investments.

While we have identified risks to claims cost outcomes in our review of the Outstanding Claims valuation, the variation in claims costs are less significant for financial sustainability than the level of premiums charged in future years and the investment returns.

Part D - Assessment of further opportunities to improve financial sustainability

In conduct of this review we have made a series of incidental observations about problems and opportunities for the scheme.

Benefit design

We have identified several areas of benefit design and operation where there may be opportunities or risks. We have set out detail on the following matters in Part D of this report cover:

- Reform to Whole Person Impairment (WPI) guidelines;
- Reforms to incentivise earlier assessment of Whole Person Impairment;
- Reforms to reduce prevalence of Work Injury Damage lump sum settlements;
- Potential reforms to change prevalence of commutation lump sum settlements;

Prudential monitoring and capital management

The prudential supervision of icare is somewhat opaque. SIRA acts as a regulator of premiums charged by icare for the Nominal Insurer, but it is our understanding that SIRA does not have responsibility for the prudential supervision of icare.

There do not appear to be defined requirements for reporting by icare to NSW Treasury, or a clear role of Treasury in prudential supervision. It appears that the use of accounting funding ratio as an indicator of prudential health has been established by the Board of icare, rather than being a measurement imposed by Treasury or any other external party. The accounting treatment of liabilities is also driving capital and prudential decisions of icare.

If clarity could be provided to icare around the respective prudential supervision roles of different stakeholders, then this would likely flow through to more efficient and sustainable scheme operation and management.

We recommend that icare consider explicit use of an Economic Funding Ratio or some analogous best estimate basis of liability measurement in their capital management and long term financial sustainability monitoring framework.

Glossary of terms

AFR – Accounting Funding Ratio. Measure of scheme financial position based on ratio of scheme assets to scheme liability, as reported in financial statements.

EFR – Economic Funding Ratio. Measure of scheme financial position based on ratio of scheme assets to scheme liability, with liability measured on a best-estimate basis using economic assumptions consistent with the asset base of the scheme. Specifically, discount rates are based on expected earning rate on scheme assets.

Risk Margin – The risk margin is an amount of provision held in addition to central estimate liability. It allows for the risk that outcomes will differ from the central estimate of the insurance liabilities, both because of the inherent uncertainty of the distribution of possible outcomes, and because of the randomness of future outcomes. By definition the central or best estimate of liabilities has a 50% probability of being too high and a 50% probability of being too low. The prudential margin is intended to increase the probability to higher than 50% that the estimate of claims liabilities will prove sufficient to pay the insurer's current obligations. Accounting, actuarial and APRA standards contemplate or require the inclusion of a risk margin in insurance provisions. The APRA prudential framework for private sector general insurers requires a risk margin that is determined based on a probability of adequacy of 75%. In recent months icare has shifted an 80% probability of adequacy to a 75% probability of adequacy.

POA - Probability of Adequacy. A statistical measure of the level of confidence that the outstanding claims provision will be sufficient to pay claims as and when they fall due. Also called Probability of Sufficiency.

Economic gap – The excess of the discount rate over the inflation rate is referred to as the economic gap. Typically, at least in the longer term, inflation and discount rates move somewhat in unison, and actuarial economic assumptions often allow explicitly for a long term 'economic gap' between discount rates and inflation via a gap assumption. The gap is effectively an estimate of long term after-inflation or 'real' interest rates. Finty apply a gap approach in the long term when measuring outstanding claims liabilities for the Nominal Insurer.

BEP - Breakeven Premium. The premium expected to be sufficient to cover the incurred cost of claims related to accidents that occur during the period of premium coverage, including an allowance for claims handling expenses. This is further differentiated in the icare context between the **Actuarial Breakeven Premium (ABEP)**, based on risk free discount rates, and the **Operational Breakeven Premium (OBEP)** based on a best estimate of investment earnings on premiums between receipt and disbursement.

RTW – Return to Work. The rate or tendency of injured workers to return to work over time after injury.

WPI – Whole Person Impairment. Measure of the level of permanent impairment to a person, including both physical and psychological impairment. Measured using an objective reference.

WID – Work Injury Damages. A type of lump sum settlement available via litigation in certain circumstances.

WCA – Work Capacity Assessment. An assessment by the claims manager of the ability of a worker to return to work. An important part of the overall claims management process for long-term injured workers.

SAA – Strategic Asset Allocation. The high level description of the percentage of assets invested in different asset classes.

Part A – Summary findings from review of 30 June 2020 valuation

We have reviewed the valuation of the outstanding claims liability of the Nominal Insurer performed as at 30 June 2020 by Finity. We have also had regard to the external peer review of that valuation undertaken by PWC, as well as the views of stakeholders that we have met or received submissions from as part of our broader review.

The most significant observations from our review of Finity's judgements in the outstanding claims liability valuation are below. Our observations about Finity's judgements should be considered in a context where individual actuaries may reach different judgements about the same data, and we do not assert that Finity's judgements in any of the matters below are wrong.

Translation of poor Return-to Work experience into injury severity distribution

Return-to-Work (RTW) performance at short durations has been very poor in recent accident periods, and this is flowing through to more claimants remaining on benefits at later durations as those accident periods develop.

It is unclear how this poor RTW performance for recent accident years will translate into outcomes in later development periods for these accident years. Plausible outcomes include:

- A. Poor RTW performance only impacts lower severity injuries, and does not lead to there being more claimants in the scheme with higher severity injuries. Thus when these low-severity injuries reach their time limits on benefit, these claims will cease. The number of higher severity injuries, including those over the 10%, 15% and 21% Whole Person Impairment (WPI) thresholds, is unaffected by poor RTW performance of lower severity injuries. The impact of poor RTW on the outstanding claims liability in this case is minor-moderate, and the cohort of affected claims is largely gone from the scheme by about 2025;
- B. Poor RTW experience leads to poor recovery outcomes for injured workers, which in itself leads to an increase in the assessed severity of some injuries. Some of these deteriorations in WPI cause workers to exceed critical WPI threshold (10%, 15% or 21%), leading ultimately to either longer periods on weekly and medical benefits, or Work Injury Damages (WID) settlements. The impact on the scheme in this case may be highly significant. Depending on the number of claims that ultimately cross thresholds into higher benefit categories, the impact may be highly significant, and the cashflow impact may persist for many years.

Finity have made a significant judgement about how this will unfold, and have set valuation assumptions based more on scenario A than scenario B. We have considered the evidence put forward by Finity as well as the views of the external peer review actuaries, of SIRA officers and of an anonymous submission to the McDougall Review which references wide consultation with practitioners on this matter. We are also aware of the comments of Peter McCarthy to the NSW Parliament's Law and Justice Committee, where he seems to suggest that Finity's assumptions (in an earlier iteration of their scheme valuation report from 2019) were optimistic in this respect. We have considered the possibility that Finity's work is optimistic in this respect. We consider that, rather than being optimistic, their judgements here appear to be reasonable estimates based on available evidence.

We consider that Finity's assumptions and outcomes related to this area of experience are based on available evidence and are not unreasonable.

WPI Threshold Disputes

Threshold Disputes, where a second higher WPI assessment extends entitlement in the scheme, are an emerging element of experience that may impact on Finity's valuation.

Finity assume that the WPI assessment that is used for determining the permanent impairment lump sum under S66 is determinative for the purpose of other benefit entitlements. To the extent that the WPI distribution for non-S66 purposes is becoming more severe relative to the S66 WPI distribution over time, then there is a risk that Finity are understating the longer term costs for WID, Weekly and Medical benefits in the higher WPI brackets.

We have asked Finity about this issue, and have received evidence that these threshold disputes are occurring, but at quite low numbers, below the level that would invalidate Finity's valuation approach and assumptions.

We consider that Finity's approach and assumptions about the impact of threshold disputes are not unreasonable.

Other matters

We have identifies a range of less significant matters where there appears to be scope for different interpretations of experience, including:

- Long term weekly continuance rates – allowance for pre-retirement mortality;
- Judgements about investigation and claims handling costs in the face of poor RTW experience;
- The number of future silicosis claims in respect of past dust exposures.

These matters are all much smaller in their potential impacts than the above matters, and the alternative view that we postulate is in some cases higher and in some cases lower than the estimate used by Finity.

We have no reason to consider that the liability estimate prepared by Finity is unreasonable as a result of any of these more minor issues.

Conclusion

We have reviewed the appropriateness of data inputs and data reconciliations undertaken. We have reviewed methods for suitability in the circumstances and against current actuarial practice. We have reviewed assumptions for consistency with available experience and trends. We have reviewed the analysis of change of valuation results. We have reviewed judgements made by the Primary Actuary for reasonableness and Materiality. We have reviewed whether key risks, sensitivities and uncertainties, and their implications, have been identified. We have considered whether there have been departures from relevant legislation (including regulations, prudential standards, subordinate standards and rules), and Professional Standards. We have given suitable weight to all Material factors.

Having carried out the review as described in this report, nothing has come to our attention that would lead us to believe that Finity's valuation results are unreasonable.

Part B - Assessment of material drivers of recent financial underperformance

There is a range of factors that has contributed to the recent financial underperformance of the Nominal Insurer.

Primarily, financial performance can be assessed in terms of premium sufficiency. But this then can be broken down to:

- Claim outcomes
- Expense structures
- Asset management

We have also addressed the appropriateness of different measures of financial performance here. Specifically, we consider that, when the long term financial sustainability of the scheme is being considered, the balance sheet position as indicated by the Accounting Funding Ratio may not be the best primary measure of financial position, and that some form of Economic Funding Ratio (using best estimate economic assumptions, rather than conservative discount rates) may be a better way forward.

B.1 Financial performance measurement framework

The capital management and long term financial sustainability framework for the Nominal Insurer has been established by icare based on accounting liabilities of the scheme, determined using risk-free discount rates, and summarised using the Accounting Funding Ratio (AFR) (the ratio of scheme assets to liabilities measured using risk free discount rates).

The Accounting Funding Ratio (AFR) has been established by icare to be a centrally important metric of financial position for the Nominal Insurer. The Capital Policy of icare/NI refers to Capital (difference of assets and accounting liabilities) as being core to the insurer's financial strength and long term sustainability. The Board's risk appetite in this area is expressed via the Target Capital Ratio Policy, again based on the accounting liability.

In our view, it may be more appropriate for icare to establish a capital management and long term financial sustainability framework that is based on an Economic Funding Ratio (EFR) (measured using a discount rate based on expected investment returns, as is done when setting premiums). This would in our view create or more internally consistent and stable measure of financial position over the longer term, and would focus considerations of risk away from short term noise such as volatility in discount rates.

We have discussed this topic in detail in Annexure B to this report.

We recommend that icare consider explicit use of an Economic Funding Ratio or some analogous best estimate basis of liability measurement in their capital management and long term financial sustainability monitoring framework.

B.2 Premiums over time

In our assessment of premiums that are currently being charged by the Nominal Insurer, we are cognisant of the fact that the icare Board chose to defer proposed premium increases from 1 July 2020. We understand this decision was made in support of the NSW Government's support of the economy in response to COVID-19.

We have been provided with a copy of the premium submission that icare made to SIRA for the 2020/21 premiums, as well as supporting material. The submission was prepared earlier in the premium approval cycle than previously, in order to provide early communication to employers. The submission was made to SIRA in December 2019, and was "not rejected" by SIRA in April 2020. Subsequent to this, icare decided to defer the premium increases. The response from SIRA to this deferral noted previous concerns regarding premium adequacy and funding position, and that these concerns were exacerbated by the premium deferral.

Our assessment of the NI premiums is in aggregate. As our terms of reference require the assessment of long term sustainability of the NI, we are considering premium income across the entire NI. We have not analysed those premiums which may be charged to particular industries, or individual employers. As such, we cannot provide opinions regarding cross subsidies within the scheme, other than to note that the provision of significant cross subsidies by some employers is an important factor in the decision for those employers to potentially exit the NI scheme and opt for self-insurance.

Beginning with the premium submission made by icare (*Final Premium Submission Letter.pdf*), we can see the structure, methodology and assumptions that form this submission. Importantly the submission is made in accordance with the five principles of the Market Practice and Premiums Guidelines (MPPG). As our focus is on the aggregate premium pool, the most relevant of the MPPG principles are Principle 1 (Premiums are fair and reflective of risk), Principle 5 (The premium basis needs to be consistent with the insurer's capital requirements), and to a lesser extent Principle 4 (Premiums should not be volatile or excessive).

In their actuarial valuation report at each June, Finity include a section regarding Breakeven Premium. Consistent with their valuation of outstanding claims, this Operation Breakeven Premium (OBEP) projects the claims cost for the various benefit types for the relevant future underwriting period. In performing these calculations, Finity allow for the pattern of underwriting through the year, so as to translate accident year projections to appropriate underwriting year projections.

The OBEP also allows for the budgeted expenses as supplied by icare.

For the OBEP, claims costs are discounted at assumed rates of investment return (based on expected asset earnings) instructed by icare, whereas the outstanding claims are discounted at risk-free rates. The rate in the OBEP in the June 2019 report was 5.0% pa (revised downward to 4.8% for the June 2020 report). There are also slightly different inflation assumptions in the OBEP, compared to the outstanding claims valuation. The overall premium calculation economic assumptions appear broadly reasonable for that purpose.

Part of Finity's analysis reconciles the OBEP to an Actuarial Breakeven Premium (ABEP) which calculates breakeven premium on the basis of the economic assumptions within the outstanding claims valuation.

In their June 2019 report, Finity estimated an OBEP for the 2020/21 underwriting year of 1.48% (without any claims savings; 5% pa discount rate). In the premium submission to SIRA, icare allowed for a breakeven premium level of 1.41%, so this estimate incorporated a 5% allowance for claims savings.

The proposed level of premiums within the December 2019 submission of 1.52% included allowance for the trajectory of a return to an acceptable capital position for the Nominal Insurer (at that time,

the capital adequacy framework and funding ratio were based on liabilities at 80% probability of sufficiency).

We note that the premium submission includes claims costs at their central estimate, and does not make any specific allowance for a profit margin.

It is clear that the premiums currently charged by the NI are insufficient to cover associated claims costs and expenses. icare is aware that the decision to forego premium increases for 2020/21 meant the premiums would be loss making and would contribute to the deterioration of financial strength of the NI.

The icare budget assumes premium increase for the next three underwriting years, beginning with an increase of over 12% from 1 July 2021. Our assessment of icare's financial forecasts in section C show that the intended return to the Green Zone of capital adequacy (Accounting Funding Ratio of 115%) is highly dependent on these premium increases.

In the June 2020 report, Finity estimated an OBEP for the 2020/21 underwriting year of 1.61%, and for the 2021/22 underwriting year of 1.58% (4.8% discount rate). Changes in the projection of future claims by Finity from their June 2019 to June 2020 report indicate a significant increase in the measured breakeven premium of icare.

We note that the budgeted rate of 1.57% for the 2021/22 underwriting year is lower than the OBEP of 1.58% from Finity's June 2020 valuation report. Further, the Finity estimate of OBEP does not allow for a component of premium to contribute to the restoration of the NI's capital position towards the desired target. Accordingly, the budgeted premium rates for the Nominal Insurer appear to allow for the progression towards sufficient premiums over several years.

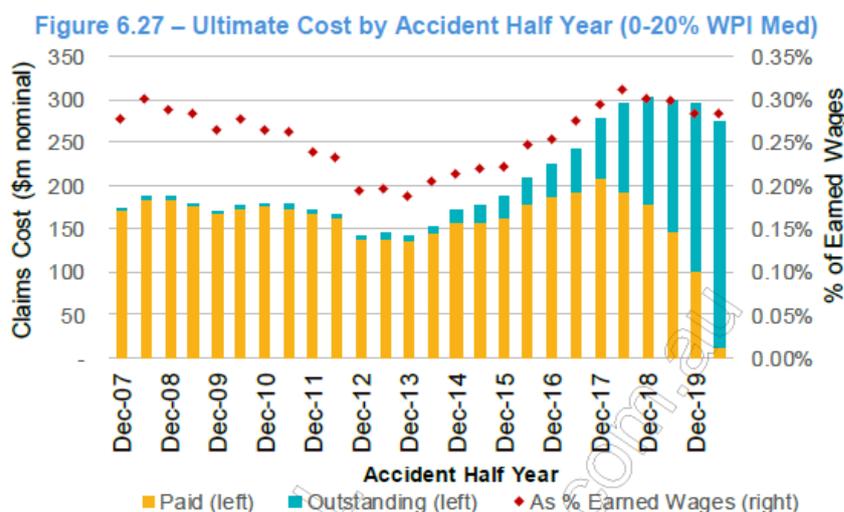
We understand that icare shall make a premium submission to SIRA prior to March 2021, in accordance with requirements. The premium submission shall include information from the December 2020 actuarial valuation by Finity, and we understand that SIRA supports this approach. We do not know the detailed results of the December 2020 valuation, or any impacts on the breakeven premium.

The level of future premiums is the major driver of long term financial stability of the NI. As shall be demonstrated in our scenario analysis in section C, premium increases shall be required in future years, or the financial sustainability of the NI will be jeopardised.

B.3 Claim outcomes

Medical costs

Medical costs have risen over time. The outstanding liability at 30 June 2020 for medical costs was \$5.3B, almost 38% of the liability for future claim payments in respect of past accident periods. To compare, in 2013 medical costs were 23% of the net liability before expenses. The following chart, reproduced from Finity’s 30 June 2020 OSC report, shows the long term history for injuries with WPI up to 20%. The experience for more seriously injured cohorts is similar.



The matter of medical costs is dealt with in icare’s submission to the Independent Reviewer on Management of Medical Costs for Injured Workers. An objective assessment of the merits of icare’s recommendations is beyond the scope of our task.

Medical costs for non-catastrophic injuries were in the range \$90-100M per payment quarter in 2015-2016, but grew rapidly, to peak in the range \$170-180M per quarter in some quarters during 2018 and 2019. Part of the dramatic increase in medical costs since about 2015 is due to normal inflation over that period, but most of the increase has been in terms of increased utilisation and in terms of increased unit costs per service. Finity include a small short term allowance for medical superimposed inflation in the forward projection, after which normal medical inflation is assumed to apply. The more recent data used in the 30 June 2020 OSC report shows early signs of moderation in the unit costs of medical benefits.

There is a range of contributors to the growth of medical costs, including:

- Growth in unit costs for medical services. This includes growth in attendant care hourly costs for catastrophically injured workers, a component which is well understood and unavoidable;
- Growth in utilisation of medical services. This may be partly tied up with the issue of “reasonably necessary”, but we consider this area to be beyond the scope of this review;
- Poor Return-to-Work rates from 2018 forward, meaning more workers are remaining in the workers compensation system for longer, and incurring medical costs all the while.

Work Capacity Assessments

A Work Capacity Assessment (WCA), and the resulting Work Capacity Determination (WCD), is a critical part of the return-to-work process for an injured worker, where there are significant periods of time away from work due to injury. An adverse WCD may impact on the worker's continued eligibility to receive weekly benefits.

From the SIRA website:

A work capacity assessment can include a review of the worker's functional, vocational and medical status.

A work capacity assessment helps inform work capacity decisions by insurers. Work capacity decisions include (but are not limited to) decisions about the worker's current work capacity, what may be suitable employment for a worker, what a worker may earn in suitable employment, and ability to return to their pre-injury employment or other suitable employment.

In addition to reviewing work capacity whenever new information about the worker's capacity is received, insurers must also conduct a work capacity assessment after 78 entitlement weeks, where it is likely that the worker's entitlement to weekly payments will continue beyond 130 weeks. The assessment must be completed before the worker accumulates 130 weeks of weekly payments.

