2014 PART III EXAMINATIONS

Subject Title: **C10 Commercial Actuarial Practice**

Date: **Friday, 9 May 2014**

Time: **9:00 am – 5:00 pm**

Time allowed: Eight (8) hours

Instructions: Type an answer in Microsoft Word. Only your MS Word Document will be marked. Do not link data from spreadsheets. Spreadsheets must be embedded in your MS Word Document.

Number of Questions: **Five** (5)

Candidates are required to answer only **ONE** question.
This paper has **twenty-four** (24) pages (excluding this page).

ENTERPRISE RISK MANAGEMENT

QUESTION

Good For You ("GFY") is a private company that provides web-based product comparisons of insurance and other consumer products. The software enables customers to compare the prices and product features of competing providers having regard to their own personal circumstances. Customers may then purchase the most appropriate product, which generates an upfront fee or a trail commission for GFY.

GFY is now the leading web-based product comparison company in the market and has expanded its service from the original insurance product to a wide range of financial and household utility products. However the original product still accounts for 80% of GFY's income.

GFY was founded by Kim Parewell in 2000 and Kim is still the Executive Chairman of the company. As the company grew it needed to raise capital and Kim sold shares to three financial investors. The Board of GFY consists of Kim and three other directors, one appointed by each of the financial investors. Kim and the three financial investors hold roughly equal shareholdings and senior management of GFY also hold some shares.

In the last 12 months growth has slowed because of a regulatory change that made GFY's original insurance product less attractive to customers. The Directors are now even more determined to increase the volumes in the newer products.

Recent Board discussions on strategy have focused on the following key issues:

- A return to 25%+ per annum growth of the business
- A focus on GFY's business risks, especially the regulatory risk that has recently impacted the growth of the business, and how these might be better managed
- The need for additional capital to support the growth of the business, working capital needs and to provide a risk buffer
- The need for continued investment in the brand of GFY, the website traffic volumes especially for the newer products, the website experience for customers and conversion rates, as well as opportunities for inorganic growth.

Kim approached an investment bank for advice on capital raising and the bank recommended that GFY should now list on the national securities exchange through an initial public offering ("IPO"). The advantages of this are:

- Investors are currently supporting IPO's of good quality businesses
- Capital can be raised now and in the future as needed
- The shareholder base is broadened, so GFY is less reliant on the current shareholders for capital
- Providing liquidity for existing shareholders including the management team.

After considering this recommendation the Board had a long meeting and agreed on the following points of principle:

- GFY will raise capital through an IPO
- The proceeds of the IPO will be used to repay the current bank debt, and in future the bank facility will only be used to fund short term opportunities such as acquisitions
- In addition to debt repayment, the capital raising will be sufficient to cover reasonable working capital needs of GFY for the next three years and to establish an appropriate risk buffer
- GFY will establish a capital management framework to manage its capital base and capital needs moving forward.

Kim and the other managers who hold shares will retain their existing shares but do not have the capacity to buy more shares so their holdings will be diluted as a result of the IPO. One of the financial investors has indicated that they will probably sell their shares into the IPO. Another of the investors has stated that while they support the Board resolution above, they do not support GFY holding excess capital. The third investor is keen to increase its holding in GFY and has offered to underwrite the IPO for a fee equal to half of the market rate for such underwriting.

Kim has considered these developments carefully and finds the issues quite complex. Kim recognises that there are inter-relationships between the amount of capital to be raised, the management of the key business risks especially regulatory risk and establishing a framework for capital management. Kim has decided to obtain some further advice on these topics.

The Directors have considered the amount of capital to be raised in the IPO but Kim thinks there would be value to GFY in obtaining an external view on this.

You are a consulting actuary who has specialised in business modelling and risk management. Kim has known you for many years and has expressed admiration for your ability to cut through complex issues and present clear practical solutions.

Kim has asked you to consider the issues outlined above and report back with your suggestions and recommendations. To help with this Kim has provided you with additional information on the business of GFY and its financials (see attached). Your report should be addressed to Kim but will be forwarded to all Board members and discussed at the next Board meeting.

