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REVIEW OF STRATEGIC ASSET ALLOCATION & ANNUAL LEVY 2017

COLEAMBALLY IRRIGATION MUTUAL CO-OPERATIVE LIMITED

MAY 15, 2017

MARSH & McLENNAN COMPANIES

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Executive Summary

Background

In brief, the irrigation infrastructure of Coleambally Irrigation, like all infrastructure, requires renewal. To fund the cost of this renewal Coleambally Irrigation Mutual Co-operative Limited (CIMCL or the Mutual) levies the users of the infrastructure a charge to meet these future costs. As the cash flows associated with the renewals are not uniform, the levies accumulate in a fund and are invested until such time as they are required to meet the renewal costs. If the fund is fully drawn, special levies can be raised to meet cash flows that cannot be serviced by the fund.

Review

CIMCL has requested that Mercer undertake a review of the assets and liabilities (i.e. the future renewal costs) associated with CIMCL as at 31 December 2016. In particular, Mercer should opine on the appropriateness of the annual levy and the investment policy of the underlying assets.

To this end CIMCL has provided Mercer with a report from Jacobs, an independent engineering consultant, detailing the assets and the expected dates of the next and subsequent renewals of the infrastructure. We have utilized this data to construct a simulation model that incorporates the cash flow timing and the future returns on invested assets. In this model we allow for the uncertainty in the timing of the cash flows and the uncertainty in renewal cost escalation and investment returns.

Conclusion

The levy required to fund the future renewals project will depend on the actual timing and renewal costs. We therefore recommend that as well as regularly monitoring investment performance, CIMCL regularly monitors the progress and cost of renewals against expected costs and timings to identify potential risks at an early stage so that the levy can be amended gradually rather than a lump sum being required.

Our analysis, based on Jacobs' estimates of costs and renewals, indicates a base case indexed levy of around $1.1m to $1.4m (expressed in 2016 dollars) for the future levies to be able to meet future renewal costs on average.

Compared to our previous Report in 2011, the required levy is more sensitive to the average real investment return; that is a higher real investment return would decrease the required levy to a greater extent in the 2016 analysis than that in the previous investigation. The main reason is that CIMCL has greater accumulated assets (around $33.2M in 2016) than in 2011 (around $21M). The $33.2M in 2016 includes $2.9M worth of assets in CICL which can be drawn to fund the liability.

We note that if Jacob's renewal timing or cost estimates prove to be incorrect, then the levy could change dramatically. To illustrate, if the lifetime of the assets is reduced to 80% of that of the current estimates, then the indexed levy would increase to around $2.3M. Likewise, if investment returns or inflation have an adverse impact on the fund earnings or anticipated renewal costs, then the levy would need to be higher than this base case estimate.

Under the current investment strategy, our analysis indicates that an annual levy of $1.2m, could result in approximately a 58% probability of CIMCL requiring a special levy before the end of the current renewal cycle (that is, during the future 90 years). If CIMCL are concerned about liquidity and the need to raise special levies, then higher levy rates may be required. We understand that the current levy collected is approximately $1.55m. Our modelling shows that this results in an11% probability of requiring a special levy. Our analysis assumes that if shortfalls occur they can be funded by an injection of funds equal to the shortfall by raising special levies.

A more aggressive investment policy produces a lower expected levy for little additional long term risk, so therefore, we continue, at this time, to recommend that CIMCL gives consideration to an increased growth bias in its investment strategy for the long term investment portfolio.

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Introduction

Coleambally Irrigation Mutual Co-operative Limited (CIMCL) has engaged Mercer to undertake an assessment of the long term financial aspects of the operation of the Coleambally Irrigation Mutual Co-operative Limited (CIMCL or the Mutual) as at 31 December 2016.

The purpose of this report is:

§ to investigate the adequacy of the current funding program (that is, the ongoing appropriateness of the current annual levy amount in the context of the expected long term capital market environment);

§ the appropriateness of the Mutual's long term investment strategy, and in particular examine the risk of members being required to contribute additional funds in the event of significant adverse capital market conditions impacting the pool of Mutual investments.

Similar to the previous analysis, we assume that the annual levy is not subject to tax following the Tax laws Amendment Bill 2005.

With reference to Mercer's previous report in 27 April 2012, we again utilise Mercer's Capital Markets Simulator (CMS). This modelling tool enables more realistic and internally consistent modelling of likely capital market environments. Sections 3 and 4 of this report, which address the Mutual's liability cost estimates and strategic asset allocation, makes extensive use of this model.