After 130 weeks of weekly payments, the insurer is expected to assess the worker's work capacity at least every two years.

From the Finity 30 June 2020 OSC Report:

A Work Capacity Assessment assesses whether a claimant has "work capacity" and is made by the Scheme Agent. A claimant is considered to have work capacity if they can return to work in 'suitable employment', which is a reasonably broad test and includes (for example) where a claimant has the skills for a particular job regardless of whether that job is currently available in the local employment market.

So, WCAs are a formal and mandated process whereby a worker's entitlement to continue to receive weekly and other benefits is assessed at around the 2-year post-injury mark, and then two-yearly thereafter. These were introduced as part of the 2012 reforms, and were viewed in the following years as a critical part of the overall toolkit for achieving appropriate return-to-work outcomes. For example, the 30 June 2015 outstanding claims valuation report prepared by PwC contained many references to the important role of WCAs in identifying workers that can return to work around the 2-3 year post-injury period.

In the period to about the June quarter of 2017, there were around 300 adverse WCDs made per quarter, with most relating to continued eligibility to receive weekly benefits. In the period from about September 2017 to June 2019, the number of adverse WCDs dropped from a prior average of around 300 decisions to an average of around 100 adverse decisions per quarter.

The drop in the number of adverse decisions coincided with a decrease in the number of scheme agents from 5 to 1, and so it appears likely that the drop was related to insufficient and/or inexperienced claims management resources.

More recently, the level of WCAs has increased closer to pre-2017 levels. According to Finity:

The proportion of claims that exit the scheme at 2-5 years duration is influenced by the number and effectiveness of Work Capacity Decisions. During 2015-2017 around 9% of active claims at 2-5 years duration exited each quarter. During 2018-19 this reduced to

4.5%. The rate has recently returned to around 7% and the valuation anticipates this rate of exit will continue in future.

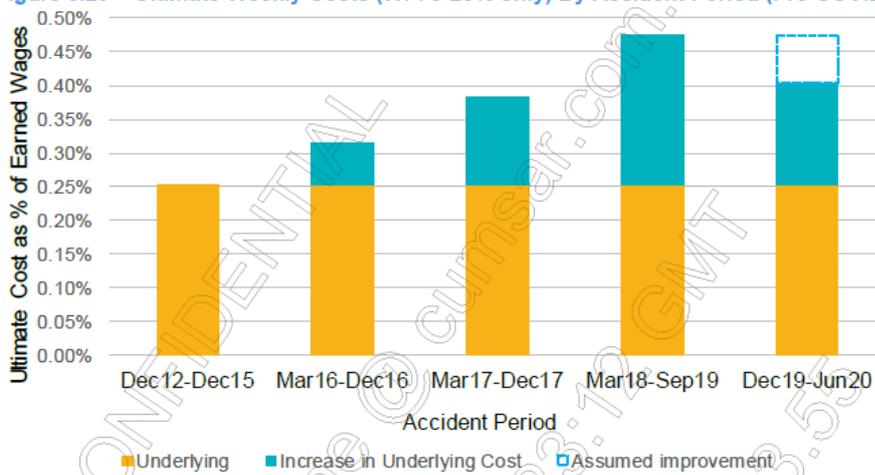
Given the critical importance of WCAs in driving Return-to-Work and scheme financial performance, it is astonishing to us that the number of WCAs was allowed to drop so much, and for such a long period. Given this drop, it appears that it was inevitable that return-to-work experience would deteriorate dramatically in the following quarters.

Scheme disruption to claims management

The scheme had a period of enormous transition from 2017 to 2019. The number of claims managers was dropped from five to one; a new claims management model was introduced; and then Guidewire was introduced. While we have focussed in detail on the disruption to Work Capacity Assessments above, this can be thought of as a proxy for much broader disruption to the claims management process. Observable impacts through that period and in the flow-on period to the present day included slow commencement of service provision for injured workers, poor Return-to-Work rates and increases in costs.

Finity have considered WCAs and other forms of disruption in the claims management model together in their 30 June 2020 OSC report. Their figure 5.29, reproduced below, shows a very significant increase in costs related to these disruptions, but also that, based on the evidence they have considered, the impacts of disruptions are now reducing over time. We have considered the evidence Finity have relied on, and we consider that, while it is uncertain, the recent experience showing an assumed reducing impact of disruption (such as an increased utilisation of WCAs in the last year) appears to be a reasonable finding.

Figure 5.29 – Ultimate Weekly Costs (WPI 0-20% only) By Accident Period (Pre-COVID)



Our overall observations about disruptions are that the scheme financial position suffered dramatically when claims management processes were not occurring in a timely manner, but that the financial position is improving slowly now that these processes at a more appropriate level and in a more timely manner. However the recovery path is not fast – it will take time for WCAs and other parts of effective claims management to cause Return-to-Work levels to increase to the pre-2017 level.

The task of identifying of the correct balance of resources and tools to achieve optimal claims management outcomes is beyond our scope. However, it is clear that the financial sustainability of the scheme is inextricably linked to appropriate ongoing application of tools such as WCAs in claims management.

B.4 Earlier years' premium

As noted, in B.2, Finity include a section regarding Breakeven Premium in their actuarial valuation report at each June. Section B.2 included analysis of the Breakeven Premium for the 2020/21 underwriting year, reflecting the claims cost for the various benefit types consistent with the claims assumptions in the outstanding claims valuation report at 30 June 2020.

We are also able to observe earlier years' estimates of Breakeven Premium from Finity reports at each 30 June. These provide estimates of Breakeven Premium for the 2017/18, 2018/19, and 2019/20 underwriting years. Each estimate in the relevant Finity reports reflects the claims costs assumptions, economic parameters, and underwriting pattern that were prevailing at the time of each outstanding claims report.

We are able to assess the Breakeven Premiums in hindsight; actual past payments (to March 2020) replace the projected payments within the BEP calculation, and payments after March 2020 reflect the claim payment assumptions for relevant accident years as contained in the most recent available outstanding claims report (June 2020).

In performing this hindsight analysis, we have only allowed for changes in claims payments and projections. We have not changed expenses that were included in the original premium bases, and have retained the same discount rate that was adopted in the original basis.

2017/18 Underwriting year

In the 30 June 2017 Actuarial Valuation report, the estimated Breakeven Premium rate for 2017/18 (assuming a flat investment return of 3.80% pa) had a claims costs of \$1,980m or 1.06% of wages. Allowing for expenses of \$733m led to a BEP of 1.46%.

Of the total claims cost of \$1,980m, Weeklies accounted for \$662m, and Medical accounted for \$555m.

As outlined above, I have restated the claims costs in hindsight, using actual past payments and the updated outstanding claims valuation models (June 2020 valuation).

The restated total claims cost estimate (discounted to the same time as the original BEP estimate) is \$2,467m, or 1.31% of wages. This represents an increase of almost 25% for those periods that covered the 2017/18 underwriting year. Using the same expenses of \$733m produced a hindsight BEP of 1.70%, around 20% higher than the original BEP for 2017/18 of 1.46%.

So with the benefit of hindsight with respect to claims costs, it may be observed that the premiums for 2017/18 were insufficient to meet the associated claims costs and expenses.

Of the total hindsight claims cost of \$2,467m (~25% higher than original estimate), Weeklies accounted for \$989m (~50% higher), and Medical accounted for \$784m (~40% higher).

The poor RTW experience achieved over the last few years has directly led to an increase in the level of Weekly payments, and to a lesser extent increases in Medical cost. Of the overall increase in claims costs with hindsight, poor RTW experience forms the bulk of the recognised deterioration; indeed other claims cost categories have performed better than expected in the original premium projections.

2018/19 Underwriting year

In the 30 June 2018 Actuarial Valuation report, the estimated Breakeven Premium rate for 2018/19 (assuming a flat investment return of 3.60% pa) had a claims costs of \$2,163m or 1.13% of wages. Allowing for expenses of \$868m led to a BEP of 1.58% of wages.

Of the total claims cost of \$2,163m, Weeklies accounted for \$714m, and Medical accounted for \$672m.

As outlined above, I have restated the claims costs in hindsight, using actual past payments and the updated outstanding claims valuation models (June 2020 valuation).

The restated total claims cost estimate (discounted to the same time as the original BEP estimate) is \$2,605m, or 1.36% of wages. This represents an increase of around 20% for those periods that covered the 2018/19 underwriting year. Using the same expenses of \$868m produced a hindsight BEP of 1.81%, around 15% higher than the original BEP for 2018/19 of 1.58%.

So with the benefit of hindsight with respect to claims costs, it may be observed that the premiums for 2018/19 were insufficient to meet the associated claims costs and expenses.

Of the total hindsight claims cost of \$2,605m (~20% higher than original estimate), Weeklies accounted for \$1,082m (~50% higher), and Medical accounted for \$784m (~20% higher).

The poor RTW experience achieved over the last few years has directly led to an increase in the level of Weekly payments, and to a lesser extent increases in Medical cost. Of the overall increase in claims costs with hindsight, poor RTW experience forms the bulk of the recognised deterioration; indeed other claims cost categories have performed better than expected in the original premium projections.

2019/20 Underwriting year

In the 30 June 2019 Actuarial Valuation report, the estimated Breakeven Premium rate for 2019/20 (assuming a flat investment return of 5.0% pa) had a claims costs of \$2,410m or 1.13% of wages. Allowing for expenses of \$825m led to a BEP of 1.48% (with no allowance for claims savings).

Of the total claims cost of \$2,410m, Weeklies accounted for \$919m, and Medical accounted for \$784m.

The restated claims costs (in hindsight) are not materially different from the original estimates, indicating that the breakeven premiums for 2019/20 were sufficient to meet the associated claims costs and expenses.

B.5 Expense structures

We have not delved deeply into the expenses of the icare claims management model. We note that there has been a significant shift in the form of the model, with a significant investment in software solutions with a corresponding anticipated reduction in the number of people involved in the claims management process. This cost-benefit assessment of this choice is beyond the scope of our review, but we note that in discussions with the former Interim GE, Personal Injury at icare and others at icare, he advised that, in his short time working in that area of the business, it had become clear to him that there was a need for more human involvement in processes such as claim triage, and that the reliance on software was not working as well as previously hoped. So, we expect that there may be further changes to the claims management model, including changes in the balance between human and software functions and costs.

B.6 Asset Management

The scheme assets are managed by TCorp, applying a Strategic Asset Allocation (SAA) set by the icare Board. We understand that the SAA is set using a liability-aware approach – that is, the Board consider the characteristics of the liability when determining the asset allocation, rather than just pursuing an overall investment strategy based solely on the interaction between risk tolerance and asset risks.

We have not conducted a detailed review of the asset management for the Nominal Insurer, as this is beyond the scope of our review. We have provided comments on one aspect of the asset management approach, related to hedging of interest rate risk, in Appendix B1 to Annexure B. While it is not within our scope to assess the appropriateness of management decisions such as this, we consider that decisions such as this are based in the measurement framework of the Accounting Funding Ratio. If the icare Board considered financial position using other measures such as an Economic Funding Ratio, this may reduce or remove the motivation for, and significant cost of, the interest rate hedge.

Our overall observation about the asset management approach is that, while a liability-aware approach is reasonable (although not universally adopted in similar schemes), it is important that the right measure of liability is used for the context.

Part C - Review of NI financial forecasts and assessment of key drivers and dependencies for improvement in financial performance

We have reviewed the financial forecasts of icare and the Nominal Insurer (NI), as contained in the document "NI Business Plan FY21- 20200929.pdf". That document contains information regarding the environment in which the NI operates, stakeholders and customers, governance, and risk management. Our focus is on section 11 (NI financials) and section 12 (NI Budget and Financial KPIs). Section 12 contains projected financial statements (Profit and Loss, Balance Sheet, Cashflow) for financial years to 30 June 2030. Section 11 includes relevant budget information with regard to premiums, claims & claim savings, and investment returns that are adopted in the projected pro-forma financial statements.

It is important to note that for a long-tailed insurer such as the NI, any projections are subject to considerable uncertainty, and the only thing we can say with confidence with respect to 10 year projections is that they will be wrong. Uncertainty in terms of projections reflects underlying uncertainty with regard to:

- ultimate claims cost, for both past accident years (i.e. liabilities) and future accident years
- investment income
- expenses
- premium income in future underwriting years

In assessing the financial forecasts in the business plan, we are conscious of this uncertainty, as well as the identification of those factors that are material to the modelling of the forecasts. We shall provide comments on some components of the forecasts, below.

In addition, in order to assess the reasonability of the forecasts, we have constructed our own simplified model of the Profit & Loss and Balance Sheet for the next ten years. We recognise that the models employed by icare in the production of the forecast financial statements are significantly more complex than our simpler model, and we cannot expect to reach a close match of the icare projections. Nevertheless, our simplified model captures the key drivers of the financial forecasts, and also allows us to model simple scenarios.

The forecasts from the NI business plan are reproduced in Annexure C. We have also included a detailed description of our replicating model of the NI business plan forecasts in Annexure C.

We note that the projected funding ratio is assumed to increase over 100% in the year ending 30 June 2021 (Orange zone for capital adequacy), then to reach 115% by 30 June 2027 (Green zone).

C.1 Assumptions underlying the business forecasts, and associated risks

Premiums

For premiums, the models assume premium rates that will be charged according to the following pattern by underwriting year:

Year ending 30 June	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Premium rates in budget	1.39%	1.57%	1.59%	1.62%	1.62%	1.62%	1.62%	1.62%	1.62%	1.62%

These premium rates are applied to wages. Future wages allow for wage inflation, and also growth in exposure of 1.5% per annum, essentially allowing for an increasing workforce.

Not surprisingly, the future projections are highly dependent on the assumed premium rates. Continued writing of premiums that are insufficient to meet claims costs and expenses shall result in

a deterioration to the NI financial position in the longer term. We note that the budget allows for a significant increase in premiums for the 2021/22 underwriting year (from 1.39% to 1.57%, or a 13% increase). This follows no increase to rates from the 2019/20 to the 2020/21 underwriting year. Further increases in premium rates are assumed in 2022/23 and 2023/24.

Should the increases in premiums not occur as budgeted, the return to the Green zone shall be delayed. The sensitivity to premium rate shall be explored in more detail below. I note that Shock Scenario Analyses performed by Finity indicate that a 10% change in premium is equivalent to a change of just under 2% in the funding ratio for each future year (cumulative).

The assumption of continued growth of wage roll does not allow for the risk that some premium payers may exit the NI scheme, and opt for self-insurance or Specialised Insurance. This leakage from the premium pool is more likely to occur if the premium rates within the NI are increased. When considering the costs and benefits of a move to self-insurance, it is reasonable to assume that large employers who have low claims costs relative to their industry's experience, are more likely to opt out of the NI scheme.

A loss of the premium pool to self or specialised insurance may not be accompanied by a commensurate drop in claims costs, and is unlikely to be accompanied in a commensurate fall in expenses. In this scenario, the return to the Green Zone will be delayed. We have modelled an indicative loss of premiums in specific scenarios below.

Claim payments

The primary source of the assumed claim payments is the cashflow projections from Finity's claims valuation as at 30 June 2020. We can confirm that the payments from the Finity report have been correctly incorporated into the financial projections.

The projected financial statements also allow for reductions in claims payments, as result of planned initiatives in claims management.

Year ending 30 June	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Savings in claim pmts (\$m)		19	34	50	63	67	71	74	68	67
Inflated Finity pmts (\$m)	2,605	2,642	2,728	2,813	2,913	3,021	3,130	3,232	3,328	3,419
Savings as % of pmts	0.0%	0.7%	1.2%	1.8%	2.2%	2.2%	2.3%	2.3%	2.0%	2.0%

Notwithstanding the risks identified in our review of Finity's valuation of outstanding claims, the assumed savings are relatively modest, and thus achievable. Should the claims savings not eventuate as forecast, the return to the Green Zone for Capital Adequacy would be slightly delayed.

Claim liabilities

The projected Balance Sheet makes calculation of claims liabilities at future balance dates. At each future date, the liabilities consist of projected payments after that date for all accident periods prior to that balance date. As with the claim payments, the primary source of the projected payments is the cashflow projections from Finity's claims valuation as at 30 June 2020. We can confirm that the payments from the Finity report have been correctly incorporated into the calculation of future claims liabilities.

The future liability estimates also allow for claims handling expenses, and a risk margin intended to provide 75% probability of adequacy.

Consistent with the approach to claim payments, anticipated savings in future payments also act to reduce the liabilities for claim payments. The projected claims liabilities also allow for reductions, as result of planned initiatives in claims management.

Year ending 30 June	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Savings in claims liabs (\$m)	139	121	132	109	48	46	44	43	-58	-54
Projected claims liabs (\$m)	17,952	17,678	17,782	18,186	18,654	19,191	19,723	20,243	20,760	21,377
Savings as a % of liabs	0.8%	0.7%	0.7%	0.6%	0.3%	0.2%	0.2%	0.2%	-0.3%	-0.3%

Notwithstanding the risks identified in our review of Finity's valuation of outstanding claims, the assumed savings are relatively modest, and thus achievable. Should the claims savings not eventuate as forecast, the return to the Green Zone for Capital Adequacy would be delayed.

We are unsure why the savings in claims liabilities become negative at 30 June 2029 and 2030, but this is a minor impact.

Discounting of claim liabilities

In estimating claim liabilities at future dates, it is necessary to make assumptions regarding the appropriate discount rates to adopt at those future dates. For the liabilities at 30 June 2020, the adopted discount rates were based on the yields on Commonwealth Government Bonds. For the period beyond the longest dated bond (2047), a long-term forward rate of 4.5%pa was adopted.

We are able to derive forward rates for all durations as at 30 June 2020. The forward rate is the rate that applies to a particular future year of discounting, whereas the spot rate is the per annum rate that is used to discount cash flows across multiple years from the period of payment to the balance date. The spot rates thus represent an amalgam of forward rates.

In selecting appropriate discount rates at future dates, the financial projections have assumed that the forward rates at 30 June 2020 are the best estimate of the applicable forward rates at the future dates of calculation. As an illustration, we can observe the adopted forward rates at 30 June 2020 are as follows:

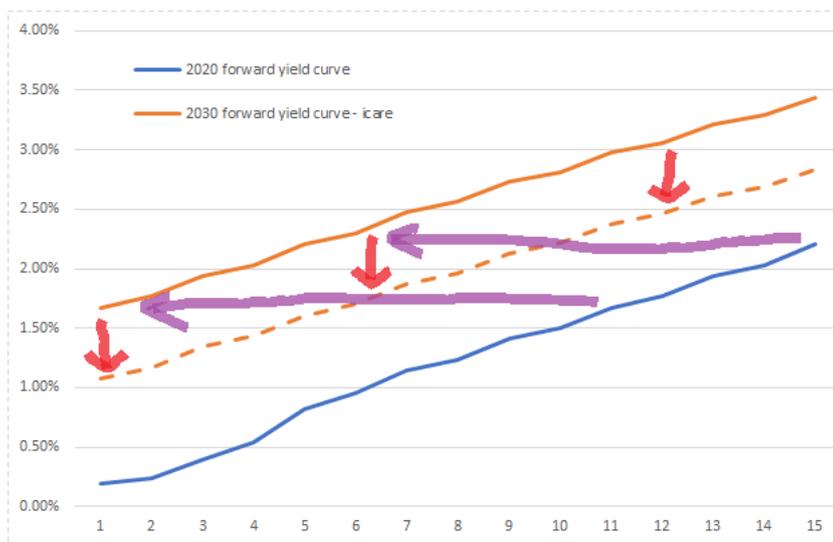
Year ending 30 June	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Years from 30 June 2020	1	2	3	4	5	6	7	8	9	10
Forward rate pa	0.2%	0.3%	0.2%	0.7%	0.7%	1.0%	1.1%	1.3%	1.3%	1.6%

When discounting the forecast liabilities at 30 June 2025, icare have assumed the applicable yearly forward rates at that time will be 1.0%, 1.1%, 1.3%, 1.3%, 1.6%, The assumption is that the forward rates at 30 June 2020 are the best estimate of the forward rates that shall apply at those future dates i.e. the forward rates remain "static" for future periods. Should the projected liabilities be projected at very long durations (after 2047), the adopted forward rates would be 4.5%pa for all future years.