The Task

With the benefit of the above and attached information prepare your report as requested addressed to Kim Parewell.

Attachments

1) C10_ERM_Attachment_1_GFY financials – a spreadsheet containing recent operating and financial information for GFY.
2) C10_ERM_Attachment_2_GFY business summary – an outline of the history and business of GFY.

END OF QUESTION

GENERAL INSURANCE

QUESTION

It is 9am on 25th April 2014 and you, Anne Actuary, are the casualty (i.e. not property) pricing actuary for the corporate client department in the Capland office of Global Insurance, a multinational multi-line general insurer. Underwriters must seek your advice on all pricing quotes, but are not bound to use your recommended quote. However, if they don't use your quote, then they must obtain sign-off from the chief underwriting officer. Just like the underwriters, your performance KPIs include both loss ratio and gross written premium targets.

When you arrive at work and check your emails, there are three new emails, all marked urgent (see attachments). Just as you finish reading the emails, Leslie Underwood, one of the corporate client casualty underwriters, walks over to your desk and says, "I have a good feeling about this one! If we win this, then I will achieve my entire annual target in just the first half of 2014! I've heard that Swish Insurance and Moonich Insurance are quoting on it too, but we have a track record of being more flexible than them, so you just need to come up with some super-competitive rates, which I'm sure will win!"

In Capland all employers must provide workers compensation insurance for their employees. The benefits are fixed via legislation, and include access to common law. Employers may partially self-insure, via an insurance deductible or excess up to a maximum self-insurance limit per claim of 5% of the employer's annual turnover (for all of its activities in total, not just for the projects and companies under a specific workers compensation contract). Global Insurance has a good market share in workers compensation, but until now Swish and Moonich have written all of the workers compensation contracts for the fast growing resources industry, due to their connections with key insurance brokers. Your CEO has been working at breaking the stranglehold of these two companies. Workers compensation is charged as a percentage of insured annual wages, with premiums charged against estimated wages, and an adjustment premium at the end of the year once actual wages are known. Commission to brokers is set by the regulator at a fixed rate of 20% of gross premiums. There is no stamp duty, sales tax or goods and services tax applicable.

Capland has been experiencing good economic conditions due to the growing demand for resources from Sinoland, a developing country with a population of half a billion people, and with a rapidly growing economy fuelled by its growing position as the world's manufacturer. Price inflation in Capland is running at 3.7% pa. Wage inflation has grown to 5.1% pa in the past year. The official cash rate is 4.75% pa.

Appendices

Appendix A: Email
Appendix B: Email
Appendix C: Email
Appendix D: Request for Tender
Appendix E: File Note – Standard Pricing Targets (Infrastructure Projects)
Appendix F: File Note – Results for M9 Motorway Project

Attachments

1) C10_GI_Attachment_1_Data.xlsx

Appendix A: Email

To: Colin Uelogy, Chief Underwriting Officer
Cc: Anne Actuary, Corporate Pricing Actuary
From: Carrie Everton-Overton, CEO
Sent: 25-Apr-14 8:21am
Subject: Hancook Mining
Attachment: tender.pdf

Dear Colin,

I had dinner with Laine Hancook last night, and I've got us onto the list of insurers who have been invited to tender for the workers compensation cover for their first resources development project here in Capland. We will be competing against Swoosh and Moonich in a closed tender – just like government tenders, we have to lodge a written submission by 9pm tonight, and they will choose a provider based solely upon the details in the written submission.

I will get the corporate communications team to put together the section explaining why we're the best insurer. But I need you and your team to put together an insurance package that best meets their needs. This is a big deal, and could get us into the resources market. So I'm counting on you to win this, no matter what. But make sure that we don't make a loss, because I don't want to look like a fool.

Carrie

Appendix B: Email

To: Leslie Underwood, Corporate Underwriting
Cc: Anne Actuary, Corporate Pricing Actuary
From: Colin Uelogy, Chief Underwriting Officer
Sent: 25-Apr-14 8:24am
Subject: fw: Hancook Mining
Attachment: tender.pdf

Dear Leslie,

Please ensure that we win this deal, no matter what. We're under budget this year, and the resources industry could give us the growth that we need. Once we win this contract, we will start to get invited to quote on other resources industry deals, and that extra new business premium can keep our cash flow positive to pay for any losses we might get on this contract. Let's quote this contract at as much of a discount as required to win the business.