Summary of previous advice

In our previous report, on the basis of the consulting engineer's 100% design life liability projections, the current asset size at that time, and our financial and economic assumptions at that time, we estimated the long term cost of the liabilities as being equivalent to an indexed annual levy starting in 2011 of $0.92m to 1.20m.

Converted to 2016 dollars using the CPI increase from September 2011 to December 2016, this translates to a current levy of approximately $1.02 to $1.33m as at December 2016.

We previously concluded that the long term strategic asset allocation to diversified growth assets of 70% of the Mutual's investments was not unreasonable given the liability profile.

We also suggested that increasing the strategic allocation to diversified growth assets from 70% to 90% could be justified and would appear to reduce the risk of future potential special one-off levies. This conclusion was based on the observation that the risk of accumulating insufficient funds over the very long term investment horizon of this entity appears to have a far greater impact on average funding risks than negative investment returns over the short term.

Reliances

In reviewing the appropriateness of the current levy we have relied on liability data and projections prepared by consulting engineers, Jacobs. This information was contained in their final report issued in November 2016 entitled MEERA Analysis with valuation as at 30 June 2016. This data includes information about the size and timing of future payments to meet projected infrastructure replacement costs.

After discussions with the Mutual we have undertaken the valuation at 31 December 2016.

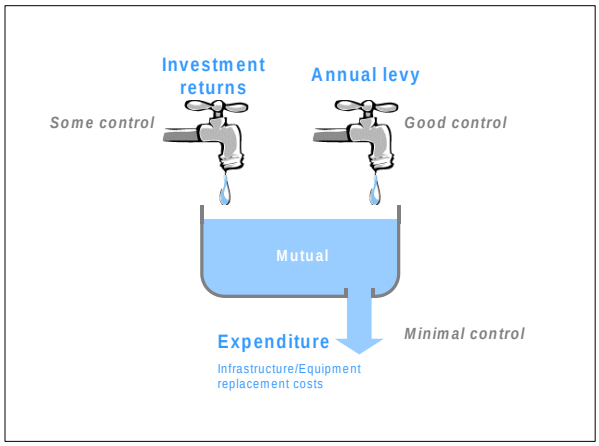
Information regarding the Mutual and its assets and expected tax treatment have been provided by CIMCL in various e-mails.

We assume all information is correct and have not independently verified the data.

Framework for the investigation

We consider that the Directors of the Mutual are faced with the conflicting objectives of ensuring that sufficient funds are available to meet future infrastructure replacement costs as they arise, whilst minimising as far as possible the financial burden on members through high annual levies. We also presume an overriding consideration is to seek as far as possible intergenerational equity, so that today's members are neither subsidising nor unnecessarily burdening future generations of infrastructure users.

Our analysis addresses this trade-off by investigating the behaviour of key aspects of the Mutual's financial operation, which we have conceptualised as follows:



The diagram illustrates the aspects of the Mutual over which the Directors have control or some influence on the expected outcome. For example, the long term investment strategy established by the Directors will be a significant influence on the level of returns produced by the Mutual's investments over the longer term, which will in turn, be a major determinant of the total annual levy paid over the lifetime of the entity. Hence, the greater the investment returns, the lower the levies that will be eventually required.

The timing and size of future expenditure of the Mutual will depend on the operating life of infrastructure assets, and future cost inflation; aspects that are generally outside the Directors' control.

The Directors' funding policy (i.e. the setting of the levy each year and the rate of indexation of the levy) is the other aspect of control available to the Directors in managing the operation of the Mutual. It is important to note that the total levies actually required over the lifetime of the entity (i.e. the total cost) will be a balancing item (equal to total outlay less investment returns actually achieved). However the *pace of funding* over time is something over which the Directors' have some discretion. For example, an annual levy struck at a rate lower than the underlying long-term average cost, will require higher than average, and possibly special one-off levies, at some stage in the future. The problem of course is in identifying this theoretical underlying cost accurately – something we address in this report.

We have therefore focused on the two "control levers" available to the Directors in making our recommendations:

§ the choice of investment strategy, and

§ the policy for the pace of funding the operations via the annual levy.

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Expected long term liability cost

In this section, we have utilised two approaches to estimate the indexed annual levies required to fund the long term renewal costs associated with the Mutual's infrastructure. The first approach (referred to as the Present Value approach), finds the annual levy by equating the present value of the estimated future renewal costs and future indexed levy in today's dollar value. The present values take into account future costs and levy escalation due to inflation, it also accounts for the time value of money.