We recognise that the term structure of Commonwealth Government Bonds at future balance dates is uncertain, and the approach taken by icare in the projected liabilities reflects the current term structure. However this approach does not recognise that the yields on government bonds include a duration premium; i.e. investors shall expect a higher return on a long-dated bond, recognising the price of that bond is subject to higher volatility than a shorter-term bond.

The chart below demonstrates the different approaches, using the 2030 forward year as an example:

- The blue line is a curve of forward rates implied by 2020 bond yields. This curve is used to set discount rates for valuation as at 2020;
- The icare approach for determining discount rates for determining liability as at 2030 is to adopt the solid orange line at that date. This is simply the rates from the blue curve, shifted to the left by ten years, as indicated by the purple arrows;
- The alternative approach is to recognise that the forward rates for later forward durations as at 2020 include a duration premium which will reduce as those forward dates come closer. The orange dotted line is the icare forward rates for 2030, but shifted downwards to allow for unwinding of the duration premium by ten years, as indicated by the red arrows.



The effect on liability of allowing for duration premium is to reduce the effect of discount, and so to determine a higher liability, with this increase in liability being larger for dates further into the future. In order to assess the sensitivity of future liability estimates to an explicit allowance for a duration premium in the yield curve, we have recalculated those future liabilities using forward rates adjusted for duration premium. These alternative rates allow for a duration premium of 0.05-0.07% for each additional year, and the impact on liability increases over time, and reaches a 4.9% increase compared to the Finitly scenario by 2030.

The higher measured liabilities would flow directly to a lower accounting funding ratio, and the return to the Green zone for capital adequacy would be delayed relative to the trajectory assumed in the Business Plan.

Overall, we consider that the forward discounting process adopted by icare in their business plan projection may be slightly optimistic in the above respect. The trajectory showing continued improvements is sensitive to the adopted approach here, and we think that, all other things being equal, if icare made allowance for unwinding of the duration premium in the forward rate structure used for discounting the trajectory may not be as favourable.

Notwithstanding any concerns about the term structure here, this duration premium effect exists only when using an accounting funding ratio. If icare were considering liabilities using a best estimate basis such as the Economic Funding Ratio considered elsewhere in this report, this phenomenon would not exist.

Investment return

The projections in the financial statements assume an investment return of 4.8%pa for all future periods. This assumption reflects the Strategic Asset Allocation (SAA) with 49% of investment assets in growth assets.

While we note that future investment returns are subject to considerable volatility, this projected investment return is not unreasonable in light of the SAA. Elsewhere in our report we have commented on the approach taken by icare, where the use of the accounting funding ratio and associated targets has influenced the SAA of the NI. Similar insurers in other Australian jurisdictions have a greater weight of their SAA in growth assets, reflecting the long term objective of higher long term investment returns with less focus on short term volatility.

In broad terms, the projected investment return of 4.8% per annum appears to have been correctly incorporated into the projected financial statements above. We note the discontinuity in the projected investment income within the Profit & Loss statement. While there are steady increases in investment income in the years to 30 June 2025 (3-5% increase in each year), there is then a 20% fall in the year to 30 June 2026.

Expenses

While we have made no specific analysis of the expenses in the financial statements, we note that the level of non-claims expenses are assumed to reduce in the next couple of years, compared to the operating expenses in the year ending 30 June 2020.

Operating expenses include the statutory levies, and a significant allowance for transformational expenses associated with technological changes. The reduction in expenses in icare's projections in the short term may be associated with reduced expenditure on such systems.

Summary

We are able to understand the logic and assumptions that underlie the projected financial statements within the Business Plan.

It is important to note that the financial projections in the Business Plan reflect deterministic models, which do not attempt to allow for the inherent uncertainties in the underlying parameters that affect long term financial outcomes. As such the financial statements represent one possible outcome for the NI. Accordingly the trajectory of the accounting funding ratio which results from the financial projections, are one plausible pathway to recovery in the capital position of the NI.

In broad terms the major items that shall affect the long term financial position of the NI are, in order of importance, the amount of premiums that shall be collected by the NI, the investment return on financial assets, the level of claims costs (both existing obligations and emerging from future underwriting), and other expenses of the NI.

While we cannot say that any of the underlying assumptions that make up the projected financial statements are unreasonable, there are identifiable areas of uncertainty which have a significant influence on the financial projections.

The level of premium income, and the scope for increases in premium rates are a primary driver of the long term financial sustainability of the NI. We should also be aware of the possibility of some workplaces exiting the NI, and choosing to self-insure.

Investment returns in the long term are the second major driver of long term financial sustainability. While the assumed returns are in line with expectations for the current SAA of the NI, the focus on the accounting funding ratio is potentially constraining the SAA in ways that may be forsaking higher long term returns on investments.

While we have identified risks to claims cost outcomes in our review of the Outstanding Claims valuation, the variation in claims costs are less significant for financial sustainability than the level of premiums charged in future years and the investment returns.

In the Business Plan, the capital position of the NI (as measured using the accounting funding ratio) returns to the Green Zone in 2026/27. Apart from the sources of uncertainty identified above, the ratio is sensitive to the yields on Commonwealth Government Bonds at each future balance date. Should the forward rates at those balance dates be lower than assumed in the financial projections, the ratio will be lower. This is despite the possibility that changes in the yields have little effect on the claims, operational and investment activities of the NI.

Conversely, if the yields at future balance dates be higher than assumed in the financial projections, the liabilities will be lower, and the ratio will be higher. Again, these circumstances may have little effect on the claims, operational and investment activities of the Nominal Insurer.

C.2 Further modelling and scenario analysis

We have constructed our own simple model of future Profit & Loss statements, and Balance Sheets for the Nominal Insurer. Our model has three main uses:

- (i) Construction of our simplified model assists in our assessment of the reasonability of the more sophisticated and complex forecasts contained within the NI business plan;
- (ii) By changing the underlying assumptions, we are able to identify the most significant factors that affect the long term financial sustainability of the NI;
- (iii) Our model assists us to consider various scenarios with respect to claims, premiums, and investment return; and to observe the resulting indicators of financial sustainability.

Details of the model and its shortcomings are contained in Annexure C. The base case of the model is also shown in Annexure C. The scenarios considered are detailed in Annexure D.

The simplified model allowed us to consider the sensitivity of the long term forecasts to changes in the underlying variables, and to consider plausible scenarios of variables in future years. As noted in Annexure C, it is the magnitude and direction of the changes in ratios that is more important than the underlying numbers. It is the trajectory of the ratios relative to the base case which provides insight into the effect of changes in variables on financial sustainability.

Elsewhere in our report, we have identified shortcomings in the use of the Accounting Funding Ratio (AFR) as an indicator of capital adequacy and long term financial sustainability. We have retained this measure given icare's focus on AFR for capital management. We have also included the Economic Funding Ratio, on the basis that it is more appropriate measure of long term financial sustainability for schemes such as the Nominal Insurer.

Claims scenarios

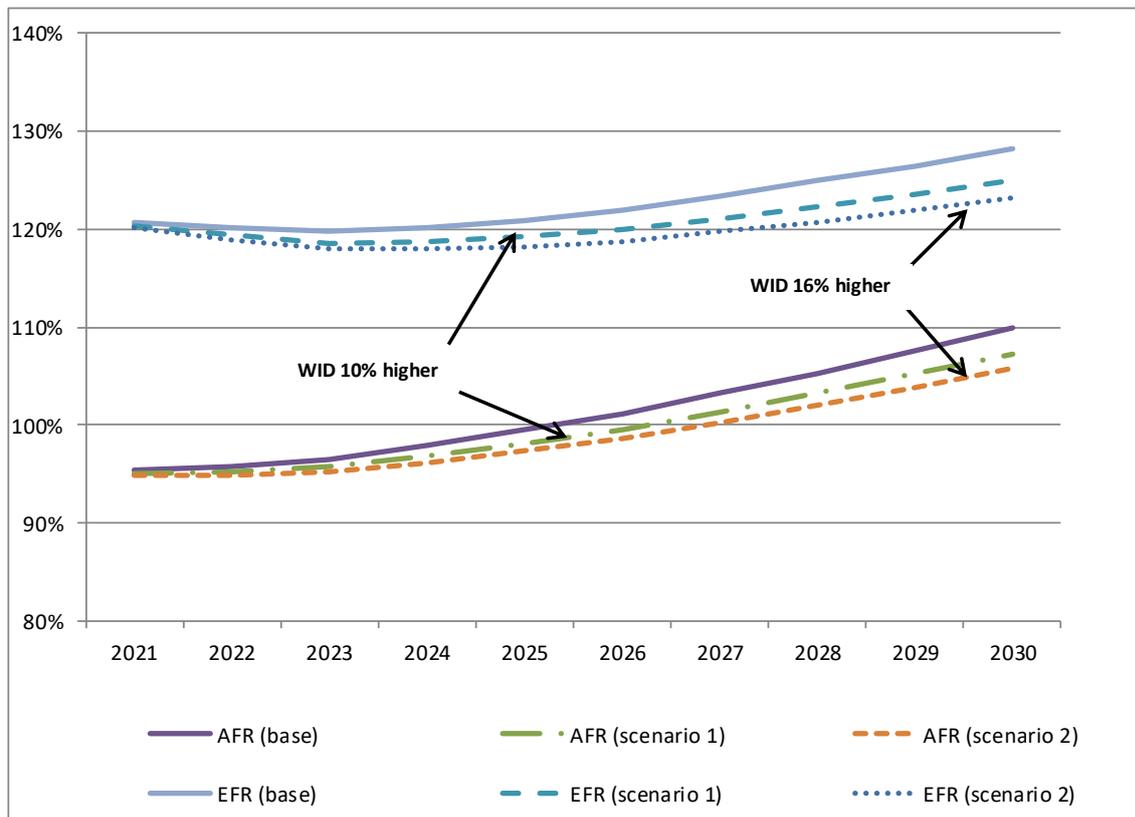
The first set of scenarios, allowed for changes in the claims assumptions. The mechanism by which we allowed for this scenario was by a 10% or 16% change in the claim payments for WID, for accident years 2017/18 and later.

The first scenario, where WID claim payments are 10% higher reflects the risk that Whole Person Impairment (WPI) shall be higher than allowed for in the valuation of outstanding claims as at 30 June 2020. This could include the continued emergence of psychological claims. Should this risk eventuate, there would likely be an increase across a range of payments, however the uplift in WID claims represents a convenient way to allow for these emerging higher claims.

Effectively the 10% increase allows for a higher number of claims, but where the additional claims will have a smaller size than the experience for existing claims.

The second scenario, where WID claim payments are 16% higher effectively allows for a higher number of claims, and these additional claims will have a similar claim size to the existing claims.

The graph below shows the resulting trajectories of the AFR and EFR, as well as the base case.

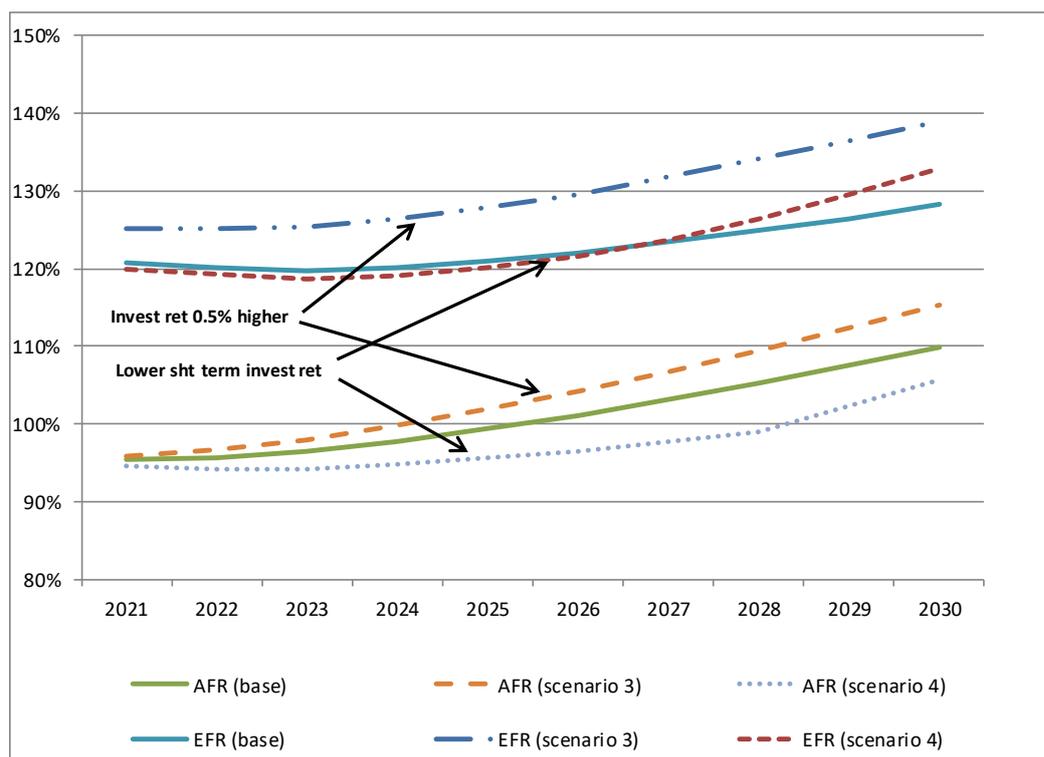


Not surprisingly, both scenarios in this case result in deteriorations in AFR and EFR, with scenario 2 (16% increase in WID) exhibiting a larger deterioration. Nevertheless the magnitude of the difference in ratios is relatively minor at 10 years.

Investment return scenarios

The second set of scenarios (scenario 3 and 4), consider variation in investment return. The base assumptions assume an investment return of 4.8% pa for all future years. Scenario 3 considers investment return that is 0.5% higher i.e. 5.3% pa for all future years. This higher expectation for investment return would be consistent with a Strategic Asset Allocation with a higher proportion in growth assets. Such an allocation would also have greater short term volatility.

Scenario 4 assumes that investment returns will be 4.0% pa until 30 June 2028, then 6.0% pa thereafter. This scenario is representative of the view that investment returns in the short to medium term shall be subdued, with a bounce back in the longer term.



For scenario 3, the higher investment returns result in higher AFR and EFR, with the gap over the base case increasing over time, reflecting a compounding effect of the higher investment return over time. The EFR takes an immediate “jump” – this reflects that the liabilities on an economic basis are discounted at the higher rate of assumed investment earnings; this leads to lower liabilities and a higher EFR.

For scenario 4, the AFR shows deterioration in the period of lower assumed returns, then a partial recovery corresponding to the period of the higher investment returns. In this scenario, the EFR, does not differ markedly from the base case until the period of higher investment returns. Unlike scenario 3, the EFR does not have an immediate “jump”; this shows that the effect of the lower discount rates in the short term is offset by the higher discount rates in the longer term. Beyond 2028, the economic liabilities are discounted at 6% pa, and this contributes to the higher EFR than the base case.

When looking at scenarios 3 and 4 in comparison to scenarios 1 and 2, both sets have relatively modest changes relative to the base case. The greater changes in the AFR and EFR in the investment scenarios shows that the investment return assumptions are a more significant driver of long term sustainability than assumptions regarding claims costs. This also reflects our view that the outstanding claims estimates are reasonable, and adverse experience in claims relative to the base case would not be expected to be large.

Premium scenarios

The third set of scenarios (scenarios 5, 6, and 7) consider variation in premiums. In the current (2020/21) underwriting year, icare chose not to have any increase in premiums for the NI, despite the non-rejection of a premium increase by SIRA. Apart from the exploration of particular scenarios, the analysis allows us to observe the effect of premium rates on long term sustainability.

The table below shows the assumed premium rates by underwriting years in the base case and the scenarios:

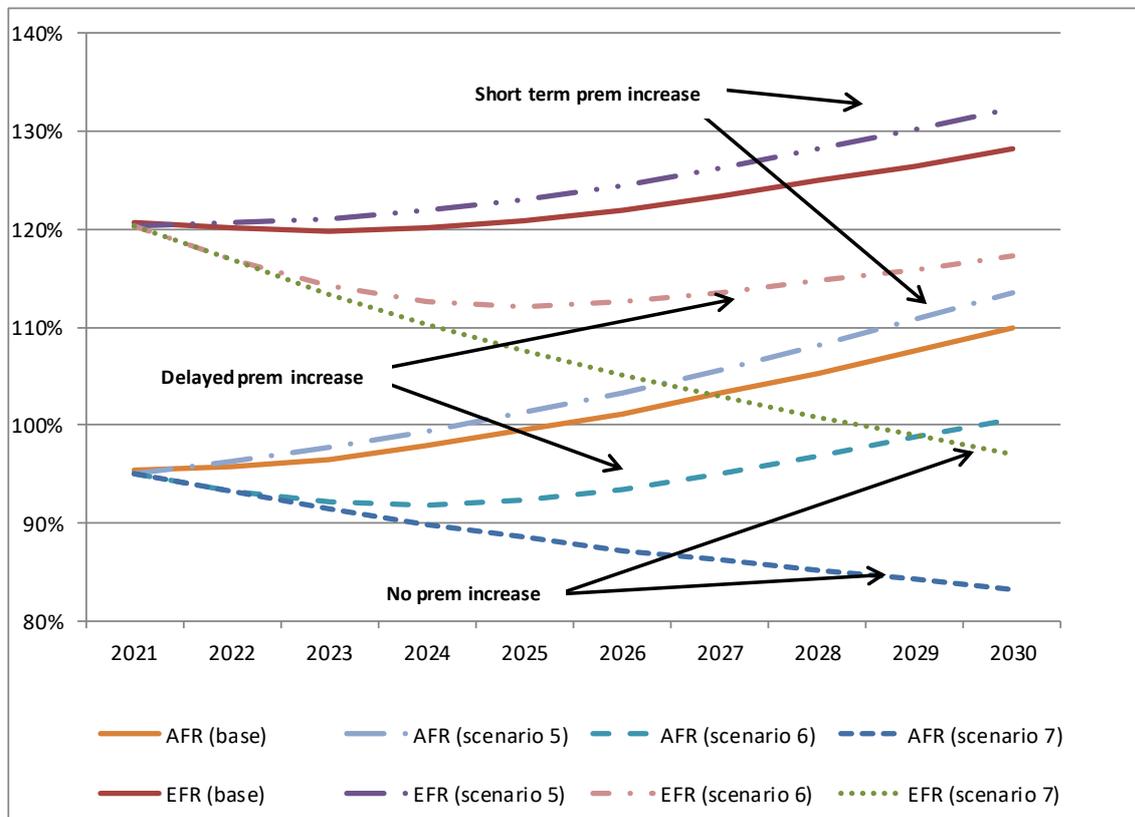
UWyr	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Base	1.57%	1.59%	1.62%	1.62%	1.62%	1.62%	1.62%	1.62%	1.62%
Sc 5	1.67%	1.67%	1.67%	1.67%	1.67%	1.67%	1.67%	1.67%	1.67%
Sc 6	1.39%	1.45%	1.50%	1.55%	1.60%	1.62%	1.62%	1.62%	1.62%
Sc 7	1.39%	1.39%	1.39%	1.39%	1.39%	1.39%	1.39%	1.39%	1.39%

The base case allows for a significant increase for the 2021/22 underwriting year, then modest increases in premium rate for the next two underwriting years.