Colin

>>Dear Colin,
>>
>>I had dinner with Laine Hancook last night, and I've got us onto the list of insurers
>>who have been invited to tender for the workers compensation cover for their first
>>resources development project here in Capland. We will be competing against
>>Swoosh and Moonich in a closed tender – just like government tenders, we have to
>>lodge a written submission by 9pm tonight, and they will choose a provider based
>>solely upon the details in the written submission.
>>
>>I will get the corporate communications team to put together the section explaining
>>why we're the best insurer. But I need you and your team to put together an
>>insurance package that best meets their needs. This is a big deal, and could get us
>>into the resources market. So I'm counting on you to win this, no matter what. But
>>make sure that we don't make a loss, because I don't want to look like a fool.
>>
>>Carrie

Appendix C: Email

To: Anne Actuary, Corporate Pricing Actuary
From: Leslie Underwood, Corporate Underwriting
Sent: 25-Apr-14 8:49am
Subject: resources industry rates

Dear Anne,

We've never written, or even quoted for, any contracts in the resources industry. But when I worked at Swoosh, we usually wrote resources business at rates the same as for infrastructure projects. Can you sign off on using the same rates for resources as for infrastructure please?

Given the importance of winning this quote, what is your recommended rate and policy coverage and profit share structure for Hancook Mining?

Leslie

Appendix D: Request for Tender

Hancook Mining Pty Ltd ("Hancook Mining")
Request for Tender: Provision of Workers Compensation Insurance for Weeper Mine

Background

Hancook Mining is the fastest growing resources company in Capland, with a turnover of just over C$250,000,000 per annum.

Hancook Mining will be building and operating an open-cut iron ore mine in the newly discovered Weeper region in remote north-western Capland. The project phases are as follows:

June-14	commence construction of housing, dormitories, offices and facilities 120 staff on site
Jul-14	complete construction of buildings that house construction staff 175 staff on site
Nov-14	complete construction of all buildings 5 staff on site
Jan-15	commence removal of surface layers of soil and rock 500 staff on site
May-15	commence drainage and environmental protection works 500 staff on site
Sep-15	commence ore extraction 700 staff on site

The mine is expected to remain operational for 15 years. We are budgeting for an average wage of C$150,000 pa per worker during 2014, of which 30% represents overtime. All staff are on a one year guaranteed employment contract, renewable annually at the employer's option. Base pay is fixed for the year, but overtime depends upon the production capacity at which we run the mine.

Workers Compensation Insurance

Hancook Mining seeks workers compensation insurance protection for a period of 5 years, commencing 01-Jun-14, and covering all staff working at the Weeper site. Premiums will be paid annually in advance, and all costs must be defined in advance i.e. the insurer may not change rates except as fully defined in the contract. Since Hancook is a responsible miner, we expect a good safety record, and therefore seek profit share arrangements that will recognise what will be excellent claims experience.

Appendix E: File Note - Standard Pricing Targets (Infrastructure Projects)

Target return on capital:
14% pa to be achieved on total workers compensation portfolio
Capital allocation:
40% of unearned premium, plus
30% of outstanding claims
Claim Reporting Pattern (versus accident date):
55% in the same calendar month
35% in the following month
2% per month in the following 5 months
Claim Payment Pattern (versus claim reporting date):
Note: pattern is in current dollars
Qtr 1: 60%
Qtr 2: 20%
Qtr 3: 5%
Qtr 4: 1%
...
Qtr 18: 1%

Claim Size Distribution
Lognormal
Mu = 10
Sigma = 2

Claim Frequency 3% per man-year

Appendix F: File Note – Results for M9 Motorway Project

These are the claims details and policy details for one of Global Insurance's infrastructure clients. This workers compensation insurance was written with no self-insurance. The project commenced on 01-Apr-2012 and will expire on 30-Jun-2014. All figures are in C$.