On the other hand, the second approach (referred to as the Project Forward approach), involves projecting forward the various asset returns and future prices increases, and then determines the indexed annual levy required in order to achieve a zero fund at the end of projection term.

The Present Value approach is similar to the one adopted by Jacobs, except for the term of the projection. We note that Jacobs used 100 or 200 years for the projection term whereas we adopted 90 years' simulated investment return dataset as this approximately represent a renewal cycle and we cannot recognise noticeable cyclical nature within the next 90 years from this valuation. (Please refer to the liability assumption section for more details.)

Liability Assumptions

The engineering projections provided by Jacobs are significantly different from the data provided to Mercer for the previous valuation which was provided by a different engineer consultant (SKM). The key differences being an increase in the replacement cost of assets. It is noted by Jacobs that the key drivers for the increase in replacement costs are cost escalation, a greater number of Flumegates, changes to the building block methodology, and the adopted depreciation rates. Jacobs' comparison of the renewal profile over 100 years also shows that much less expenditure is expected in the period before 2040, and between the years of 2050 and 2080 in 2016 than 2011. That is the asset life is longer in Jacob's report than in SKM's and therefore assets are replaced less frequently. Overall the total expected cash outflow in real terms over a 100 year time period has reduced by around 23% since last valuation.

Replacement Cost Variation Factor

The engineering data provided the liability estimates under both a 100% and 125% replacement cost assumptions. For the purpose of this report we have assumed a 100% replacement cost but have also calculated the appropriate levy under a 125% replacement cost assumption for comparison purposes.

Design Life Variance

Design life represents the expected life of an infrastructure asset. The liability profile provided also allowed for 15% variance in the design life for the infrastructure assets on a stochastic basis (using Monte Carlo simulations). This approach has been adopted to remove the "peakiness" of the cash flows rather than provide an accurate estimate of the variability of the likely cash flow.

Liability Profile

The key drivers of the liability profile are the replacement costs of the assets and the length of the cashflow cycle.

Replacement costs

The actual assets currently included in the Jacobs' analysis have a replacement cost of $168M, whereas the value in the previous report were $141M an increase of roughly 19%.

We understand from Jacobs that that the key drivers for the increase in replacement costs are cost escalation, a greater number of Flumegates, changes to the building block methodology, and the adopted depreciation rates.

Lengthening of cash flow life cycle

Investigation of the liability data also revealed that the timing for assumed asset replacement appears to have lengthened under the new engineering projections compared to the data previously supplied. Therefore despite the increase in replacement costs, the total expected cashflows before discounting are lower in the next 100 years than was estimated in the SKM report.

Change in liabilities

Assuming 100% design life, the liability profile received from Jacob in its most recent analysis showed a significant decrease in the liabilities over 100 years compared to the forecasted liabilities supplied to us for the previous valuation. The table below shows the total projected liabilities in today's dollars with no discounting or adjustment for inflation.

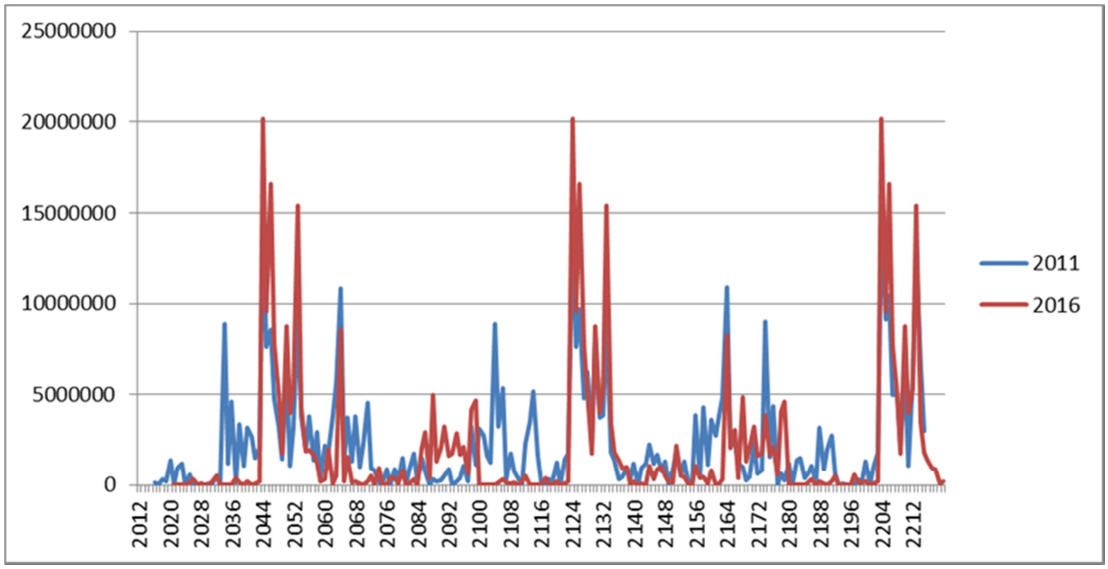
Design Life	Current Valuation $m	Previous Valuation $m
80%	275	306
100%	164	212