Scenario 5 allows for a significant increase (20%) for the 2021/22 underwriting year, then a steady premium rate.

Scenario 6 allows for more modest increases that are slightly lower than the bases case. This case illustrates one possibility should more significant premium increases prove politically unpalatable.

Scenario 7 is a more extreme scenario where there is no increase in premiums i.e. they remain at the level in 2020/21.



Taking scenario 7 first, we can see that should there be no increase in premium rates, there will be significant falls in both the EFR and AFR. The decline in the ratios does not moderate, with both ratios showing continued downward trajectories, reflecting the effect on the continued writing of loss making premiums. The current capital of the NI is not sufficient to subsidise loss making premiums. In this scenario, the EFR would go below 100%.

For scenario 5, the increase towards profitable premiums shows a more favourable trajectory than the base case. The new periods of higher premiums allow for some “balance sheet repair” over the period of the projections.

Scenario 6 shows that a delay in premium increases coincides with deterioration in both the AFR and EFR, and the ratios only recover when the premium levels approach 1.6%. Premiums in the next few years are insufficient to cover the associated claims costs and expenses, so the financial position deteriorates.

Taken together, we can observe that the premium levels and pathway are significant contributors to the long term sustainability of the scheme. Further the scenario analyses indicate they are a more significant driver of sustainability than the level of investment return. It would appear that the NI must increase premiums, and any delays in the increase to premiums will result in further deterioration of the NI’s financial position, which can then recover once premiums are of sufficient level to cover associated claims and expenses, as well as contributing to the improvement in financial position.

Premium pool leakage scenarios

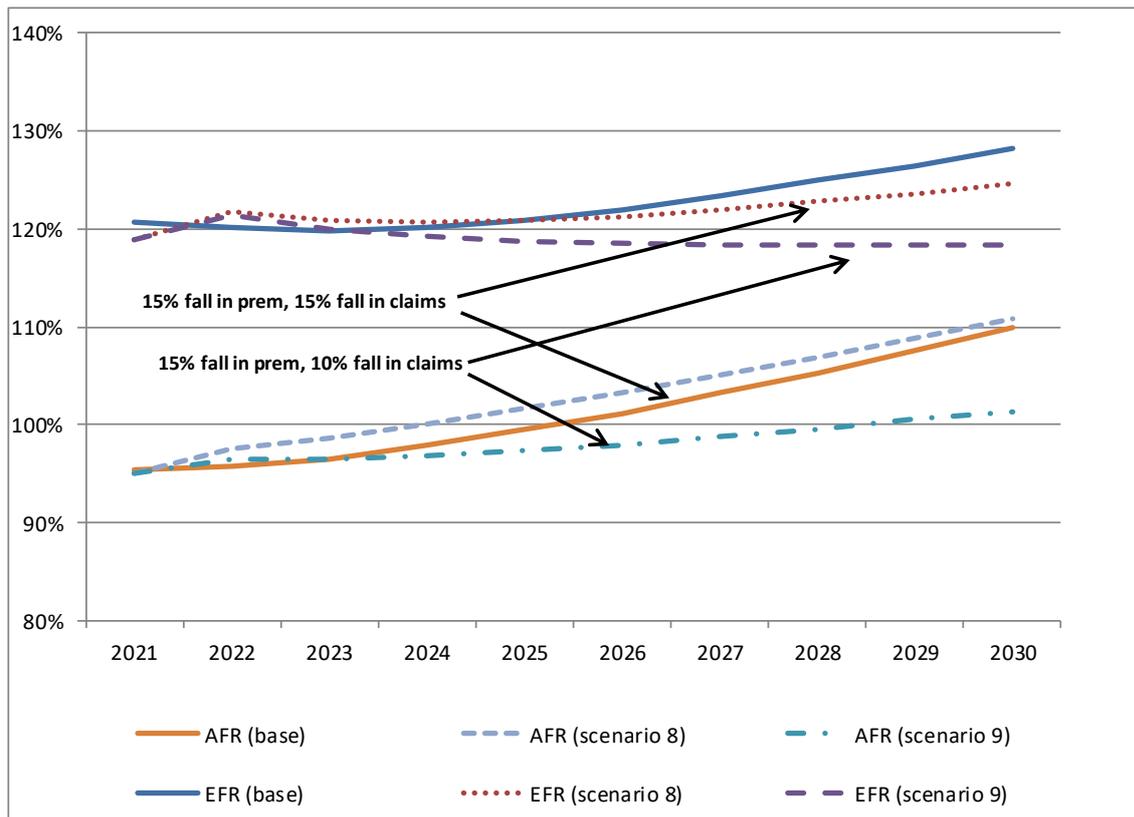
We are aware that NI operates as a quasi-monopoly for some segments of the workers’ compensation market, however there is a possibility that large employers or groups of employers could leave the scheme and become self-insured or a member of a specialised insurer. Increases in premiums may result in higher levels of exits from the scheme.

Scenarios 8 and 9 are designed to show the effect of exits from the NI scheme.

Both scenarios model the possibility that 15% of the premium pool could choose to exit the scheme. We recognise that this is an extreme situation with low probability.

In scenario 8, the exit of scheme participants is matched by a 15% drop in future claims costs, but other expenses remaining unaltered.

Scenario 9 considers the possibility that those employers exiting the scheme will do so on the basis that they view themselves as relatively good risks, can self-insure more cheaply than remaining in the NI scheme, and do not wish to provide cross subsidies to poorer performers within the scheme. In this scenario, while the premium pool falls by 15%, we have only allowed for a 10% fall in claims costs, with other expenses unchanged.



The scenarios show counterintuitive improvements in financial position in the earliest periods; this likely reflects a shortcoming of our simplified model and the assumed pattern of earning of premiums.

Nevertheless we can observe that in scenario 8, the AFR does move markedly from our base case projections. This indicates that although the expenses are now spread over a smaller pool of policyholders, this effect is of low significance relative to claims expenses, existing claims liabilities, and investment returns.

For scenario 9, it is not surprising that there is clear deterioration in the financial strength of the NI. Relative to the base case the gap between premiums and claims grows, as well as the allocation of expenses over a smaller pool. However the deterioration takes several years to become apparent. If our projections were made over a longer period where the older liabilities are paid down, and future underwriting years gain more prominence in the balance sheet, we would likely see more significant declines.

Taken together, this would indicate that a small amount of exits to self-insurance will not have a large effect on the financial sustainability of the NI, however if the exits represent relatively less risky employers, this would have a long term negative effect.

Part D - Assessment of further opportunities to improve financial sustainability

In conduct of this review we have made a series of incidental observations about problems and opportunities for the scheme. The primary observations are summarised below.

We recognise that each of these observations is outside our particular scope, but each observation is made to highlight an area of potential change that may improve the financial sustainability of the scheme. We also note that some of the below observations have been addressed in submissions to the Independent Reviewer made by icare, and where relevant we have commented on the icare submissions.

D.1 Reform to Whole Person Impairment guidelines

The level of Whole Person Impairment (WPI) is a critical assessment for each injury, as it determines the level of benefit entitlement for the injured worker. The level of permanent impairment lump sum is based directly on the WPI assessment, as are the ongoing entitlements to weekly benefits and medical benefits. In terms of financial sustainability, the two most important WPI levels are 15% and 21% - reaching 15% WPI entitles a worker to seek a WID benefit, while reaching 21% WPI entitles a worker to ongoing benefits until retirement age.

The current guidelines to assess the percentage of Whole Person Impairment are the American Medical Association's Guides to the Evaluation of Permanent Impairment, Fifth Edition (AMA5), with some exceptions, including for the assessment of psychological injuries.

In discussion with icare officers there were issues raised with the practical application of the existing injury guidelines for particular injury types, and there was a suggestion from icare officers that a shift to AMA6 guidelines would be a positive step for objective injury assessment and sustainable scheme operation.

We have received a copy of the icare submissions to the Independent Reviewer relating to Assessment of Whole Person Impairment (WPI), including the shift to use of AMA6 rather than AMA5. We have no reason to disagree with the icare recommendation to shift from AMA5 to AMA6.

D.2 Reforms to incentivise earlier assessment of Whole Person Impairment

One of the practical problems for the measurement and financial management of the outstanding claims liability is that Whole Person Impairment assessments are often delayed for several years post-injury. There are several reasons for this:

- WPI assessments should ideally not be performed until an injury is stabilised, and this may be several years post-injury;
- The severity of an injury may change over time due to the development of consequential conditions. The S66 benefit for permanent impairment is based on a single, once-and-for-all, WPI assessment, and workers will tend to delay claiming a S66 benefit until they are approaching a relevant time limit, most often five years post-injury. (The exception to the five-year point is for workers whose impairment level is 21% or higher – for these workers, an earlier assessment will remove the need for Work Capacity Assessments, and these workers are incentivised to formalise the WPI assessment sooner, around 2.5 years post injury.)

The delay in receiving information on WPI severity is largely unavoidable, although the 2012 reforms have placed a heavier reliance on WPI in determining benefit outcomes. Hence workers now have a stronger incentive to maximise WPI, and a stronger incentive to delay the WPI assessment until the last possible moment, so as to give the injury and all consequential impairments time to fully develop and be reflected in the WPI assessment.

A large part of the outstanding claims liability at any point is related to claimants from the most recent accident years, and the WPI severity distribution for these accident years is largely unknown in the early development periods. The WPI severity distribution is also a critical determinant of liability, and as highlighted elsewhere in our review the uncertainty in how this emerges for each accident year is the largest single uncertainty in the outstanding claims liability valuation. This uncertainty means the scheme operators are forced to chart a course for the scheme without proper knowledge of recent claiming history.

In most insurance arrangements, scheme managers must steer by looking in the rear view mirror at what has just passed by, but in the Nominal Insurer, the lack of information on the WPI severity distribution for up to five years post-injury is equivalent to trying to steer based on what passed by 500m back up the road – it is exceptionally difficult to remain on course, particularly when the road is winding!

There may be ways for the scheme to receive earlier information about the WPI severity distribution for S66 purposes, including:

- Seeking informal assessments from injured workers. We understand that the Worker Assistance Program may collect some information on likely WPI outcomes earlier in claim life. There is potential for this type of informal assessment to be expanded, although the benefits of earlier information must be balanced against the costs of the additional assessments;
- Encouraging workers to seek WPI assessments for S66 purposes earlier in claim life, eg by providing a S66 benefit scale which commences at a higher level if claimed at earlier post-injury durations.

D.3 Reforms to reduce prevalence of WID settlements

Work Injury Damage (WID) lump sum settlements are now assumed to be the ultimate form of settlement for 78.75% of Weekly 15%+ WPI claims for the 2011/12 to 2016/17 accident years (Finity June 2020 OSC report, p164).

There is a richly documented history of the problems with litigated lump sum settlements (such as WID settlements) in lieu of continuation on scheme benefits. As set out by Armstrong & Tess¹ primary amongst the concerns are:

- Delays involved in reaching a settlement. These delays can be detrimental to the interests of the worker, can entrench the worker in behaviour which is incompatible with successful rehabilitation, and can further diminish the worker's physical and mental health;
- Worse longer term outcomes for injured workers:
 - Injured workers may delay rehabilitation and prolong time away from work, fearing that an early return may impact upon their final settlement, and workers receiving lump sum settlements have been found to have poorer health outcomes and worse

¹ Armstrong, K. and Tess, D. 2008. *Fault versus No Fault – Reviewing the International Evidence*. 16th General Insurance Seminar, Institute of Actuaries of Australia.

return to work rates than weekly benefits claimants. Moreover, the adverse health outcomes were enduring, evident up to 10 years post claim closure;

- Payment of compensation in a single lump sum rarely lasts to meet all of the costs it was intended to cover. A large majority of lump sum recipients become reliant on social security disability benefits as a source of income;
- While claimants are often satisfied with the lump sum they receive at the time of payment, claimant satisfaction reduces considerably as time since payment increases.

We received a copy of the icare submission to the Independent Reviewer related to Potential Amendments to Workers Compensation Legislation, which sets out, amongst other things, a proposal to increase the WID threshold from WPI of 15% to WPI of 20%. (We assume icare intended to suggest 21% rather than 20%.)

In justifying the suggested change, icare noted a particular inconsistency between the WID benefit and the normal scheme benefit for weekly benefits for WPI in the range 15%-20%. WID allows compensation for foregone earnings until retirement, whereas the scheme benefit in this WPI range only allows 260 weeks (5 years) of weekly benefits. Aside from all other differences between lump sums and periodic benefits, this inconsistency creates a financial incentive towards claiming WID for most injured workers in the WPI 15-20% cohort, relative to remaining on weekly benefits. We agree with icare's observations about the inconsistency, and note that this is acting to incentivise WID settlements for this cohort.

In the submission, icare suggest that the appropriate response is to increase the WID threshold to 20% (presumably 21% intended). We have not formed a view on the merits of elimination of WID settlements for the WPI 15-20% cohort, as this potential change goes beyond actuarial matters. However, we note that there are other potential ways of addressing the inconsistency. For example, it may be possible to keep WID settlements as an option for this cohort, but to limit the WID entitlement to only provide economic loss compensation in respect of the same period as would be compensated by the ordinary scheme benefits. That is, for those with WPI in the range 15-20%, compensation would be limited the unpaid fraction of 260 weeks of weekly benefit. We do not know how such a thing may be implemented in a policy and legislative sense, but in a practical sense we consider that such a change, which is a smaller change than that advocated by icare, would probably:

- Reduce the average size of WID settlements in the WPI15-20% cohort and/or avoid some smaller settlements;
- Counteract the current incentive to delay the WID settlement until the expiration of five years in the WPI15-20% cohort;
- Reduce the prevalence of WID as a final benefit outcome for this WPI15-20% cohort, and bring forward the average post-injury delay of other WID settlements.

D.4 Reforms to change prevalence of commutation settlements

Commutations are currently a very uncommon form of final benefit from the Nominal Insurer. A commutation transfers the risks and responsibilities for treatment and income replacement from the scheme to the worker. For non-catastrophic injuries, a commutation represents a full and final settlement in respect of the injury in question.

In our discussions with the Chief Actuary and GE Organisational Performance of icare on 3 December 2020, the Chief Actuary indicated that icare was currently considering an expansion of the use of commutations, particularly for injured workers in the WPI 21%+ cohort. The Chief Actuary observed that, for that cohort, WID settlements were moderately common, yet a commutation benefit may provide a larger amount to the injured worker than a WID settlement, while also avoiding the stress and time of a contested WID process. We have also received a copy of icare's submission to the Independent Reviewer on this matter.

The differences between a WID lump sum and a commutation for those with WPI over 20% include:

1. Inclusions in the benefit calculation:
 - the WID only includes economic loss, and does not also include any explicit allowance for future medical costs. It is a full and final settlement, and so injured workers do not receive any compensation in respect of future medical costs from the time of WID settlement; whereas
 - the commutation calculator includes an explicit allowance for both future weekly benefits and future medical benefits.
2. Level of disputation:
 - The WID requires a contested process in court, and requires the worker to establish negligence on the part of the employer; whereas
 - The commutation is not a contested process, although we understand that any commutation does currently require special approval.
3. Legal costs:
 - WID typically involves significant legal work. Plaintiff legal costs are deducted from any court-awarded settlement, and so the plaintiff receives proceeds which are net of plaintiff legal costs. Employer and scheme costs may also be substantial, and these are in addition to any court award; whereas
 - Commutation may involve a relatively small amount of legal costs, and a small deduction from the lump sum to the injured worker.

It is the icare Chief Actuary's contention that:

- for those in the WPI 21%+ cohort, commutation lump sums would typically be larger than WID settlements; and
- after plaintiff legal costs are deducted from the WID settlement, injured workers would be much better off financially to seek a commutation benefit than a WID; and
- the lower level of disputation involved in a commutation is a more appropriate process for an injured worker.

Our observations about commutations

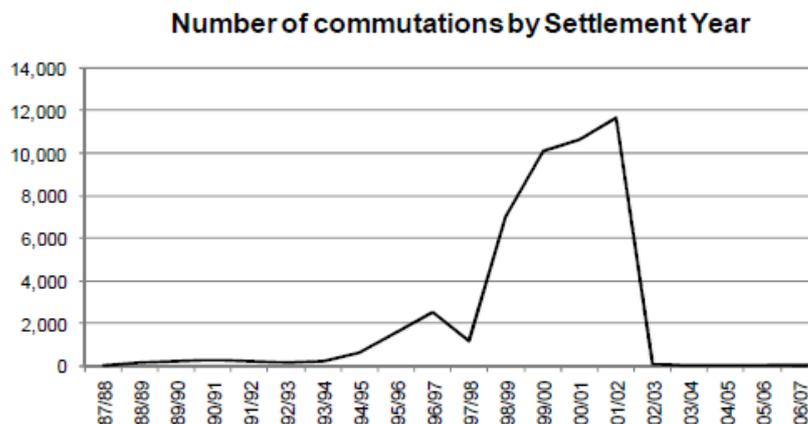
While commutations appear to be a better outcome than WID settlements for individual injured workers in the WPI 21%+ cohort, such a change would just substitute one lump sum settlement for another. We are wary of such changes, given the longer term past history of the scheme related to commutations. It is important to be clear-eyed about the disadvantages of commutation (or any lump sum settlement) compared to continued scheme participation:

- A commutation is a full and final settlement. If future medical costs are larger than anticipated, or the period until return to work is longer than anticipated, the injured worker

has no further recourse against the scheme. All risk related to medical costs is transferred from the scheme to the worker;

- A commutation may be a large lump sum amount, which is intended to provide income and cover medical costs, potentially for multiple decades. This then requires careful management by the recipient in order to ensure it meets needs over that time. The recipient must bear investment and inflation risk;
- From the scheme perspective, offering an injured worker a choice inevitably involves the worker making an informed decision and selecting in favour of their own interests and against the scheme's interests. For example, if a worker expects medical costs in future to be lower than the past, but the commutation calculation does not reflect this, then the worker will be more likely to select the commutation. Likewise, if a worker is in very poor health and may soon die, a lump sum which assumes the worker continues to survive until retirement age may provide a much larger benefit. It is necessary for the scheme to proceed very carefully with every commutation calculation, to properly take into account individual workers' circumstances.

It is necessary for the scheme to consider not just the individual claimant outcome, but also broader scheme impacts. The NSW Nominal Insurer has a vexed history related to commutations, with commutations featuring very strongly in scheme experience in the late 1990s, and up to the 2001 reforms. The scheme had developed a "lump sum culture", where the expectation of many claimants was that they would receive a financial settlement rather than a continuation of benefits under the scheme. It was clear in the period leading up to the 2001 reforms that the availability of commutations had modified claimant behaviour, and had made return-to-work by means other than a lump sum settlement quite difficult. Commutations, rather than reducing scheme costs, had reduced effectiveness of all other claims management and return-to-work processes and ultimately increased scheme costs. The 2001 reforms drastically reduced the ability to receive commutations, and this has continued to the present day.



The above disadvantages of commutations are significant, and it has been the case for the last twenty years or more that accident compensation arrangements have strongly disfavoured lump sum settlements as a standard means of scheme exit. The 2012 Nominal Insurer reforms further tightened the conditions for commutation, such that a commutation can only be paid with SIRA approval. Recent and medium term past experience suggests that commutations have been used quite sparingly in the scheme since 2012. In the period October 2019-March 2020 there were 13 commutation settlements.