Policy Details

Start Date	Duration (years)		Year	Exposure	Staff	Man Years	Ave Wage	Total Wages	Company Turnover
1-Apr-12	2.25		2012	0.75	250	187.5	$ 50,000	$ 9,375,000	$ 90,000,000
			2013	1	250	250	$ 52,000	$ 13,000,000	$ 102,000,000
Excess	$0		2014	0.5	250	125	$ 54,900	$ 6,862,500	$ 101,000,000
			Note: 2014 values are budget values. Previous years are actual.						
			Risk Premium Rate		9%	of wages			
			Brokerage		20%	of premium			
			Profit Margin		20%	of premium			
			Quoted Rate		15%	of wages			

Exposure: the proportion of the calendar for which the contract is on risk
Staff: the number of staff employed for the construction
Man Years: exposure per staff member, times the number of staff employed
Ave Wage: average remuneration per employee, annualized
Total Wages: total remuneration paid to employees during the calendar year
Company Turnover: total of all company turnover for that year that is received by the employer, including from other activities

Claim Details

Results - M9 Motorway Project					
Accident Date	Advised Date	Status	Paid	Case Estimate	Incurred
17-May-13	24-May-13	Closed	$ 17,054	$0	$ 17,054
8-Mar-13	23-Mar-13	Closed	$ 699	$0	$ 699
26-Dec-13	13-Feb-14	Closed	$ 10,814	$0	$ 10,814
15-Oct-12	7-Nov-12	Closed	$ 2,201,586	$0	$ 2,201,586
31-Mar-14	7-May-14	Open	$ 4,137	$15,007	$ 19,144
8-May-13	27-Jun-13	Closed	$ 30,860	$0	$ 30,860
9-Sep-13	2-Oct-13	Closed	$ 337,651	$0	$ 337,651
16-Oct-12	27-Oct-12	Closed	$ 181,909	$0	$ 181,909
14-Jan-14	5-Feb-14	Closed	$ 10,251	$0	$ 10,251
21-Apr-14	22-Apr-14	Open	$ 140	$4,584	$ 4,724
24-Apr-14	24-May-14	Open	$ 6,247	$21,863	$ 28,110
18-Feb-14	17-Apr-14	Open	$ 1,015	$6,645	$ 7,660
16-Jun-12	30-Jul-12	Closed	$ 2,476	$0	$ 2,476
31-Jan-14	7-Feb-14	Closed	$ 9,181	$0	$ 9,181
27-Dec-13	21-Jan-14	Closed	$ 132,883	$0	$ 132,883
10-Jun-12	13-Jun-12	Closed	$ 68,467	$0	$ 68,467
29-Jun-13	23-Aug-13	Closed	$ 3,692	$0	$ 3,692

END OF QUESTION

GLOBAL RETIREMENT INCOME SYSTEMS

QUESTION

BIG International Group is a large multinational manufacturing company that is preparing to sell one of its local operations, which will create a new company, NEW Pty Ltd. The business sale, which is expected to occur in three months' time, will include the transfer of employment of the local workforce, including professional, clerical and manufacturing employees. A profile of the NEW employees is set out in Attachment 1.

BIG provides superannuation to its employees through a stand-alone trust arrangement providing accumulation benefits. The fund is administered internally and the benefits provided on death, disablement or ill-health are self insured. The fund's assets are invested with external investment managers based on a single investment strategy. BIG contributes at the rate of 10% of employee earnings for clerical and manufacturing employees and a higher rate of 12% for professional employees. BIG also meets the cost of the internal administration and insurance arrangements. A summary of the BIG Fund's operations is set out in Appendix A.

To minimise any disruption to the manufacturing operations, NEW wants to retain all local employees. As part of the remuneration arrangements for the transferring employees, NEW wishes to provide equivalent superannuation arrangements in the most cost effective and least disruptive manner.

The local Manufacturing Union has discussed with the HR manager the importance of the current superannuation arrangements for the manufacturing employees. The Union has also suggested that the current benefits should be improved to provide better protection for its members in the event of death or disablement and higher income when members retire. In particular, the Union has referred to an industry survey which suggests that for a "comfortable lifestyle" a single retiree would require an income of $42,000 per year in addition to any social security benefit.