Total liabilities under an 80% design life have decreased by roughly 10.1%, and decreased by around 23% under a 100% design life. All things being equal, this would result in a decrease to the recommended levy.

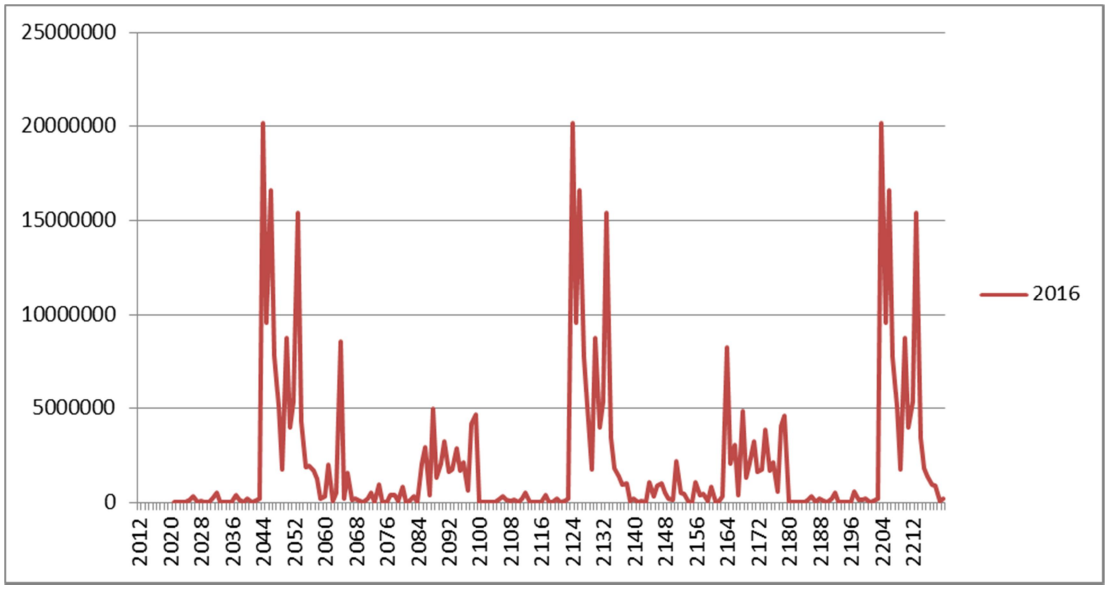
Expected Liability Cashflows

The first graph compares, the expected liability cash flows (in 2011's dollar value) predicted by SKM in 2011 with that predicted in 2016 (in 2016's dollar value) by Jacobs. The second graph shows the future cash flow expenditure (in 2016's dollar value) predicted by Jacobs in 2016.

Comparison of Expected Liability Cash flows predicted in 2011 and 2016



Expected Liability Cash flows predicted in 2016



Term of Projection

The liability profile provided in this valuation does not show an obvious expenditure cycle in the first 100 years and hence we have used Mercer's longest stochastic future investment return dataset (90 years) to project future asset value and cashflows. 90 years broadly marks the end of the first expenditure cycle or the start of a second expenditure cycle.

Present Value approach

Gap Assumption

The key financial variables that will determine the present value of future cash flows are:

- the rate at which future liabilities grow over time (assumed by the consulting engineer to be linked to general price inflation or change of a construction index); and
- the discount rate used to derive the present values of the cash flows.

In fact, the gap between these two assumptions is actually more important than the absolute values of either assumption in isolation, since today's value of a future cash flow will be increased by inflation and reduced by the discount rate.

Since the average term of the liabilities is extremely long, with significant projected expenditures anticipated many decades into the future, assumptions should therefore be consistent with this long term horizon.