We would be concerned if icare is intending to rely on commutations as a significant contributor to improved financial sustainability of the Nominal Insurer, without addressing the broader issue of the potential for emergence of a lump sum culture that inhibits early return to work.

D.5 Prudential monitoring framework

The prudential supervision of icare is somewhat opaque. SIRA acts as a regulator of premiums charged by icare for the Nominal Insurer, but it is our understanding that SIRA does not have responsibility for the prudential supervision of icare.

The role that NSW Treasury plays in prudential supervision is not clear. There do not appear to be defined requirements for reporting by icare to Treasury. While we cannot be certain, it appears that the use of accounting funding ratio as an indicator of prudential health has been established by the Board of icare, rather than being a measurement imposed by Treasury in a supervisory role.

Further, icare officers have claimed that the NSW Audit Office requirements for the accounting statements to reflect liabilities discounted at risk-free rates is a major reason for the focus on accounting funding ratio. More particularly, changes in the accounting funding ratio may lead to breaches in thresholds (100% and 115%) and resulting actions taken by icare to rectify these breaches. Accordingly in the current framework the accounting treatment of liabilities is also driving capital and prudential decisions of icare; the accounting approach and the prudential management of the scheme are currently inextricably linked.

This approach is in contrast to the prudential framework that applies to the Victorian long-tailed insurers i.e. the Transport Accident Commission (TAC) and Worksafe. The Department of Treasury and Finance (DTF) is the representative of the Victorian Government as the “owner” of the schemes, and also acts as the prudential regulator of the schemes. In the Victorian prudential framework:

1. The Boards of the TAC and Worksafe have limited power in the setting of Strategic Asset Allocation (SAA) for the investment assets. The Board set long term investment objectives, and express this objective as an excess over inflation over a ten year rolling period. Implicit in the approach to investment is the balance of long term return and risk. The high proportion of growth assets recognises the long term nature of the liabilities, and places a higher premium on higher long term investment returns, and a lower emphasis on short term returns.
2. Similarly, the Boards of TAC and Worksafe have limited ability to set the financial risk appetite of each entity, as each Board must give primary consideration to the risk appetite as expressed by DTF in its role as prudential supervisor.
3. In its prudential supervision, DTF assesses long term sustainability of the insurers using an Insurance Funding ratio (Economic Funding Ratio). Liabilities are discounted at the assumed rate of investment return, and include a risk margin to provide 75% sufficiency. The target is an Economic Funding ratio over 100%. The move to an Economic Funding ratio is relatively recent.
4. TAC and Worksafe are still required to produce accounting statements in accordance with relevant standards, with liabilities discounted at risk-free rates. The financial statements are subject to audit by the Victorian Auditor-General’s Office (VAGO).

There are subtle but important differences for the Victorian schemes compared with icare. While TAC and Worksafe are run as commercial insurance enterprises, there is a greater degree of “ownership” displayed by the Victorian Government as shareholder. The Government expects dividends from the insurers, partly as return for the implicit guarantee of the schemes. TAC premiums are legislated to increase by CPI in each year. TAC has longer term liabilities than the Nominal Insurer.

Overall, the “package” of prudential supervision, the use of the economic funding ratio, and the separation of decisions regarding SAA, provide confidence in role delineation, and better serve the objective of long term sustainability of the Victorian schemes. If such clarity could be provided to icare, then this would likely flow through to more efficient and sustainable scheme operation and management.

Annexure A

Review of Outstanding Claims Liability valuation of the NSW Workers Compensation Nominal Insurer as at 30 June 2020

Cumpston Sarjeant has been engaged to examine estimates of outstanding claims liabilities for NSW Workers Compensation Nominal Insurer at 30 June 2020 by Finity.

This review of the outstanding claims liability valuation is part of a broader review currently being undertaken by us, relating to financial sustainability of the Nominal Insurer.

We received the report “Insurance Liabilities as at 30 June 2020 – NSW Nominal Insurer”, dated 11 September 2020. This report is authored by Finity representatives and has 288 pages plus appendices. We also received spreadsheet appendices to the report for our review.

The estimated net outstanding claims liability provision (inflated and discounted including claims handling expenses and a risk margin of 15.6%) as at 30 June 2020 is \$17.636 million.

We had several discussions with Finity representatives, and received verbal and written responses to queries as part of the review.

While there is no specified template for a review of this nature, we consider that the terms of The Institute of Actuaries of Australia Professional Standard 315². on External Peer Review (PS315) are a useful framework, and we have broadly conformed to the matters within that standard in this review. We were not asked to provide an independent calculation of the outstanding claim liabilities, nor have we attempted to make such a calculation.

The following sections are in the order of consideration under PS315.

Statements by Reviewing Actuary

We consider that this review has been prepared in accordance with PS 315, and provides a review, but does not provide an additional valuation. This review was requested by Andy Hobbs of NSW Treasury, as part of a broader review of the financial sustainability of the Nominal Insurer. No restrictions have been placed on the conduct of this review.

We consider we meet the definition of “external” in section 6 of PS315 as we have no significant personal, commercial or employment relationships with the icare Nominal Insurer or the valuing actuaries, Finity.

We have reviewed the Finity final report of 11 September 2020. Our review should be read in conjunction with the Finity report for it to be considered in its appropriate context.

Matters for Consideration by Reviewing Actuary

Scope

Finity have determined the value of outstanding claims insurance liabilities of the Nominal Insurer as at 30 June 2020. They have determined liabilities in respect of reported claims, as well as in respect

² That standard, PS315, was recently withdrawn by the Actuaries Institute, but its usefulness as a template for reviews such as this remains.

of claims which are yet to be reported, but which were incurred prior to the valuation date. They have also included the expenses associated with the handling and settlement of these claims.

Finity's valuation includes a risk margin. The risk margin is based on a probability of adequacy of 80%.

The scope of Finity's valuation is appropriate.

Data

The draft report is based primarily on data to 31 March 2020. Finity's checks on valuation data did not reveal any material data issues with supplied data. In our discussions with Finity some areas where better or more complete data would be useful were identified:

- Whole person impairment (WPI) data is a critical determinant of liability, as availability of many benefits is dependent on WPI score. There is a delay of up to about 5 years post-injury before reliable data on WPI is available. This is a concern, given the importance of this information in determining benefit eligibility;
- Data on causes of discontinuance, or claim finalisation, would be useful to Finity in their valuation. Given the interactions between benefit types now explicitly identified in Finity's valuation model, greater insights would be gained into these interactions via more complete and accessible data on reasons for claim finalisation for historical exits. It is not clear whether such data may become available in the short term.

While we note the limitations due to absence of some data, we consider that appropriate and sufficient data inputs were used, and that the quality of this data has been checked by Finity.

Valuation methods

The valuation employs a range of valuation techniques for different payment types, with each technique using past data to estimate future payments for reported and unreported claims combined. We consider that the techniques used for each payment type are not unreasonable for that payment type.

Assumptions

Finity make many assumptions about future claims, including assumptions about the number of claims, the timing of future payments and the size of future claims. These assumptions are mostly based on recent experience within the scheme, and in general appear to be unbiased and appropriate.

We have identified some areas in the weekly and medical benefits valuation (long term continuance rates and ultimate WPI severity distribution for recent accident periods) where different judgements might be justifiable given the same data and circumstances, and where the future experience could be more favourable or adverse than the assumptions derived by Finity, but nothing where we consider Finity's judgements to be unreasonable.

Finity use external data to set some valuation assumptions, e.g. for valuation of dust disease claims and large medical claims. This is appropriate.

The economic basis has been set using both short and long term assumptions, and using a range of information sources:

- The discount rates adopted by Finity are based on yields on Australian Government Bonds at 30 June 2020, and are appropriate for this valuation under AASB1023. These rates are

consistent with the concept of a “risk-free” rate, and are appropriate in this financial reporting context.

- Short term WPI and CPI inflation have been set based on recent external forecasts for the first five projection years, as is reasonable. For the longer term beyond five years post-valuation, inflation assumptions are set using a gap approach. The gap approach implicitly accepts that there are longer term stable relationships between economic parameters, e.g. rather than making an explicit assumption about CPI inflation at each valuation, it is assumed to be 1% pa lower than the forward discount rate at the 10-year duration. This approach, while it has limitations and should not be relied upon unthinkingly, is reasonable and consistent with the requirements of accounting standards, and in our view is a pragmatic approach to dealing with some of the volatility in results due to movements in bond rates. The adopted longer term CPI/discount rate gap and WPI/CPI gap are appropriate based on historical data.

The overall economic basis is internally consistent and in our view it is appropriate for this valuation.

In addition to Finity’s allowance for normal claims inflation on emerging claims (apart from statutory benefits that are fixed), some claim types (particularly those with a treatment or medical component) may be subject to higher levels of inflation over time, known as superimposed inflation. The identification of superimposed inflation is difficult, as it does not tend to emerge evenly. Further its presence in the past does not necessarily indicate it shall be present in the future. Finity have allowed for superimposed inflation in the short term in their medical benefits valuation, and in the long term in their dust disease valuation, but not elsewhere in their valuation. We accept that other potential areas of superimposed inflation are best allowed for in the risk margin rather than within the best estimate valuation result. We are satisfied that the superimposed inflation allowances in Finity’s valuation are appropriate, although further volatility may be expected in future.

Quality assurance reviews and controls

We have seen evidence of involvement of several actuaries and other staff in the valuation and review thereof. We are satisfied that internal control processes applied by Finity are not inappropriate.

Analysis of Specified Valuation Results

In our view, the valuation results have been developed following a reasonable sequence of steps. They appear to be internally consistent. The changes in results, allowing for the changes in basis from one valuation to the next, are consistent with emerging experience and revised valuation assumptions.

Specified Valuation Results

We have reviewed the principal valuation results, and have performed some simple reasonableness and arithmetical checks on the most significant parts of the valuation. Appendices 1-4 to this paper describe some checks that we have performed and set out some observations on various aspects of Finity’s valuation. Overall, we are satisfied that the valuation results are reasonable, given the assumptions that have been made.

The outstanding claims liability valuation results are set out clearly in Section 21 of Finity’s report.

Section 24 of the Finity report describes sensitivity analyses conducted as part of the review, and also discusses key sources of variability in the estimate of outstanding claims:

- Finity were instructed to adopt a probability of adequacy (POA) of 80% in determining their risk margin. The decision on the probability of adequacy is a decision for icare rather than Finity. (We understand that, subsequent to the 30 June 2020 valuation work, there has been a review by icare of the level of POA to apply for future. We have not considered that here);
- Finity have determined a risk margin to establish an 80% probability of adequacy for the outstanding claims liability of 15.6% based on an analysis of a range of sources of variability, including a specific consideration of the biggest areas of uncertainty. We are satisfied that the approach and adopted risk margin at this valuation are reasonable;
- The scenario analysis undertaken appears appropriate. In our view it captures a wide range of foreseeable outcomes.

Standards

We consider that Finity have complied with all aspects of relevant Professional Standards.

Conclusion

We have reviewed the appropriateness of data inputs and data reconciliations undertaken. We have reviewed methods for suitability in the circumstances and against current actuarial practice. We have reviewed assumptions for consistency with available experience and trends. We have reviewed the analysis of change of valuation results. We have reviewed judgements made by the Primary Actuary for reasonableness and Materiality. We have reviewed whether key risks, sensitivities and uncertainties, and their implications, have been identified. We have considered whether there have been departures from relevant legislation (including regulations, prudential standards, subordinate standards and rules), and Professional Standards. We have given suitable weight to all Material factors.

Having carried out the review as described in this report, nothing has come to our attention that would lead us to believe that Finity's valuation results are unreasonable.

Appendix A1 – WPI Severity Distribution

The Whole Person Impairment (WPI) data for each claimant is an important element determining benefit entitlement, as different WPI levels have different maximum duration of weekly and medical benefits and different other entitlements e.g. access to WID settlements. WPI data is a necessary and crucial predictor of future claim behaviour in Finity's valuation model. However the scheme has inherent delays in receiving accurate WPI data, and in practice it is common for there to be a five year delay between injury and emergence of complete and objective WPI data.

One of the key uncertainties in the liability valuation is the blind spot of the scheme relating to the ultimate WPI severity distribution for claimants from recent accident years. The valuing actuaries make a set of assumptions about the severity distribution that have significant impact on the overall valuation result.

We have identified three factors which we consider have led to increased uncertainty in the assumed WPI severity distribution, and hence the estimate of scheme liability, over recent years.

1. Return-to-work experience

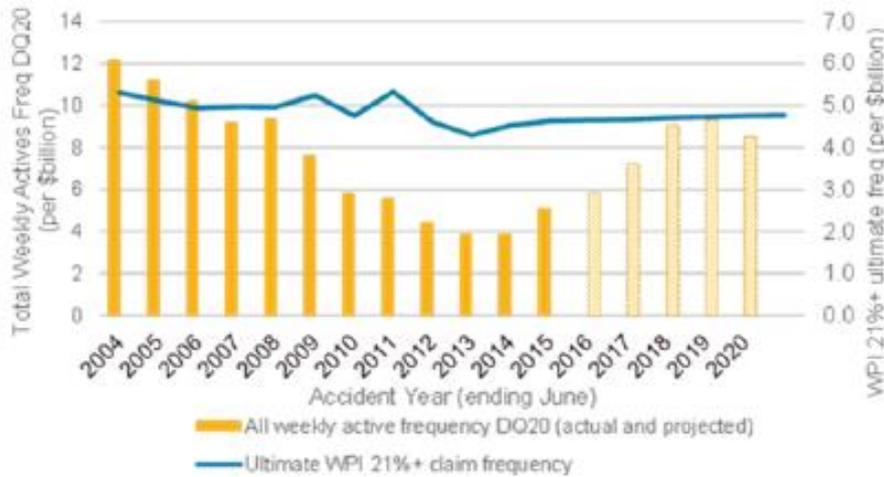
Return-to-work experience in the early development years of recent accident years has been considerably worse than for earlier accident years. This means that there are now more injured workers who have not returned to work and are still in receipt of weekly benefits after 3, 4 and 5 years than previously applied.

It is unclear how this poor RTW performance for recent accident years will translate into outcomes in later development periods for these accident years. Plausible outcomes include:

- A. Poor RTW performance only impacts lower severity injuries, and does not lead to there being more claimants in the scheme with higher severity injuries. Thus when these low-severity injuries reach their time limits on benefit, these claims will cease. The number of higher severity injuries, including those over the 10%, 15% and 21% Whole Person Impairment (WPI) thresholds, is unaffected by poor RTW performance of lower severity injuries. The impact of recent poor RTW on the outstanding claims liability valuation in this case is minor-moderate, and the cohort of affected claims is largely gone from the scheme by about 2025;
- B. Poor RTW experience leads to poor recovery outcomes for injured workers, which in itself leads to an increase in the assessed severity of some injuries. Some of these deteriorations in WPI cause workers to exceed critical WPI threshold (10%, 15% or 21%), leading ultimately to either longer periods on weekly and medical benefits, or Work Injury Damages (WID) settlements. The impact on the scheme in this case may be highly significant. Depending on the number of claims that ultimately cross thresholds into higher benefit categories, the impact may be highly significant, and the cashflow impact may persist for many years.

We asked Finity about this and they replied that their broad approach is to assume that the number of higher-WPI injuries is independent of RTW experience, i.e. that poor RTW experience will NOT translate into more higher-WPI claims. Finity have formed this view based on long term past historical experience, including periods with better and worse return-to-work experience, which indicates that the number of claims with WPI 21%+ is largely invariant over time.

The following chart is from Finity’s June 2020 valuation.

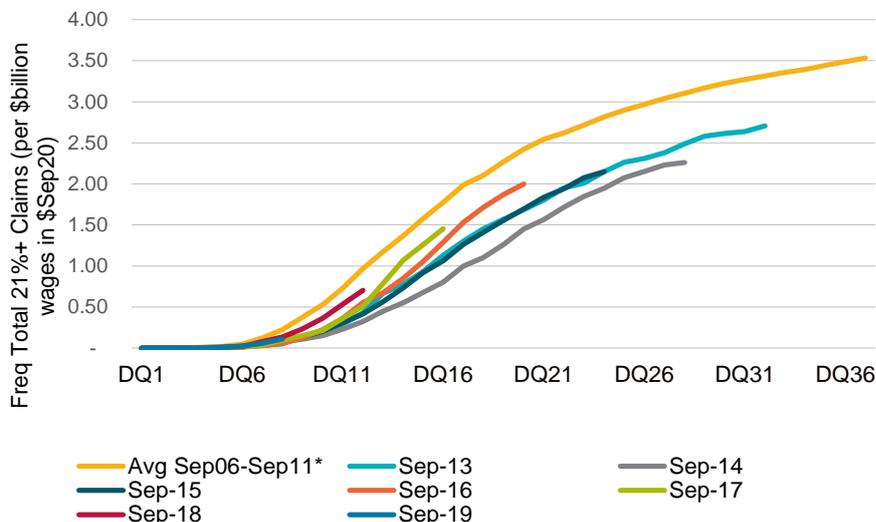


It is worth setting out some detail from this chart:

- The yellow bars show the frequency of active weekly claims five years after injury. For the period to 2015 this is actual data, and for post-2015 it is projected data. The projected increase in active weekly claims at longer durations for more recent accident years is clear;
- The blue line shows the frequency of WPI21%+ claims. For the period up to about 2014 this will be predominantly actual outcomes, while for 2015 onwards it will increasingly be reflecting the Finity valuation assumptions;
- The chart shows a mix of actual and projected experience, but importantly it shows reasonably complete actual data for the period up to about 2015. The pre-2015 actual experience for WPI21%+ frequency is quite stable, even though the frequency of longer term weekly claims has varied significantly through that period.

We consider the above evidence to be a good base of past experience, and we consider that Finity’s assumption that WPI21%+ frequency will be broadly stable over time is well supported by this.

A second element of Finity’s evidence base for their view is the “worm chart” below. This chart shows how the number of higher severity physical injury claims for a given accident year emerges over time. The yellow line shows the experience for pre-2012 accident periods, while the shorter lines show the emergence of WPI21%+ claims for more recent accident periods.



Several things about recent experience are observable from the above chart (and the very similar chart for the WPI15-20%+ severity category):

- In the post-2012 environment, most WPI scores are expected to be known by about development quarter 28 (about 7 years post-injury), because the WPI assessment is required as part of retaining entitlements within the scheme. The frequency of claims emerging in the WPI21%+ category for years 2013-2015 is markedly *lower* than for the pre-2012 period. Finity have allowed for this lower emergence frequency in their valuation, as is reasonable for accident periods where most emergence is expected to have already occurred;
- For more recent accident periods the worms have climbed faster than for the 2013-2015 period (but still lower than the pre-2012 period). This may be caused by:
 - An increase in the underlying level of WPI21%+ claims that will emerge for more recent accident periods compared to the 2013-2015 period, AND/OR
 - An increase in the pace of assessment of these more serious injuries. This second alternative may be explained by the impact of work capacity assessments on this cohort – for those with WPI21%+, having this injury severity formalised in a WPI assessment removes the need for a Work Capacity Assessment in order to retain entitlement to weekly benefits. Thus there is an incentive to formalise the WPI assessment before about 2.5-3 years post-injury.

If the second of these alternatives is a stronger cause of the observed steeper climb of the emergence curve for more recent accident years, then this will not necessarily cause the ultimate frequency to increase compared to the 2013-2015 period.