You are a consulting actuary who has been engaged by the BIG Human Resources manager (as NEW is not yet established) to assist in determining appropriate superannuation arrangements for the transferring employees.

You have raised with the HR Manager the option of operating an internal accumulation fund as well as identifying two possible external accumulation funds (Fund A and Fund B) that could be acceptable to both the company and the Union. A summary of the key features of Funds A and B is set out in Appendix B.

The scope of your engagement is to provide a recommendation of the most suitable accumulation arrangement which includes specific advice on all aspects of the available options. In addition,

- What contribution rate should NEW make for transferring employees?
- Should employees be allowed to choose between Fund A, Fund B or another fund?

For the purpose of this analysis you can assume that no tax is payable on contributions or investment earnings in a superannuation fund and that benefits are not taxable provided that they are taken in the form of an income stream.

Appendices

APPENDIX A: BIG Fund Operations

APPENDIX B: Funds A and B Features

Attachment

1) C10 _GRIS_Attachment_1_data
   4 worksheets:
   - Employee details
   - Fund A insurance
   - Fund B insurance
   - Investment options

APPENDIX A: BIG FUND OPERATIONS

Benefit design

- Company contribution allocated to member accounts is 10% of earnings for manufacturing and clerical employees and 12% for professional staff.
- Member contributions are fixed at rates of 3% for manufacturing and clerical employees and 5% for professional staff.
- Benefit on death and total and permanent disablement (TPD) is a lump sum payable in addition to the accumulation balance. The TPD definition includes a six month off work requirement. The lump sum is a percentage of earnings base for each remaining year (and months) of membership to age 65, where the percentage is 15.0% for manufacturing and clerical employees and 17.5% for professional staff. The cost of this benefit is not deducted from accumulation balances.
- Benefit on defined major ill-health (not amounting to TPD) is a lump sum of the accumulation balance plus 60% of the TPD benefit payable. There is no minimum period off work required for the ill-health benefit. If the member is subsequently admitted for TPD the balance of the TPD benefit is payable. The cost of this benefit is not deducted from accumulation balances.
- No administration fees are deducted from accumulation balances as these are paid by BIG.

Investment strategy

BIG Fund investment strategy is designed to achieve net investment earnings of 3% pa in excess of wage inflation over the long term.

Benchmark asset allocation is set out below:

Asset Class	**%**
Domestic Shares	35
Overseas Shares	35
Direct Property	5
Listed Property	5
Domestic Fixed Income	10
Overseas Fixed Income	5
Cash	5
Growth	**80**
Defensive	**20**

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APPENDIX B: Funds A and B Features

Key Features	Fund A	Fund B
Fund type	Public offer - available to anyone	Restricted offering – available to employers and their employees
Benefit paid on leaving service	Accumulation of contributions (net of administration fees and insurance costs) at an earning rate (net of investment fees)	Accumulation of contributions (net of administration fees and insurance costs) at an earning rate (net of investment fees)
Benefit paid on death or permanent disablement	Accumulation balance plus insured amount	Accumulation balance plus insured amount
Death and TPD Insurance amount and premiums	Not mandatory Units of cover based on age and work rating – see Attachment 1 Default cover provided with no underwriting. Option to increase subject to satisfactory health evidence. Premium is $0.70 per week per each unit of cover (ie total of $1.40 per week for one unit of both Death and TPD cover). Clerical and Professional occupations can apply for higher cover levels for the same premium.	Mandatory % Earnings base for each remaining year of membership to age 65. Can be tailored for a particular % earnings base. Insured amount in BIG fund provided with no underwriting. Higher cover is subject to satisfactory health evidence. Premiums – see Attachment 1

Appendix B (continued)