Indeed as the horizon is so long we consider it unreasonable to predict likely static levels of discount rate and CPI with any great precision. We therefore produce results for a range of potential 'gaps', ranging from 4% pa to 1% pa.

We understand the Mutual is subject to income tax at the company rate on investment earnings. Our central estimate, or base case gap, based on Mercer's estimates of long term CPI, asset returns, CIMCL's current asset mix would be approximately 2%. A more pessimistic or optimistic scenario gives a gap of 1.5% pa and 2.5% pa respectively after allowing for tax.

Analysis

Using the 100% liability cost estimates with no allowance for liability timing variance, the full 100 years liability cash flow forecasts and the range of gaps we have produced the following results ($000).

Gap	**4.00%**	**3.00%**	**2.00%**	**1.00%**
PV Future 100 years' expenditure	41,429	56,331	78,188	111,462
PV Levy $1.55M Indexed	37,983	48,978	66,802	97,695
Current Assets	33,200	33,200	33,200	33,200
(Surplus) / Deficit	-29,754	-25,847	-21,814	-19,432
Required Indexed Levy to meet costs ($000)	336	732	1,044	1,242

As seen in the table above, a high gap means lower costs due to the higher excess investment returns over the inflation rate.

These estimates are consistent with those produced by Jacobs, except for a difference in initial asset value.

If we allow the timing of the cash flows to become uncertain and follow a triangular distribution[1] with the mode at current expected timing, with minimum of 85% of expected timing and maximum of 115% of expected timing. We observed that the impact adds around 5% to the present value of the median future expenditure over the 90 year projection. The impact is small because when we introduce uncertainty we assume the term to renewal is equally likely to be longer as shorter. Making the term shorter increases the cost slightly more than lengthening the term decreases the cost; although the net impact is small.

However, timing changes in the cash flows may have an impact on whether the fund becomes fully drawn and needs to be topped up by borrowing or an increased levy. To illustrate, we have also calculated the required levy using the 90 year liability profile allowing for the timing of

[1] This is the distribution used by Jacobs in their Monte Carlo simulations

cashflows to vary by 15% on a stochastic basis. For comparison purposes, we have also included the required levy for a 100 year liability profile in 2011 and 2016.

Median required indexed levy to meet costs ($000)

Gap	4.0%	3.0%	2.0%	1.0%
90 Year Life in 2016	404	798	1,124	1,362
100 Year Life in 2016	421	824	1,163	1,418
100 Year Life in 2011	949	1,281		

Under either the 100 year life or 90 year life scenarios the contributions over 90 years are similar. Therefore we have used a 90 year life for future analysis. Compared to 2011, the required levy is smaller for the same return. This is because of the slightly lower expected future expenditure in the next 100 years and greater accumulated assets (around $33M in 2016) than in 2011 (around $21M).

Compared to our previous Report in 2011, the required levy is more sensitive to the average real investment return; that is a higher real investment return would decrease the required levy to a greater extent in the 2016 analysis than that in the previous investigation. The main reason is that CIMCL has greater accumulated assets. As a result, the required levy has decreased for the scenario when the investment portfolio has more growth assets but increased slightly for a more conservative investment strategy. The detailed analysis is shown in the next section.

Effects of Assumptions

Design Life estimation error

If the design life estimates are systematically incorrect, then this would dramatically affect the incidence and value of the liabilities. To illustrate this we have valued the assets using the cashflows provided by Jacobs in Scenario 4 which assumes the design life of all assets is reduced to 80% of the current estimated design life whilst keeping other assumptions unchanged.

Using a 3% gap and a 90 year life, the required indexed levy would increase to around $2.2m[2] under the Present Value Approach. The cash flow in the short term would also increase significantly which might give rise to some short term liquidity issues.

Renewal Cost Estimation Error

If the renewal costs are underestimated, then, **ignoring any initial assets**, the annual costs would increase linearly with the estimation error. That is if all costs are 25% underestimated, then the annual levy will need to increase by 25%.

[2] The levy value is different from Jacobs' estimate as Jacobs assumes current asset is $20M rather $33.2M.

If we take into account the current asset of $33.2M, then using the 2% gap and a 90 year tem the estimated indexed levy becomes around $1.55m under the Present Value Approach after allowing for a 25% increase in liabilities.

Project Forward Approach

As an alternative to adopting a static "gap" and producing present value figures we have also utilised our Capital Market Simulator to project forward asset returns and price increases over various periods using different asset mixes to assess the impact on funding and the liquidity of the Mutual. The projected liabilities allow for a 15% design life variance.