While the above worm chart is not entirely consistent with the Finity contention that the WPI severity distribution is largely unchanging over time, the observed pattern of emergence for post-2012 periods is *lower, not higher*, than the pre-2012 period. Finity's assumption for the ultimate severity distribution for more recent periods is that it will replicate the pre-2012 level, which on the empirical evidence alone appears to be a conservative, rather than optimistic, assumption.

The alternative to the Finity view is that the expected doubling of longer term weekly claims for 2018-2020 compared to 2013-14 will translate into an increase in the ultimate number of high-WPI claims for those more recent accident periods. Peter McCarthy, a retired actuary, noted, in his evidence to the NSW Parliament Law and Justice Committee in November 2020, that "the scheme actuary has not allowed for one additional claim to exceed the 10, 15 and 20 percent WP threshold arising from the obviously substantial deterioration in return to work". He seems to imply that this lack of allowance for additional higher severity claims "has not followed the recent poor claims experience" and is optimistic. McCarthy is referring to an older scheme valuation from 2019, but the situation is much the same at 2020, and so we can directly address his observations. For the reasons set out above, we are satisfied that Finity's valuation assumptions in this respect are based on a substantial body of objective evidence and are within a reasonable range, rather than being unduly optimistic.

The financial consequences of the different views are large – for example, Finity demonstrate a \$1.5B increase in liability on a scenario where the number of WPI outcomes over 10% is increased by 25%.

The scheme has little information about the emerging severity distribution for 2018 accident year, and virtually no information about 2019 or 2020. In terms of an allowance for the risk of deterioration in WPI severity distribution due to poor RTW experience, Finity advised that they "do consider that WPI deterioration is a key risk to the scheme, because of the significant financial consequences (rather than the likelihood of it happening)... It is certainly plausible that a deterioration in WPI could come from poor return to work experience leading to pressure on WPI assessments." Adopting an ultimate frequency for recent accident periods that is in line with pre-2012 experience, despite emerging

experience that may be better than pre-2012, appears to be a reasonable response to a quite uncertain element of experience.

We consider that the valuation risk margin has a role to play in representing the impacts of any low-probability high-impact event. Finity have explicitly considered the unusually large potential impact of WPI severity uncertainty in setting their risk margin for this valuation, and this is the single largest component of their overall risk margin. We consider that this is reasonable.

Conclusion: The general stability of the WPI frequency distribution in the past in the face of changes in RTW experience gives comfort that, at worst, any increase in WPI frequency distribution due to poor RTW experience will be a muted response not proportionately linked to the recent and expected future increase in active weekly claims at the 4-6 year duration. Further, the valuation currently includes an allowance for a deterioration in the severity distribution compared to the exceptionally good most recent emerging severity data (for accident periods 2013-2015).

We are satisfied that Finity's assumptions and approach in this respect are not unreasonable.

2. Psychological injuries.

There has been an increase in the number of higher WPI claims in recent years where psychological injury is a primary injury. This experience is similar to that seen interstate over the last decade, and there appears to be a non-trivial chance that there will be further deteriorations in this area of experience, in respect of past accident years.

Finity have explicitly identified and allowed for recent observed increases in the number of higher WPI claims where the primary injury is psychological injury. We have reviewed Finity's judgements and consider that they are reasonable in an uncertain environment.

The increases in the number of high-WPI psychological injury claims are large in the context of psychological injuries, and appear to mostly represent a change in claimant behaviour rather than a change in underlying prevalence of psychological injuries. However, even after increases, psychological injury claims represent a relatively small fraction of all high-WPI claims. We consider that, were it not for the much larger uncertainty relating to the impact of poor RTW experience (on the WPI severity distribution and other parts of the valuation), this deterioration in psychological injury WPI distribution would be a widely discussed emerging feature of scheme experience.

We consider that the risk margin has a role to play in capturing the potential impact of further deterioration in the WPI severity distribution due to an increase in the number of psychological injuries with high WPIS.

We are satisfied that the approach taken by Finity is reasonable, and that the uncertainty in this area of the valuation is sufficiently represented within the central estimate and risk margin in the valuation.

We note that the impact of a deterioration in WPI severity distribution due to psychological injuries on premiums is greater than the impact on outstanding claims, and also that this trend may be harder for icare to control in the longer term than the recent poor RTW experience. Thus this feature of experience may have longer lasting impacts on scheme financial sustainability.

3. Decoupling of Permanent Impairment WPI assessment and WPI assessment for other purposes – Threshold Disputes

In recent discussion with SIRA officers, we became aware of an emerging element of experience that may impact on Finity's valuation. Finity assume that the WPI assessment that is used for determining the permanent impairment lump sum under S66 is determinative for the purpose of other benefit entitlements. Specifically, if a WPI for S66 purposes is below a threshold, Finity do not allow for the possibility that a subsequent reassessment of WPI to be over that threshold via a Threshold Dispute may lead to entitlement at the above-threshold level.

SIRA advise that these threshold disputes are becoming a significant part of scheme experience, and the individual outcomes, because they may involve substantial amounts of backpay, may be quite expensive.

Finity's valuation model appears to explicitly link the WPI severity distribution across all benefit types, and appears to base it on the emerging S66 WPI distribution (as that is the first emerging measure of WPI). To the extent that the WPI distribution for non-S66 purposes is becoming more severe relative to the S66 WPI distribution over time, then there is a risk that Finity are understating the longer term costs for WID, Weekly and Medical benefits in the higher WPI brackets.

We have asked Finity about this issue, and have received evidence that these threshold disputes are occurring, but at quite low numbers. Specifically, Finity advised that, for claims in 2013-2015 accident years (which are post reform periods with mature experience), there had been 1,977 claims with a S66 payment implying a WPI between 11% and 20%, and of these, only 26 (about 1.3%) had a WPI over 20% for S39 purposes (to determine ongoing entitlement to weekly benefits). That is to say, the extent of erosion of WPI thresholds due to threshold disputes is real but at very low frequency.

We consider that this low level of threshold disputes is below the level that would invalidate Finity's valuation approach and assumptions. We consider that Finity's approach and assumptions are not unreasonable in this respect.

Appendix A2 – Specific comments on Weekly Benefits Valuation

The weekly benefits liability at 30 June 2020 was \$4.3 billion, about 30% of gross liabilities. Weekly benefits were previously the largest single component of the liability (e.g. they were about 43% of total liabilities ten years ago), but the shift towards WID settlements and the increase in medical costs over the last decade means that weekly benefits have declined as a proportion of total liability.

Below are some comments on particular aspects of the weekly benefits valuation (apart from the relevant comments on WPI severity distribution in Appendix 1 above).

WPI 21-30% and WPI>30% continuance rates

The WPI>30% group is the most severely injured cohort of workers, and the weekly liability is about \$1.0B for this cohort. Finity adopt long term continuance rates of 100% after delay 14 (i.e. 3.5 years post-injury) for this cohort of claims. That is to say that Finity assume the number of claimants on benefit in this category does not decline at all over time for each accident period in the long term, apart from age retirements and WID settlements.

For WPI 21-30% weekly recipients (a cohort with about \$1.5 billion of weekly benefit liability) Finity adopt continuance rates of 100% for delay 34 (i.e. 8.5 years post-injury) onwards.

Relevant features when considering long term continuance rates for this cohort include:

1. Anyone with a WPI >30% is unlikely to ever return to work, and so benefits that are payable for more than a few years will mostly continue until retirement, pre-retirement death or Workplace Injury Damages (WID) settlement. Finity allow explicitly for retirement and WID decrements when valuing weekly benefits for this cohort, as is reasonable;
2. Mortality of workers prior to retirement age may be moderately significant, particularly given the impaired health of such claimants. The following table is based on Australian Life Tables 2015-17 without any allowance for mortality improvement over time, and shows the probability of a male dying before age 67 (the applicable retirement age) from ages 30, 40 and 50. It assumes an impairment loading of 0%, 50% 100% or 200% (e.g. 50% loading means the injured person is assumed to have 50% higher chance of dying in the year than an average Australian at the same age). For example, the chance of an injured worker aged 30 with no significant impairment to survivorship dying before age 67 is 12%; 88% of such workers are assumed to reach age 67. The chance of dying for someone with a moderate impairment to survivorship (say 100% loading) is 23%. Finity allow for impaired life mortality in their medical valuation for catastrophic injuries (who make up a moderate fraction of the WPI >30% group in the weekly benefits valuation), so we consider that it is appropriate to consider some mortality impairment for this cohort here as well.

Current age	Probability of dying before retirement age (67) from current age			
	Impairment loading on top of 100% of Australian Life Tables 2015-17			
	0%	50%	100%	200%
30	12%	18%	23%	33%
40	11%	17%	22%	31%
50	10%	14%	18%	26%

The above table shows that there is a material chance of totally incapacitated workers not reaching retirement age due to earlier death. We think that it would be better if Finity's valuation model for weekly benefits for these workers made some explicit or implicit allowance for pre-retirement mortality. The next table shows the implied average probability of death per quarter, spread evenly over each worker's life between now and age 67.

Current age	Average probability of dying per quarter between now and retirement age			
	Impairment loading on top of 100% of Australian Life Tables 2015-17			
	0%	50%	100%	200%
30	0.09%	0.13%	0.18%	0.27%
40	0.11%	0.17%	0.22%	0.34%
50	0.15%	0.22%	0.30%	0.45%

This table shows that discontinuance rates due to death of claimant in the range 0.1-0.3% per quarter due to death may be appropriate, perhaps with a relatively larger allowance later in the tail where advanced ages mean mortality rates are higher;

3. Finity allow in their model for late identification of higher severity claims, by explicitly modelling the transition of claims with unknown WPI to being claims with known WPI>20%. This transition/emergence pattern is expected to be complete before development quarter 34, i.e. 8.5 years post-injury. This allowance for new emergence of higher severity claims appears reasonable;
4. Reactivations and new claims are unlikely to be significant factors for older accident periods. There was a transition period after introduction of the 2012 reforms where reactivations may have occurred, but this period has long passed.

We consider that tail continuance rates (excluding WID and retirement allowances) of slightly below 100% for these two cohorts appear to be reasonable based on general reasoning. Finity assume continuance rates of 100% for later durations since injury, which may be slightly high in the long term.

Finity advised in our meeting of 3 February that an allowance for pre-retirement mortality would reduce liability for the WPI 21-30% and WPI>30% groups by about \$150M. We consider that Finity's approach to setting long term continuance rates, while arguably slightly conservative by not allowing for pre-retirement mortality, is not unreasonable.

Modelling approach – Segmentation approach

Finity segment their weekly valuation model in WPI bands based on weekly entitlement rules. They do not differentiate between WPI 11-14% and WPI 15-20%, whereas these two groups are likely to have quite different scheme experience due to the entitlement to a WID settlement cutting in at WPI 15%. Finity subsequently model the proportion of WPI 11-20% claims that will be over 15%, but given the dominance of WID as a feature of experience for WPI>14%, we think that direct modelling of the 11-14% and 15-20% cohorts may produce a more stable overall model. This is a minor concern, and we accept Finity's judgements in balancing the various competing factors in their segmentation approach.

Modelling approach – emergence and continuance rates

Finity over recent years have shifted the valuation model to a model that more explicitly allows for characteristics of individual claims. Finity explicitly model the effects of benefit thresholds and retirement age on the continuance of weekly benefit claims, while also explicitly considering the tendency of claims to shift from being weekly benefit recipients to seeking a WID settlement. This explicit modelling increases precision in the model, particularly when considering alternative scenarios, which is welcome. We note as follows:

1. We consider that additional precision and model transparency could be achieved by separating the “emergence” rates for higher WPI brackets (related to when claims are identified as belonging in those brackets) and continuance rates (related to when claims cease receiving weekly benefits).
2. We consider that explicit consideration of all causes of claim discontinuance (which may include death, return to work, and other causes) may further increase model precision and may also provide insights into underlying claim termination processes and causes. However this possibility is limited by available data on causes of benefit discontinuance.

Of course, any observations we make on the level of specification of the model must weigh the benefit that would be achieved against the costs and the level of uncertainty.

Overall Summary – Weekly Benefits

Overall we have identified one area (long term continuance rates) where different judgements might be justifiable given the same data and circumstances, with a relatively small impact on results. We have not identified anything where we consider Finity’s judgements to be unreasonable.

We consider that Finity’s valuation of weekly benefits is reasonable and the central estimate result lies within a reasonable range.

Appendix A3 Specific comments on Medical Benefits valuation

Medical benefits are the largest part of the overall liability (\$5.3 billion, or about 37% of the total). Below are some comments on particular aspects of the medical benefits valuation (apart from the relevant comments on WPI severity distribution in Appendix 1 above).

Non-catastrophic claims

The modelling of non-catastrophic claims is divided into different injury/impairment levels. Finity analysed experience and model emerging benefit streams for those with impairment 0-10%, 11-20%, 21-30% and 31+%. The differences between the cohorts are significant, and by breaking up their analysis to this extent, Finity are able to take into account the specific features of each cohort in order to project future payments. While (as noted in the weekly model) there may be some advantage in segmenting between 11-14% and 15-20% Whole-of-Person Impairment (WPI) cohorts, Finity's segmentation approach is valid and reasonable.

As with the weekly benefits valuation, the emergence experience (where claims emerge into higher WPI brackets as they undergo WPI testing, typically around three- five years post-injury) is an important indicator of ultimate medical liability, both in reality and in Finity's model. The emergence experience into higher WPI categories has been volatile over recent valuations, leading to some modelling uncertainty.

Superimposed inflation in non-catastrophic claims

Finity make a short term allowance in their non-catastrophic claims valuation for superimposed inflation. The evidence in Figure 6.20 of their report shows evidence of broadly stable medical costs over scheme history to about 2014, but with a spike after then. The spike may be partly explained by removal of lower-severity claims, but the trend has continued beyond what may be explained by that feature. Finity's judgement is that this is a short term burst of above-inflation growth in medical costs, and that this will continue at a moderate level in the short term, but then stop. This is a highly subjective area, and we consider that Finity's judgement is broadly reasonable.

Given scheme experience does not strongly point to existence of superimposed inflation over the long term, we accept Finity's contention that no longer-term allowance for superimposed inflation is required. This means that the risk of possible future superimposed inflation is handled as an element of risk within the risk margin rather than within the central estimate of liability. This is reasonable.

Catastrophic claims

The liability for catastrophic claims of \$2.2B, in respect of over 400 reported and IBNR claims, makes up about 40% of the total medical payments liability. Finity have maintained a split between catastrophic and other claims in the valuation, as is reasonable. Identifying a small number of very large claims allows focus on those claims and is sensible and increases accuracy in the model.

The catastrophic medical cost model appropriately projects medical costs for the lifetime of claimants. There are some material actuarial judgements made about quantum and persistence of payments. The allowance for impaired life mortality in the model appears reasonable. There is considerable uncertainty about the future lifetime course of each individual claim. The assumptions made are not unreasonable. We were able to examine the various steps of the valuation process, and conducted some simple checks on the annuity model for several individual cases and established that the annuity model approach used to value catastrophic claims and the valuation result appears to be reasonable.

Overall we are satisfied that the liability for medical benefits determined by Finity is not unreasonable.

Appendix A4 – Other payment types

Workplace Injury Damages

The liability for Workplace Injury Damages (WID) has been quite volatile over recent years. In 2007 the liability was \$508M (6% of total); in 2017 the estimate was \$2.4B (21% of total); the current estimate is \$2.7 billion, or 18% of total liability. The increase in liability for WID payments over the longer term is justified by emerging experience, and is driven by reforms in other areas which have reduced other parts of the liability while increasing incentives to make WID claims. The observed trend in the liability outcome over time is consistent with our expectations based on other parts of scheme experience.

Finity's WID valuation model is heavily influenced by the WPI severity distribution assumptions they make. The WPI distribution for claims from the last 5-6 accident years is quite uncertain, as discussed in the weekly benefit model commentary above. The WID valuation is quite uncertain on a stand-alone basis, but of course any increases in WID liability would be offset by other decreases.

The WID valuation process performed by Finity and the valuation results are not unreasonable.

Interestingly, it is accepted within Finity and icare that WID settlements for more severely injured claimants have a smaller present value. While this is true when assessed at an individual claimant level for claims that have reached a certain point of development without exiting, it is important to bear in mind that the development of a lump sum culture within the scheme may have wide ramifications for scheme costs and long term financial sustainability of the scheme that go beyond the comparison of outcomes for individuals at a point in time.

Commutations

Commutations are restricted in the scheme, and experience of the past few years indicates that they are rarely used. Any change in accessibility of commutation settlements may have a significant impact on the liability for commutations, with flow-on to other parts of the valuation. The valuation by Finity is reasonable based on the prevailing circumstances.

As with WID settlements, any deliberate strategy to change the frequency of commutation outcomes must consider that the development of a lump sum culture within the scheme may have wide ramifications for scheme costs and long term financial sustainability of the scheme

Investigations

Finity value investigations using a payments-per-active-weekly-claim model. A considerable part of investigations is related to medical costs, and in our view there is some chance that a divergence between medical and weekly payments would result in inaccuracy in the valuation approach, although this is a minor concern.

The pattern of investigation payments over time has shown trends consistent with the broader scheme, perhaps indicative of the level of active management of claims. Specifically, at the same time that scheme features such as work capacity assessments were at a historical low, investigation costs were also low. Given that work capacity assessments have increased in recent periods, it is reasonable that the valuation would also allow for an increase in investigation costs.

Interestingly, Finity have responded to an increase in the number of active weekly claims from recent accident years (through poor return-to-work performance) by decreasing the average investigation payments per active weekly claim at this valuation. Alternative responses would have been:

- To assume that payments per active weekly claim would be unchanged, and hence the liability for investigations would increase;
- To assume that, because of poor return-to-work performance, a higher level of investigation costs would be incurred for each claim in order to achieve return-to-work outcomes, and hence the liability for investigations would increase further.

We asked Finity about these alternative views, and a Finity representative advised, in respect of the larger number of active weekly claims due to poor RTW experience, that “with a cohort of active claims that is, on average, less seriously injured, we would expect a lower average medical investigation cost per active claim”. This is not unreasonable, and we accept Finity’s judgements in this area.

Legal costs

Legal costs are valued by Finity based on their characteristics. Finity identify various cohorts that are expected to either persist or not persist and make appropriate allowance for these features in the valuation. Their consideration of various sources of legal costs in the valuation appears appropriate.

Given the assumptions made about the existence of icare obligation to fund particular legal costs, the valuation of legal costs performed by Finity is not unreasonable.

Statutory lump sum benefits

The impacts of 2012 reforms on the patterns of claiming statutory lump sum (s66) benefits continue to evolve:

- In the first few post-reform years there was a strong pattern of deferral of s66 claims, as claimants sought to maximise their WPI assessment by letting injuries fully develop prior to getting their (one and only) WPI assessment, but before the claimant entitlement to weekly benefits would otherwise cease. This meant that the bulk of s66 claims have been assumed to occur around the five year mark post-injury.
- A second trend has emerged more recently, with claimants with WPI at 21% or higher tending to have that assessment done around 3 years post injury. This coincides with the requirement to have a work capacity assessment, with that work capacity testing requirement not existing for those with WPI 21% or higher.

The strong indication from the above two features of experience is that certain aspects of claimant behaviour evolve over time to be influenced by the incentives within the scheme rules. Finity appear to take account of the incentives and patterns that are apparent, and the valuation reflects these features. The assumptions made by Finity, and the valuation processes adopted, are not unreasonable in the circumstances.