The Mutual's current asset portfolio split is approximately 50% growth (or higher) and 50% defensive assets if assuming the $2.9M of assets held by CICL are invested in cash. This forms the base case for our asset projections. We also investigate the impact of moving this mix to 60%/40% and 40%/60%.

Assets	90 yr rate	Prob 90	Prob 20
40%/60%	1.26	65.0%	0.0%
50%/50%	1.18	58.3%	0.0%
60%/40%	1.10	53.3%	0.0%

Where:

- 90 yr rate is the annual indexed levy required in $m to provide an average fund value of $0 in 90 years' time;
- Prob 90 is the probability that using the 90 year rate the fund will be negative at some point during the 90 year period assuming the 90 year rate is paid; and
- Prob 20 is the probability that using the 90 year rate the fund will be negative at some point during the first 20 years assuming the 90 year rate is paid.

The probability of the fund going negative is high because we are targeting a levy that is equitable across generations; that is, we are not intentionally building up a surplus or running a deficit. At the end of the projection period the target fund is $0, so there is roughly a 50% chance the fund will be greater and a 50% chance the fund will be lower than $0, and hence, there is approximately a 50% probability of being negative at the end of the period.

There is, of course, a chance the fund will be lower than $0 at some time during the period even if the fund is positive at the end of the projection period so the overall probability of the fund going negative is greater than 50%.

We note that under our adopted assumptions, the higher the percentage in growth assets the greater the expected return, but also the greater volatility of returns which results in a greater

probability of negative returns in future years. However, given the low level of current funds relative to the value of future cash flows, the results are not particularly sensitive to reasonable asset mix variations.

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Strategic Asset Allocations

The theoretically required annual levy depends on:

§ the forecast liability profile,

§ the growth in liability replacement costs,

§ the asset mix of the investment strategy; and

§ the long term portfolio returns achieved by the chosen investment strategy.

All of these factors are variable over time.

In the following subsections we have analysed the appropriateness of various annual levies under a variety of investment strategies and economic scenarios over the next 90 years. We have also calculated the probability of a significant shortfall occurring over the next 90 years for a range of levies, asset allocations and investment scenarios.

Our analysis focuses on the probability of the Mutual finding itself with a significant shortfall under a 90 year liability funding term. In this report we have used real shortfalls of $1.00m, $2.00m and $3.00m as at 31 December 2016, as trigger points (that is, shortfalls above the trigger points inflated by CPI over time).

Given that the Mutual will review and reset its levy on at least a 5 yearly interval we consider that focussing on potential shortfalls allows the Board to determine not only the probability of the need to raise additional funding, but also the magnitude of the cash flow and debt raising implications.

Current Structure of the Fund

At 31 December 2016, investment assets totaled $30.3m with the breakdown of investments broadly as follows.

Mutual	**2016 (%)**
Australian Equity	6.9
International Equity	1.8
Unlisted infrastructure	6.6
Private Equity	5.8
Hedge Fund	30.8
Leveraged Loan	3.8
Australian Fixed Interest	10.1
Cash/Term Deposit	34.2
Total	100

We have also been advised that the Mutual has a reserve of approximately $2.9million held in the CICL account which would be expensed first before other funds are used. Following advice from the Mutual, we have included this reserve in our analysis and we have also assumed the reserve would earn a rate equal to the future cash rate.

After taking into account of the reserve held in CICL and other net assets, the effective asset allocation at 31 December 2016 are as follows:

Mutual	**2016 ($M)**	**2016**
Australian Equity	2.1	6.3%
International Equity	0.5	1.6%
Unlisted infrastructure	2.0	6.0%
Private Equity	1.8	5.3%
Hedge Fund	9.3	28.1%
Leveraged Loan	1.2	3.5%
Growth	**16.9**	**50.8%**
Australian Fixed Interest	3.1	9.2%
Cash/Term Deposit	10.4	31.2%
Reserve in CICL	2.9	8.7%
Defensive	**16.3**	**49.2%**
Total	33.2	100.0%

Overall, the total pool of assets has approximately a 50%/50% split between growth and defensive assets; we understand however that the long term strategy adopted by the Directors is a 70%, or higher, strategic allocation to growth assets.

Experience since previous review

There has been overall positive return in both equity and bond markets since the last strategy review. The yield on Government Bonds has declined dramatically and hit an historical low level. Going forward, asset returns are in general expected to be lower than those experienced in the period since the 2011 review.

We have not tracked whether the Mutual's actual liability outflows thus far have been greater or less than those forecasted by SKM as we have not been provided with the actual replacement costs. We suggest that the Mutual, or Jacobs, monitors actual cash flows against anticipated cash flows to enable them to gauge the accuracy of the estimates.

We understand the annual levy actually currently paid into the Mutual is around $1.55m.

Future Scenario Assumption Inputs

Mercer's current long term return assumptions are based on the market information available as at 31 December 2016. Of course such scenarios may not occur over the ensuing immediate future and therefore plausible alternative scenarios should be examined.

Our model (the Mercer Capital Market Simulator) forecasts asset class returns over a long term period based on projections of underlying economic fundamentals. We have analysed three investment return scenarios, Pessimistic, Base and Optimistic, within our capital market return assumption model to determine the likelihood of the Mutual seeking a special one-off levy in future years. Under our pessimistic (Optimistic) scenario, the CPI-adjusted growth asset return is in the lower (upper) quartile of our simulated real growth asset returns. In our Pessimistic (or Optimistic) scenarios, Australian and Developed Market Economic growth is lower (or higher) than the base case while average inflation and average cash yield broadly stays the same. The details are set out as follows:

Assumption Input	Pessimistic	Base Case	Optimistic
Growth Asset Return	5.4	6.2	6.9
Defensive Asset Return	2.9	3.0	3.0
Australian CPI Inflation (%pa)	2.7	2.6	2.5
Australian Economic Growth	5.1	5.4	5.8
Cash Yield	4.1	4.1	4.2
Developed Market Economic Growth	3.6	4.1	4.6

Results

The tables below show the probability

Base Scenario

Growth/Defensive: 50%/50% (approximate current portfolio composition)

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	71.3%	70.0%	67.5%	65.5%
1.20	55.4%	53.1%	50.7%	48.0%
1.30	40.2%	37.7%	35.4%	32.7%
1.55	10.9%	9.5%	8.6%	7.6%

Growth/Defensive: 60%/40%

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	52.8%	51.3%	49.6%	47.5%
1.20	38.1%	36.1%	34.2%	32.2%
1.30	25.5%	23.8%	22.0%	19.7%
1.55	7.1%	6.5%	5.8%	5.1%

Growth/Defensive: 40%/60%

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	87.4%	86.6%	85.4%	83.8%
1.20	75.5%	73.6%	71.2%	68.2%
1.30	59.0%	56.4%	53.1%	50.9%
1.55	18.6%	16.0%	14.3%	12.8%

Pessimistic Scenario

Growth/Defensive: 50%/50%

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	93.7%	93.3%	92.8%	91.7%
1.20	84.4%	81.8%	79.7%	78.1%
1.30	71.5%	69.5%	66.8%	63.4%
1.55	26.6%	24.8%	22.9%	20.7%

Growth/Defensive: 60%/40%

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	83.9%	82.2%	80.5%	79.2%
1.20	71.1%	69.0%	67.1%	64.4%
1.30	54.1%	51.2%	47.9%	45.3%
1.55	20.1%	18.6%	16.5%	14.6%

Growth/Defensive: 40%/60%

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	98.4%	98.2%	97.9%	97.6%
1.20	94.4%	93.5%	92.6%	91.5%
1.30	85.2%	83.0%	80.6%	78.1%
1.55	41.1%	37.6%	33.4%	30.1%

Optimistic Scenario

Growth/Defensive: 50%/50%

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	44.8%	42.5%	39.8%	37.0%
1.20	25.9%	24.0%	22.3%	20.2%
1.30	13.5%	12.0%	11.1%	9.6%
1.55	0.8%	0.6%	0.6%	0.5%

Growth/Defensive: 60%/40%

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	21.9%	20.5%	18.8%	17.1%
1.20	11.7%	10.9%	10.0%	8.7%
1.30	5.2%	4.5%	3.9%	3.4%
1.55	0.2%	0.1%	0.0%	0.0%

Growth/Defensive 40%/60%

		Shortfall		
Levy ($m)	**Prob 90**	**$1.00m**	**$2.00m**	**$3.00m**
1.10	71.5%	70.1%	68.2%	66.1%
1.20	53.5%	50.0%	46.4%	43.7%
1.30	31.5%	28.3%	26.1%	24.0%
1.55	4.1%	3.6%	3.2%	2.6%

Taking the pessimistic scenario, with a Growth/Defensive investment asset class split of 60%/40% for example, the tables above can be interpreted as follows:

§ Prob 90 is the probability that under the specified levy the fund will require a special levy at some point during the 90 year period. That is, there is a 20.1% chance that there will be a shortfall sometime in the next 90 years if an annual indexed levy of $1.55m is paid.