Dust Disease Claims

Finity have determined a separate liability for dust-related claim liabilities because the emergence and payment pattern for these claims is significantly different to other Nominal Insurer claims. This is appropriate.

Finity project expected claim numbers of dust disease claims based on industry-standard claim emergence patterns, but with adjustments to allow for the different circumstances of the Nominal Insurer, including particularly a later expected average emergence of claims. We note the general

reasonableness of the shape, height and position of the distribution of future emerging asbestos-related claims used in the Finity valuation of these claims.

For silicosis claims, Finity also adopt a finite run-off distribution similar to the non-malignant asbestos-related disease curve. However, we are not convinced that silicosis claims will necessarily follow the same run-off pattern. Finity note that silicosis has a shorter latency period than asbestos-related claims, and also the exposure pattern is less well understood. We also expect that exposure has occurred for a longer period after the phasing out of asbestos, and so there is potential for a much fatter tail of silicosis claims related to past silica exposure than has been projected by Finity. We asked Finity about this and they advised that they understand that the exposed workforce is small and contained, but also that they will be seeking better data on silicosis exposures and potential changes in scheme liability would be a focus in their valuation in 2021.

Typically dust disease claims are shared amongst multiple defendants, and the average claim sizes observed in the portfolio indicate that the nominal insurer typically has a share of total liability of perhaps slightly less than 50%. We expect that the Nominal Insurer's share of individual settlements would increase slowly over time as other sharing parties become harder to find and exposures can more often be traced solely to the post-1987 period for which the Nominal Insurer is responsible. It would be useful for Finity to examine the Nominal Insurer share of settlements on each individual claim over time, but we understand that this data is not collected or recorded consistently for dust claims. Finity note, in their qualitative discussion of claims sizes, that silicosis claims have a higher average size because fewer have shared liability with multiple defendants, confirming our contention that claim sharing is an important feature of experience. Finity may gain greater insights into underlying experience and greater predictive power if this data were available. Currently Finity allow for this expected increase as a component of their overall superimposed inflation assumption, which is reasonable given data limitations.

Finity have assumed superimposed inflation will be at 1.5% pa. There are several inflationary and deflationary forces at work in this portfolio and we think on balance that Finity's small positive superimposed inflation allowance is reasonable.

The liability related to dust diseases comprises about 1% of the overall outstanding claims liability, and silicosis is a further small subset of that. Any concern we have about potential for higher silicosis liability is immaterial at scheme level. Finity's valuation of dust disease claims is not unreasonable.

Risk Margin

Finity have been instructed by icare to adopt a probability of adequacy (POA) of 80% in framing their risk margin. The choice of POA is appropriately made by icare; Finity have accepted the instruction.

According to Finity the outstanding claims liability risk margin that corresponds to the 80% POA at 30 June 2020 was 15.6%. We have examined the analysis undertaken by Finity, and we consider that they have made explicit allowance for the largest risks in their analysis of variability in liability results. We asked Finity about the possibility that poor RTW experience may be explained by, or may contribute to, a highly significant deterioration in WPI severity distribution, and that this may cause a highly significant increase in liability. Finity replied:

We do consider that WPI deterioration is a key risk to the scheme, because of the significant financial consequences (rather than the likelihood of it happening). In fact, we consider it to be the largest risk in the risk margin basis.

We are satisfied that the approach is reasonable and the adopted risk margin, for the stated probability of adequacy, at this valuation lies within a reasonable range.

Claims Handling Expense

The allowance for claims handling expenses (CHE) has changed over the last decade as follows.

30 June of year	CHE liability	Liability as % of scheme liability
2010	\$932M	8.6%
2011	\$923M	7.5%
2012	\$1,141M	10.0%
2013	\$1,086M	10.1%
2014	\$952M	9.8%
2015	\$920M	9.6%
2016	\$1,021M	9.7%
2017	\$1,073M	9.5%
2018	\$1,023M	8.7%
2019	\$1,080M	8.1%
2020	\$1,080M	7.5%

Finity have valued CHE based on an estimate of CHE per active weekly claim informed by icare budgetary information. This is a broadly reasonable approach in the circumstances.

The claims management cost per active weekly claim is slightly reduced (down 4%) from 2019 at the 2020 valuation. Despite the current issues with poor return-to-work performance, the total CHE estimate has dropped to a greater degree as a percentage of liability. We asked Finity about this and they responded that:

- poor RTW experience does not flow through proportionately to CHE, and the CHE is lower for these longer duration claims; and
- the disproportionate increase in catastrophic medical liability due to change in economic basis (due to very long tail of this liability) does not flow through proportionately to CHE liability.

We consider these responses to satisfactorily explain our observations.

More broadly, the CHE percentage has dropped considerably over the last four years. This presumably reflects, among other things, a shift towards automation of some claims management processes. Given concerns about the level of resourcing of both external and internal claims management functions, and recent suggestions that the level of manual intervention in automated processes will need to increase, there is some chance that the CHE estimate will increase in coming valuations. However, these are recent developments that were not apparent to Finity when undertaking the 2020 valuation, and their assumptions appear broadly reasonable based on the then-available budgetary and expense information.

The CHE percentage is broadly in line with estimates for similar schemes interstate. We are satisfied that the liability included for CHE is not unreasonable.

Annexure B

Capital Management using Accounting Funding Ratio versus Economic Funding Ratio

The capital management and long term financial sustainability framework for the Nominal Insurer has been established by icare based on reported liabilities of the scheme, and based on the requirements for commercial insurers set out by APRA. We note that this framework is conservative in several respects for an entity such as the Nominal Insurer. In this section we explore the issues and put forward some alternatives for more effective long term management of the Nominal Insurer.

Economic assumptions for accounting disclosures

Discounting

Claim liability estimates include:

- An estimate of future claim payments in respect of past accident periods, including an allowance for inflation between now and the anticipated future payment date;
- An estimate of future expenses related to settling the outstanding obligations;
- An allowance for discounting of future cashflows to the present day;
- Usually, an allowance for a risk margin over the best estimate measure of liability.

For schemes with a long future period of payments in respect of past accident periods (long-tailed schemes) such as the Workers Compensation Nominal Insurer, the method of discounting of future payments to a present value makes a significant difference to the measured liability. Claimants may be eligible to receive weekly payments to their retirement age and medical expenses for many years following the injury. Accordingly, workers' compensation insurers have significant liabilities for claims that were incurred many years ago, and payments for existing claimants are expected to be significant for many years to come. Payments which are expected to be made many years in the future are subject to a greater discount to present value.

The present value of liabilities for long tail schemes such as the Nominal Insurer is sensitive to the adopted discount rate; for example, all other things being equal, a 1% per annum decrease in the assumed discount rate for all years for the Nominal Insurer leads to a 9.6% increase in the present value of liabilities (Finity 30 June 2020 OSC report, p281).

Under relevant accounting standards, actuarial standards and the prudential framework imposed by APRA, future benefit obligations are required to be discounted to present value at rates based on the yields on Commonwealth Government Securities (i.e. default risk-free rates). Discounting using risk-free rates provides an objective measure of liabilities, although it is widely recognised, both in accident compensation and in superannuation, that using risk-free discount rates provides a conservative measure of liability that, while providing measures that are objective and comparable between entities, has limited usefulness in other contexts such as funding and internal capital monitoring and management.

Inflation assumptions,

Inflation assumptions may vary by benefit type. Some benefits are assumed to be subject to price inflation measures, whereas others are subject to wage inflation. Inflation rates in the short term (i.e. the next few years) are typically based on economic forecasts or inflation forecasts in government budget. These forecasts are generally only available for a short period; typically only three to four years. For the longer term, the difference in the yields on nominal and inflation-indexed bonds provides a market estimate on the long-term price inflation rate. The long-term relationship between wages and prices is often used to set wage inflation relative to price inflation.

Inflation and discount assumptions are not set in isolation from each other, and actuaries are obliged to consider the interaction between discount rates and inflation rates when setting the overall economic basis for a valuation. Over the last 20-25 years, actuaries for very long-tailed insurance schemes, including for the Nominal Insurer, have adopted a long term 'economic gap' between discount rates and inflation, such that the long term inflation rate moves in response to movements in long term bond yields.

Practice and history of economic assumptions for Nominal Insurer

Commonwealth Government bond rates have fallen significantly and steadily since about 2008. The 10 year government bond rate was 6.2%pa at 30 June 2008, and was below 1.0%pa at 30 June 2020. All other things being equal, these dramatic falls in long term bond yields would lead to very dramatic increases in measured liabilities for the nominal insurer.

The adoption of an economic gap approach in setting economic assumptions for valuation of Nominal Insurer liabilities in the long term by Finity reduces the volatility of the liability estimate to changes in risk free interest rates. For the period where the gap is adopted, changes to risk free rates are matched by changes in inflation rates, such that the effect of discounting over this period is unchanged. A change in risk-free rates only affects the discounting in the period prior to the adoption of the gap. So, while liabilities have risen significantly over the last decade as a result of discount rate decreases, a part of the increases has been offset by decreases in assumed inflation over the last decade. Thus liability changes have not been as extreme as might otherwise have applied. While a 1% decrease in discount rates would lead to a 9.6% increase in liabilities if everything else is unchanged, if the expected interaction with inflation is also allowed for, the impact on liability is dampened to a 4.5% increase.

Economic assumptions for scheme management

While the use of risk-free discount rates is mandated for accounting disclosures, there is no mandated requirement that risk-free rates be used for other purposes. The most obvious alternative to using risk-free discount rates is to use asset-based discount rates based on expected returns on scheme assets.

There is a natural logic to the use of asset-based discount rates in some contexts. Consider an example where \$100 is required to settle an obligation in 5 years from now. The risk free discount rate may be 1% pa, meaning that the liability measured on this basis is $\$100/(1+1\%)^5 = \95.15 . However, consider an example where the scheme has an opportunity to invest for that five year period, with expected earnings of 5% pa. If the scheme invested \$78.35 now, this would grow to \$100 in 5 years [$\$78.35 \times (1+5\%)^5 = \100]. From a funding perspective, the more appropriate measure of the central estimate of the present value of liability is \$78.35.

This use of an asset-based discount rate is common in management of funding, and the liabilities measured on this basis are closer to genuine best estimates of the amount required to settle the obligations than those determined using risk-free discount rates.

When setting premiums, icare use an asset-based discount rate (and inflation rates which are set to be consistent with this discount rate). It is this change which differentiates the Operational Breakeven Premium (OBEP) from the Actuarial Breakeven Premium (ABEP) in Finity's reports. We consider that icare's approach, where premiums are set based on the OBEP, is appropriate when considering funding and premium arrangements.

As discussed below, we consider that there is further opportunity to use an asset-based discount rate, and the genuine best estimate liabilities that result from this approach, for management of the scheme's capital position. Analogous to Finity's terminology, we refer to the liability determined using the asset-based discount rate as the Operational Best Estimate Liability (OBEL).

Measuring scheme financial position for long term sustainability monitoring

Long term financial sustainability is an important objective within accident compensation schemes, however sustainability is necessarily a subjective concept.

Ideally each year of premium receipts would fund that year's associated claims costs and expenses. This would include allowance for investment return on the premiums prior to payment of claims and expenses. While breakeven premiums are calculated on this basis, there is considerable uncertainty with respect to associated claims costs and investment returns. The sufficiency of premiums is only truly known many years after the writing of those premiums.

There is no widely agreed method of measuring long term sustainability, but it seems reasonable that any measure makes a comparison of the liabilities of the scheme, and the assets that have been (accumulated from past premiums and investment returns, and disbursed through claim payments and expenses) held to paydown those liabilities and associated expenses.

Measures of financial position for capital monitoring and management

The **Accounting Funding Ratio (AFR)** is an often-used measure in capital monitoring, calculated as the ratio of Assets to Liabilities from the Balance Sheet of the insurer. In some situations there are adjustments to the calculation, such as the exclusion of intangible assets.

It appears that the Nominal Insurer calculates the AFR on the basis of Assets/Liabilities with no adjustments. The liabilities are discounted at risk-free rates and include a risk margin. The adopted economic parameters reflect an assumed long-term 'gap' between discount and inflation rates. Assets are valued at market rates at balance date.

The AFR is sensitive to short term fluctuations in bond markets. In our view the fluctuations in AFR in the short term in response to market forces give an unrealistic indication of volatility in the underlying volatility of the financial position of the scheme. In particular, we consider that the continual marking to market of the discount rate based on bond yields (and assets based on market prices) is inconsistent with the much slower response time in the way short and medium term inflation rates in the accounting liability measure are adjusted in response to changing market conditions. This inconsistent response time in these two offsetting elements of the economic basis creates short term volatility in the liability measure that is in our view largely artificial.

While it is simple to calculate the AFR, this simplicity must be balanced against the short term volatility of the AFR, and the implications for financial management of the scheme of icare's decision to focus on AFR for financial management of the Nominal Insurer.

The **Economic Funding Ratio (EFR)** (also known as Insurance Funding Ratio) is an alternative measure of financial position that is used in management of some accident compensation schemes. The EFR is conceptually similar to the AFR, but liabilities are determined using an asset-based discount rate (earlier defined as the Operational Best Estimate Liabilities – OBEL). The practical outcome is that the EFR is a considerably larger percentage than the AFR. For example, an AFR of 100% may currently be equivalent to an EFR of perhaps 120-135%, depending on the prevailing difference between economic bases.

The advantages and disadvantages of EFR compared to AFR when monitoring the longer term sustainability and capital position of the scheme include:

- EFR includes a genuine best estimate of liability, determined using an asset-based discount rate based explicitly on the expectations for earnings on scheme asset. This creates an internal consistency in the numerator and denominator of the ratio, and a transparent measure of the underlying financial position of the scheme. In our view this is a significant advantage of EFR over AFR;

- The EFR is less volatile in the short term than AFR, but similarly responsive to changing economic conditions in the medium term. In our view this is a significant advantage of EFR over AFR;
- The EFR is not based on the liabilities reported in financial statements, whereas AFR is. This creates a communication challenge in the use of EFR, but this can form part of the overall communication of icare about the capital management approach. In our view this is a minor disadvantage of EFR, and not a reason to avoid use of EFR.

Capital Management Policy of icare for Nominal Insurer

The Accounting Funding Ratio (AFR) has been established by icare to be a centrally important metric of financial position for the Nominal Insurer. The Capital Policy of icare/NI refers to Capital (difference of assets and accounting liabilities) as being core to the insurer's financial strength and long term sustainability. The Board's risk appetite in this area is expressed via the Target Capital Ratio Policy, again based on the accounting liability.

The icare Board have a target for the AFR of 123%, with a Minimum Capital Requirement of 100%. The Target Operating Zone set by the Board is 115% - 135% (so-called "Green Zone"). If the AFR is within the Green Zone, no action is required. For a ratio of 100% - 115% (Orange Zone), management must formulate an action plan to return to the Green Zone within seven years. For a ratio below 100% (Red Zone) management must formulate a plan to return to Orange within three years.

In the Capital Management Policy, the target ratio of 123% is derived in part in alignment with the prescribed (minimum) capital requirements imposed on commercial insurers licensed by the Australian Prudential Regulatory Authority (APRA). We note that the minimum capital requirements imposed by APRA, as the prudential regulator of the financial services industry in Australia, are designed to limit the possibility that a commercial insurer will be unable to meet its obligations.

Most insurers that are subject to the APRA minimum capital requirements operate in competitive markets. Accordingly such insurers have less scope than the Nominal Insurer to increase premium rates; a unilateral increase in premium rates by a private insurer in a competitive market would lead to a lower market share. While increases in premiums by the Nominal Insurer may lead to a higher number of entities choosing self-insurance or specialised insurer status, this "leakage" or loss of market is likely to have a far lower relative impact on market share than for a private insurer.

We note that there are considerable non-quantitative aspects to the setting of premiums. For example, the Board of icare decided in light of COVID-19 that it would withdraw its request for a premium increase to apply to for the 2020/21 underwriting year .

Further, while there is no explicit guarantee of the Nominal Insurer by the NSW Government, there appears to be some expectation of an implicit guarantee. Further, action by the government could include legislative changes to benefits under the scheme.

Additionally, many insurers that are subject to the APRA minimum capital requirements write predominantly short-tailed business. As the term of payment of short-tailed insurance is shorter than for workers' compensation, the liabilities are less sensitive to changes in risk-free rates. Short-tailed insurers tend to have a low proportion of growth assets, such that the valuation of investment assets are subject to lower volatility, and the assets have corresponding lower risk charges (that contribute to the minimum capital requirement).

These important differences indicate that the APRA capital framework may have limited application to a long-tailed, quasi-monopoly insurer with some implicit government guarantee. Nevertheless it

appears that icare has expressed its risk appetite via targets for the AFR that as based on APRA requirements.

A large part of the deterioration in the Nominal Insurer's AFR over recent years is attributable to the record low levels of yields on Commonwealth Government Bonds. It would seem reasonable to explicitly recognise that the effect on long-term sustainability is limited to changes in 'real' claims costs and investment return, and we consider that this is better reflected in the EFR than the AFR.

The large Victorian Government insurers (Worksafe, Transport Accident Commission, Victorian Managed Insurance Authority) have their prudential requirements set down by the Department of Treasury & Finance. Over the last eighteen months, the use of an Accounting Funding Ratio has been replaced by an Insurance Funding Ratio (or Economic Funding Ratio). The Insurance Funding Ratio discounts liability cashflows at the expected return on the investments of each entity. It also allows a risk margin to be included in the estimation of liabilities.

For the Victorian insurers, there has been no change to the production of financial statements under accounting standards. The claims liability provision on the balance sheet is still required to be calculated using risk-free rates, and an AFR is still readily able to be calculated. However in the expression of long term financial risk appetite and financial sustainability, the EFR is adopted in place of the AFR. Furthermore, the target ranges and trigger points for EFR are different than for AFR, recognising the different nature of these measures.

As an example of the different response to bond rate falls that has occurred in Victoria, steep falls in risk-free rates over 2018/19 contributed to a \$6b underwriting loss for the TAC, reflecting greatly increased liabilities as measured using accounting standards. This led to a significant drop in the accounting funding ratio to well below 100% (around 81% at June 2019), however the economic funding ratio remained well above the 100% target (138% at June 2019).

In our view, considering the experience of similar organisations interstate and noting the specific differences between the Nominal Insurer and private sector insurers, it may be more appropriate for icare to establish a capital management and long term financial sustainability framework that is based on the Economic Funding Ratio. The EFR will be higher than the AFR, but this does not necessarily imply that the solvency position of the Nominal Insurer will improve, as any reassessment of the capital framework would inevitably include a resetting of target solvency zones.

The action plans that must be formulated for repair of the capital position (Red, Orange zone) can include claims management, premium increases and changes in investment strategy. In the context of the Nominal Insurer and icare, the adoption of the AFR as the basis for the capital management is driving real decisions of the management of icare, whereas at least part of these changes to the AFR do not in our view have significant impacts of long term sustainability of the Nominal Insurer. Focus on the AFR for capital management has led to outcomes that may not apply if EFR was used as the primary measure for capital management:

- The short term volatility in the AFR is actively managed by icare through an interest rate hedging strategy. While the movement in the AFR is real in terms of financial reporting, we contend that this volatility is not strongly or directly related to the economic position of the scheme. The hedge acts as a constraint on the investment policy – the cost of hedging is substantial (an opportunity cost for investment return that we think is probably in the range \$50-100M per annum), and we contend that, while the hedge will act to limit short term movements in the AFR, there are other ways of addressing the AFR volatility problem. In particular, a shift to EFR as the primary measure of economic position of the Nominal Insurer would reduce or remove the motivation for the interest rate hedge. We have provided further details on the interest rate hedge justification and practice in Appendix B1;
- The premiums being put forward by icare include an amount in respect of balance sheet repair. While an AFR below 100% may be interpreted as an indicator of a solvency problem

requiring balance sheet repair, we note that a shift to EFR as the primary indicator of long term sustainability may result in a different view. For example, in the Victorian context the AFR for Transport Accident Commission (TAC) was about 82% at 30 June 2020, but this is not taken as a sign of distress because the EFR (which is the primary measure of financial sustainability) remains at over 137%, and within the target range.

Perceived impediment to change

We understand from icare staff that there is a view within icare that consideration of the EFR, or any other consideration of best estimate outstanding claims liabilities of the Nominal Insurer, for capital management and consideration of long term sustainability is not allowed. Indeed, we understand that icare do not, at any point, require their actuarial advisors to provide a valuation of scheme outstanding claims liabilities of the Nominal Insurer using best estimate economic assumptions. Further, in discussion, icare staff including the Chief Actuary and the GE Organisational Performance readily recognise the benefits of having such information available, and both expressed frustration that these measures were “off-limits”, due to restrictions imposed from outside of icare.

We have discussed with both Treasury and SIRA this reluctance of icare to consider a best estimate measure of liabilities. Both Treasury and SIRA have confirmed that there is no such restriction imposed by them, and that they would consider a best estimate liability, and use of EFR as a measure of financial sustainability, to be something that is within the current discretion of icare to consider.

We recommend that icare consider use of an Economic Funding Ratio or some analogous best estimate basis of liability measurement in their capital management and long term financial sustainability monitoring framework.

Appendix B1 – Interest Rate Hedging strategy

The icare board has an investment strategy which has a growth orientation, but which also includes an interest rate hedge.

The growth orientation of the investment strategy is in our view a reasonable approach for a fund with an investment horizon of several years and with obligations that are linked to inflation and general economic conditions. The icare board has made an informed decision about the level of risk to accept in the investment process, based on advice from TCorp about such things as probabilities of negative returns and probabilities of achieving certain benchmark returns.

We note that the icare board Investment and Asset Committee (IAC) take an active approach to reviewing the Strategic Asset Allocation, and the SAA has recently been shifted towards a more growth-oriented strategy, with higher corresponding investment risk.

We have not formed a view as to the particular degree of growth orientation and investment risk adopted for the Nominal Insurer investments, nor the recent shift towards a higher-growth and higher risk orientation. We are comfortable with the general outcome, which sees a significant fraction of all assets invested in classes which can expect an equity-type return that is expected to exceed inflation by a moderate margin in the long term.

Further, the commentary below should not be interpreted as a critique of management decisions taken within the prudential framework that icare has imposed on itself. Rather, the text below is intended to highlight the issues in light of a broader view of prudential management, such as a shift to consideration of an Economic Funding Ratio as a primary measure of prudential health.

Balance sheet risk related to interest rates

The icare board has identified a particular risk related to increases in the actuarially assessed liability due to increases in government bond yields. The risk identified by the board relates to the way the liability is measured and reported³, with the liability being moderately sensitive to movements in government bond yields of durations up to about ten years. The board has requested that the investment strategy include a specific allocation towards hedging the risk related to movements in bond yields, and TCorp has implemented this strategy per the board's instructions.

TCorp had, up until about November 2020, effected a 100% hedge of the interest rate risk, such that any change in liability related to movements in government bond yields resulted in an offsetting movement in the value of the investment portfolio. According to icare, this hedge had worked quite well in recent years. As bond rates have fallen over recent years, the effect of reduced bond yields on measured liability has been substantial, but so too the value of the assets invested in bonds has increased by a corresponding amount.

The hedge was reduced from 100% to 50% in November 2020, and the nature of the underlying defensive asset holdings was changed from predominantly nominal government bonds to predominantly inflation-linked government bonds. We understand from briefing papers prepared by TCorp for the IAC that TCorp expect the reduction in hedge from 100% to 50% to increase yields on the portfolio by about 0.3-0.4% per annum.

Offsetting factors

While bond yields may move independently of other economic parameters in the short term there are underlying interrelationships which mean that, for example, a drop in bond yields is likely to be

³ Accounting standard 137 has been interpreted here as requiring the use of yields on Commonwealth bonds of matching duration as the discount rates for valuation. We do not intend to call this accounting treatment into question, except to note that we are aware that the adopted discount rate under AASB137 in some contexts is a discount rate based on expected return on assets supporting the liabilities.

accompanied by lower inflation in the medium term. This observation is supported within icare and Finity through the adoption of a fixed gap approach when setting long term inflation assumptions in the liability valuation. This observation is also supported over observed experience in the last few years. While bond yields used as discount rates have dropped by somewhere in the range 1.5%-2.0% pa between 2015 and 2020, so too have short term inflation forecasts dropped, by around the same 1.5%-2.0% pa. Because discount rates and inflation rates have opposite effects of similar magnitude in the liability valuation, the liability measure has been largely unaffected by movements in the external economic environment over this period. Further, this drop in both inflation and discount rates is not an aberration, but is quite consistent with expectations.

Consider an example where economic growth slows due to a significant external shock in June of a year. Bond yields may fall immediately, leading to an increase in measured liability immediately. However, the valuing actuary doing the 30 June valuation may not immediately react to the lower inflationary expectations associated with the economic slowdown, and it may not be until the following valuation that the actuary revises inflationary expectations in the valuation downwards. This will see an immediate increase in measured liability, but then a reduction at the following valuation as the actuary builds in the revised inflationary expectations.

It seems quite plausible that liability results are volatile in the face of changing bond rates primarily because valuing actuaries rely on inflation forecasts which are not as reactive to market conditions and emerging information as bond rates – it appears to be the delay in incorporating new inflation information which results in most volatility in reported results. If for example the valuing actuaries relied on the implied inflation expectations in inflation-linked bonds when setting inflation assumptions at each valuation, then much of the apparent volatility in outstanding claim present value liability results would dissipate. This is a genuinely vexed area of actuarial practice, and there is no simple way to cope with all the competing factors that may guide the selection of a valuation basis in such circumstances. Ultimately the challenge is to effectively communicate the underlying causes of volatility.

Cost of hedging

We have discussed the hedging strategy in detail with icare, TCorp (as investor) and Mercer (as the icare investment strategy peer reviewers). We have explored the concept of opportunity cost with these stakeholders. We understand from briefing papers prepared by TCorp for the IAC that TCorp expect the reduction in bond yield hedge from 100% to 50% to increase yields on the portfolio by about 0.3-0.4% per annum⁴.

On an asset base of about \$18B, the opportunity cost of hedging appears to be quite high. The additional returns expected to be generated by reducing interest rate hedging from 100% to 50% is in the range \$50-90M per annum. There would be further gains expected if the interest rate hedge was removed altogether, and we consider that the overall cost of the interest rate hedge, in terms of foregone investment returns, is probably in the range \$50-100M per annum.

⁴ While we do not expect that reducing the hedge from 50% to zero would produce double the increase in expected yields, we do expect that there would be some further increase in expected yields.

Annexure C

C1 Forecasts from icare's Nominal Insurer business plan.

Year ending 30 June	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Balance sheet	\$m										
Cash & equivalents	377	201	202	203	201	209	201	204	202	204	208
Receivables	1,447	572	602	614	629	642	655	668	681	694	706
Financial assets	17,196	17,787	18,527	19,471	20,558	21,703	22,672	23,673	24,704	25,767	26,871
Intangibles	134	135	117	98	85	80	73	67	67	67	67
Other	41	34	27	21	16	11	6	1	6	6	5
Total assets	19,195	18,729	19,475	20,407	21,489	22,645	23,607	24,613	25,660	26,738	27,857
Payables	731	128	119	113	109	104	85	85	85	86	86
Unearned premium	542	613	733	768	803	829	855	881	905	929	952
Outstanding claims	17,952	17,678	17,782	18,186	18,654	19,191	19,723	20,243	20,760	21,377	22,000
Unexpired Risk Premium	267	206	99	96	82	77	71	65	60	55	50
Total Liabilities	19,492	18,625	18,733	19,163	19,648	20,201	20,734	21,274	21,810	22,447	23,088
Net Assets	-297	104	742	1,244	1,841	2,444	2,873	3,339	3,850	4,291	4,769

Year ending 30 June	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Profit & Loss	\$m										
Premium revenue	2,806	2,853	3,355	3,645	3,811	3,936	4,058	4,181	4,299	4,412	4,520
Net claims Incurred	3,966	2,285	2,622	3,061	3,183	3,344	3,441	3,533	3,628	3,821	3,926
Levies paid	297	321	328	336	343	350	356	360	365	368	372
Other operating expenses	839	687	639	659	650	653	661	667	688	708	727
Total expenses	5,102	3,293	3,589	4,056	4,176	4,347	4,458	4,560	4,681	4,897	5,025
Underwriting result	-2,296	-440	-234	-411	-365	-411	-400	-379	-382	-485	-505
Investment income	423	840	869	912	961	1,014	815	851	888	926	985
Net result	-1,873	400	635	501	596	603	415	472	506	441	480
Total assets	19,195	18,729	19,475	20,407	21,489	22,645	23,607	24,613	25,660	26,738	27,857
Total liabilities	19,492	18,625	18,733	19,163	19,648	20,201	20,734	21,274	21,810	22,447	23,088
Net assets	-297	104	742	1,244	1,841	2,444	2,873	3,339	3,850	4,291	4,769
Funding ratio	98%	101%	104%	106%	109%	112%	114%	116%	118%	119%	121%

Year ending 30 June	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Cashflow	\$m										
Operating											
Receipts	2,958	4,547	4,315	4,585	4,799	4,969	4,893	5,052	5,206	5,357	5,523
Payments	-3,631	-3,766	-3,563	-3,640	-3,714	-3,816	-3,932	-4,047	-4,176	-4,292	-4,415
Investing											
Sale of investments	750	-	-	-	-	-	-	-	-	-	-
Purchases of investments	-	-924	-740	-944	-1,087	-1,145	-969	-1,001	-1,031	-1,063	-1,104
Purchases of intangibles	-37	-28	-11	-	-	-	-	-	-	-	-
Net increase in cash	40	-171	1	1	-2	8	-8	4	-1	2	4
Opening cash and equivalents	332	372	201	202	203	201	209	201	205	204	206
Closing cash and equivalents	372	201	202	203	201	209	201	205	204	206	210

Notes:

While the items in the year to 30 June 2020, and as at 30 June 2020 are listed as "Actual" figures in the Business Plan, we note there are some small differences to the financial statements of the Nominal Insurer at 30 June 2020. For example the net result in the financial statements was a loss of \$1.894b, compared to the net result above of a loss of \$1.873b.

In the financial statements, the net assets of the Nominal insurer at 30 June 2020 are -\$316m, compared to the net assets above of -\$297m.

We note that the projected funding ratio is assumed to increase over 100% in the year ending 30 June 2021 (Orange zone for capital adequacy), then to reach 115% by 30 June 2027 (Green zone).

In our discussions with icare regarding this model, we have been made aware of some minor limitations in the model. For example, the model assumes a high proportion of receivables at 30/6/20 are paid out in 2020/21 with lower relevant receivables projected in future years. We understand this shortcoming will be corrected in future iterations of the model. Recognising the inherent uncertainty in making future forecasts, this limitation should not have a significant effect on the future projections, and the conclusions that may be drawn with regard to long term financial sustainability.

C2 Description of our Nominal Insurer forward projection model

We have constructed our own simple model of future Profit & Loss statements, and Balance Sheets for the Nominal Insurer. Our model has three main uses:

- (i) Construction of our simplified model assists in our assessment of the reasonability of the more sophisticated and complex forecasts contained within the NI business plan;
- (ii) By changing the underlying assumptions, we are able to identify the most significant factors that affect the long term financial sustainability of the NI;
- (iii) Our model assists us to consider various scenarios with respect to claims, premiums, and investment return; and to observe the resulting indicators of financial sustainability.

We cannot expect that our simple model will match the more complex model used by icare. In the construction of our model we have taken some necessary "shortcuts". These include the aggregation of claims payments from quarters into years, and simplifying assumptions regarding the pattern of premiums, claims, expenses and investment returns.

For many items, as outlined below, we adopted the figures that appear in the NI Business Plan. This includes expenses, levies, intangible assets and amounts payable. In our discussions with icare regarding this model, we have been made aware of some minor limitations in their model. For example, the model assumes a high proportion of receivables at 30/6/20 are paid out in 2020/21 with lower relevant receivables projected in future years. We understand this shortcoming will be corrected in future iterations of the model.

We have allowed for the same savings in claim payments and liabilities as assumed in the NI model.

Importantly our projections of premium revenue, investment income and outstanding claims provisions were close to those contained in the NI forecasts. These are the items that have the greatest effect on long term financial sustainability, and provides confidence that our simplified model is fit for purpose.

In the consideration of sensitivities and scenarios, the magnitude and direction of the changes in the financial outcomes are far more significant than the underlying figures. As noted earlier, any projections are subject to considerable uncertainty, and the only thing we can say with confidence with respect to 10 year projections is that they will be wrong. The financial projections in our model, and in the NI Business Plan reflect deterministic models, so each single version of the model represents one possible outcome for the NI.

Our choice of the scenarios was driven by the materiality of the changes to long term sustainability, and those areas where icare could plausibly take action to improve long term sustainability of the NI. In our review of the projected financial statements in the NI Business Plan, we noted that the trajectory of the accounting funding ratio is dependent on the assumed term structure of yields on Commonwealth Government Bonds at future dates, however given the inability of icare to influence these yields, we have not modelled specific scenarios to reflect this uncertainty.

Elsewhere in our report, we have identified the shortcomings in the use of the accounting funding ratio as an indicator of capital adequacy and financial sustainability. Accordingly, we have also calculated an Economic Funding ratio (EFR), where claims liabilities are discounted at the rates of assumed investment return rather than risk-free rates. The EFR also includes allowance for the same 75% adequacy percentage risk margin as the accounting claims liabilities.

As with the AFR, it is the magnitude and direction of the changes in the EFR that are far more significant than the underlying figures.

The projections of the funding ratios for the base case of our model, are shown in the graph below. This enables comparison of the trajectories of the ratios under each scenario.

Projections for our base case model are shown below:

	2020(a)	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Forecast Profit and Loss statement											
Premium revenue (b)	2,804	2,784	3,248	3,583	3,775	3,909	4,032	4,155	4,274	4,388	4,497
Net claims Incurred (c)	3,966	3,198	3,087	3,342	3,468	3,548	3,669	3,727	3,841	3,902	4,033
Levies paid (d)	297	321	328	336	343	350	356	360	365	368	372
Other operating expenses (d)	839	687	639	659	650	653	661	667	688	708	727
Total expenses	5,102	4,206	4,054	4,337	4,461	4,551	4,686	4,754	4,894	4,978	5,132
Underwriting result (e)	-2,298	-1,421	-807	-754	-686	-642	-654	-600	-620	-590	-636
Investment income (f)	423	845	855	889	928	974	1,023	1,073	1,125	1,180	1,241
Net result	-1,875	-576	49	135	243	331	369	473	505	590	606
Forecast Balance Sheet											
Cash & equivalents (g)	377	201	202	203	201	209	201	204	202	204	208
Receivables (g)	1,447	572	602	614	629	642	655	668	681	694	706
Financial assets (h)	17,196	17,025	17,563	18,298	19,205	20,198	21,190	22,253	23,355	24,617	25,817
Intangibles (g)	134	135	117	98	85	80	73	67	67	67	67
Other (g)	41	34	27	21	16	11	6	1	6	6	5
Total assets	19,195	17,967	18,511	19,234	20,136	21,140	22,125	23,193	24,311	25,588	26,803
Payables (g)	731	128	119	113	109	104	85	85	85	86	86
Unearned premium (i)	542	611	718	780	816	843	869	895	920	945	968
Outstanding claims (j)	17,952	17,895	18,399	18,934	19,576	20,232	20,847	21,421	22,014	22,682	23,272
Unexpired Risk Premium (k)	267	206	99	96	82	77	71	65	60	55	50
Total Liabilities	19,492	18,840	19,335	19,923	20,583	21,256	21,871	22,466	23,080	23,767	24,376
Net Assets (l)	-297	-873	-824	-690	-447	-116	253	726	1,231	1,821	2,427
Liabilities on economic basis (m)		13,936	14,465	15,075	15,747	16,458	17,107	17,749	18,392	19,144	19,801
Accounting Funding Ratio (n)	98%	95%	96%	97%	98%	99%	101%	103%	105%	108%	110%
Economic Funding Ratio (o)		121%	120%	120%	120%	121%	122%	123%	125%	126%	128%

Notes

- i. All figures for 2020 are extracted from icare's "NI Business Plan FY21 - 20200929.pdf", with no alterations.
- ii. In our base case, premium revenue is calculated using the same assumptions with respect to future wages as the icare model. The base rates by underwriting year are the same as those in the NI budget. In some scenarios the rates are allowed to vary. The revenue item allows for the earning pattern, whereby a majority of policies are written in July each year. This pattern also affects the unearned premium, with changes in unearned premium being recognised as revenue.
- iii. Net claims incurred allows for the claims payments, changes in claims provision, and changes in unexpired risk premium. We have allowed for the same claim payments savings that are adopted in the NI Business Plan.
- iv. These items are unchanged from the NI Business Plan.
- v. Underwriting Result calculated as Premium revenue less Expenses.
- vi. For investment income, we have calculated investment return (base rate of 4.8%pa, but varying in some scenarios) on the opening financial assets in each year, as well as on the inflows of premium income less outflows of expenses and claim payments. The investment earnings on premium allows for the majority of premium to be received early in each financial year. Our simplified model assumes that expenses and claim payments are made in the middle of the financial year.
- vii. These items are unchanged from the NI Business Plan.
- viii. In our simplified model, we are unable to explicitly project cashflows. Financial assets have been derived by allowing this to be a balancing item. As the profit and loss in each year produces a net result, we are able to project the net assets at each future balance date. The financial assets are then allowed to vary in order that the calculated assets differ from total liabilities to equate the net assets.
- ix. Unearned premium applies the earning pattern to the premium for each underwriting year. This reflects that premiums are mostly written in the early part of the financial year.
- x. Outstanding claims utilise the cashflows from Finity's valuation of outstanding claims as at 30 June 2020. We were supplied with projected payments for each benefit type, by past and future accident year, and by future payment quarter. We aggregated this data into yearly cashflows. We also allowed for the savings in claims liabilities that are included in the NI Business Plan.

In some scenarios, these payments were allowed to vary.

When discounting cashflows in the base case we used the forward rates as adopted in the NI Business Plan. We also calculated liabilities at rates of assumed investment return - see note (m).

The provision also allows for claims handling expenses and a risk margin to provide 75% probability of sufficiency.

- xi. Unexpired risk premium has been based on the projections from the NI Business Plan, but allowing for variations in premium rates and claims costs (sufficiency).
- xii. Net assets change in each future period allowing for each year's net result (profit & loss).
- xiii. Liabilities have also been calculated using discount rates that are equivalent to the expected return on investments. The provision also allows for claims handling expenses and a risk margin to provide 75% probability of sufficiency.
- xiv. Calculated as the ratio of Total Assets to Total Liabilities.
- xv. Calculated as the ratio of Total Assets to Total Liabilities (but using Claims Provision on Economic basis).

The projections of the funding ratios for the base case of our model, are shown in the graph below. This presentation enables comparison of the trajectories of the ratios under each scenario.

Base scenario projected Accounting Funding Ratio and Economic Funding Ratio