§ There is a 47.9% probability of a $2.00m or more shortfall at some time in the next 90 years if an annual indexed levy of $1.30m is paid.

We have estimated the likely value of probability weighted special levies under each scenario as follows:

	Base		
Levy ($m)	**50/50**	**60/40**	**40/60**
1.1	10.679	7.230	15.326
1.2	6.535	4.260	9.977
1.3	3.835	2.432	6.240
1.55	0.708	0.462	1.206

	Optimistic		
Levy ($m)	**50/50**	**60/40**	**40/60**
1.1	4.351	1.909	8.966
1.2	2.051	0.808	4.835
1.3	0.847	0.276	2.330
1.55	0.026	0.001	0.172

	Pessimistic		
Levy ($m)	**50/50**	**60/40**	**40/60**
1.1	18.27	14.43	22.27
1.2	12.43	9.39	16.01
1.3	8.23	5.88	11.24
1.55	1.95	1.38	2.95

Using the base case scenario using an asset mix of 40/60, if a normal indexed levy of $1.20m is being paid, we would expect on average the total special levies over the 90 year period to be $9.977m after allowing for discounting at the simulated future CPI rate.

It can be seen from the tables above that a more aggressive investment strategy or a higher levy results in a lower probability of special levies and a smaller probability weighted expected total special levies. This result is mainly due to the Mutual's liability cash flow profile and its long term investment horizon. However, please note more aggressive investment strategies tend to result in a larger magnitude of the total special levies (i.e. with no probability weighting) should they occur over the next 90 years.

The liability cash flow projection provided by Jacobs suggests that the major liability cash flows are mainly expected to be after 20 years but before 50 years (i.e. approximately the period 2037-2067.The relatively long term liability profile allows assets and collected future levies to accumulate over a long term horizon.

Generally investing in growth assets versus defensive assets adds to short term volatility of returns but is compensated by higher expected returns. However over a long term horizon, the risks associated with growth assets are diversified to some extent while the expected return is higher for the growth assets than defensive assets. Our analysis shows the risk, as represented by the probability of a special levy, are reduced by investing in growth rather than defensive assets.

However, we would stress that as the Mutual approaches major cash flow periods, the more aggressive investment strategy may no longer be suitable as it might be more likely to give rise to short-term liquidity issues.

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Conclusion

The levy required to fund the future renewals project will depend on the actual timing of the renewals and their costs. We therefore recommend that the Mutual regularly monitors the asset performance as well as the progress and cost of renewals against expected costs and timings to identify potential risks at an early stage so that the levy rates can be amended gradually rather than a lump sum being required.

A five yearly review is appropriate unless an extraordinary event occurs. However, when future outcomes severely deviate from the assumptions behind the asset and liability modelling, an early review might be warranted. These early signs include, but are not limited to:

1. The actual asset renewal costs and timing significantly differ from what consulting engineers have estimated;
2. Significant change in the levies received against expectation;
3. Significant changes in the investment markets; and
4. Significant deviation of portfolio composition from the strategic one..

Our analysis, based on Jocobs' estimates of costs and renewals, indicates an indexed levy of around $1.1m to $1.4m expressed in 2016 dollars.

Under the current investment strategy, our analysis indicates that an annual levy of $1.2m, which may be "sufficient" on average but could result in approximately a 58% probability of CIMCL requiring a special levy before the end of the current renewal cycle (that is, during the future 90 years). If CIMCL are concerned about liquidity and the need to raise special levies, then higher levy rates may be required. We understand that the current levy collected is approximately 1.55m and this could result in approximately an 11% probability of requiring a special levy. Our analysis assumes that if shortfalls occur they can be funded by an injection of funds equal to the shortfall by raising special levies.

As a more aggressive investment policy produces an expected lower levy for little additional long term risk, we therefore continue to recommend CICML to give consideration to a growth-biased strategic long term investment portfolio. However, given most asset classes are generally either fully priced or slightly over priced, and the ongoing political and economic uncertainty in the world at this time, the Mutual may prefer to maintain its current asset mix until the markets present more attractive opportunities on a risk adjusted basis.

Determination of the short term dynamic or tactical asset allocation strategy is beyond the scope of this report, however we recommend that the Mutual bears in mind short term liquidity requirements in deciding if and when to increase its exposure to growth assets.

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