Income Protection	Not mandatory Unit Benefit on partial or total disablement of $500 a month, 60 day waiting period, payable for two years. Default is lower of $20,000 per month or 85% of earnings base. Clerical and Professional occupations can apply for the same cover levels for a lower premium. Waiting period can be reduced to 30 days. Premiums – see Attachment 1	Mandatory Default cover for 75% of salary, 60 day waiting period, payable for two years. Waiting period can be varied between 30 and 90 days. Cover can be increased to 85% of salary. Premiums – see Attachment 1
Administration fees	$100 pa indexed annually with wage inflation	0.2% pa for total balances between $0 and $20 million. 0.1% pa for total balances in excess of $20 million.
Investment strategy and fees	Lifecycle strategy where the asset allocation is managed according to the members' age (see Attachment 1) Fee is 0.7% pa of accumulation balance	Three diversified options can be selected by the member at any time (see Attachment 1) Fee % pa of accumulation balance Growth 0.7% pa Moderate 0.6% pa Conservative 0.5% pa

END OF QUESTION

INVESTMENTS

QUESTION

Capland is a developed country with a large, successful financial market. For historical reasons, no investment in derivative style securities is permitted.

Big Equity Investors ("BEI") is a major fund manager with a focus on equity products. Around 70% of its customers' funds are invested in Capland equities. BEI currently has a policy of limiting overseas equities to no more than 10% of its total equity portfolio.

A description of BEI's general product specifications is set out in Attachment A.

You are the Chief Investment Actuary and the Chief Investment Officer. A year ago a new CEO was appointed. At your usual weekly meeting the CEO made the following comments

> " I have just finished reading ' Black Swan ', a most interesting and disturbing book. It was this passage which gave me sleepless nights when I think of Black Swan events in equity markets
>
> > ' a Black Swan is an event with the following three attributes.
> > First, it is an outlier, as it lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. Second, it carries an extreme impact. Third, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable.'
>
> Given the issues potentially raised by this concept, when we think about it in investment markets, we need to develop some product options, including their pricing, which provide customers with some level of protection against a "black swan" event, as I have described it. I want you to provide me a report setting out what we might do, what protection those options could provide and your recommendation as to which, of your options, you recommend we implement. You also need to provide some draft wording as to how such protection might be described."

The Task

Prepare your report

Appendices:

Appendix A: BEI General Product Specifications

Attachments:

1) C10_INV_Attachment_1_capland_investment_data.xlsx

APPENDIX A: BEI GENERAL PRODUCT SPECIFICATIONS

Products are offered which provide both "pre-mixed" asset allocations e.g. Conservative, Balanced, Aggressive; and individual asset allocations e.g. cash, fixed interest, equity.

BEI has no property offerings.

While it currently has no products which have guarantees it has offered these products in the past and is prepared to offer them in the future if a need arises and an appropriate price can be obtained.

Under the Capland tax rules BEI pays no tax on investment earnings from customers' investments. These are taxed in each customer's hands.

Fees are determined on the basis of current expense assumptions. These are

Admin	0.40% p.a. of FuM
Overhead	0.15% p.a. of FuM + C$75 p.a., per account, indexed to inflation
Sales Commission	0.33% p.a. of FuM

Investment Expenses

These depend on the asset class as follows (all % p.a. of FuM)

Cash	0.10
Fixed Interest	0.20
Equity	0.65

The prices which these assumptions produce are generally competitive.

BEI's profit targets are a return of the greater of 0.38% p.a. of FuM or 17% on capital (if any).

The Capland regulations only require capital if guarantees are provided. In that case capital must be sufficient to ensure a probability of insolvency of no more than 1% over the next twelve months.

END OF QUESTION

LIFE INSURANCE

QUESTION

Capland is a developed country with a successful financial services market. The regulations for life insurance companies in respect to the calculation of their policy liabilities for their balance sheet allow the following:

> "Companies are free to use the methods and assumptions determined by their actuary, provided:
>
> a) The probability of the liability valuation being inadequate over the next twelve months is at a suitably very low level as determined by the actuary (note that asset value fluctuation is not considered); and
> b) The Regulator may conduct an audit of the liability calculations and can order the company to change the methods or assumptions (or both). If such an order is intended the company is entitled to make representations to the Regulator in respect to those changes before the order is formally issued.
>
> The company's actuary must certify that the liability valuation adopted is adequate to meet the company's liabilities under policies with the required very high probability.
>
> If the company makes representations then an actuary must indicate in those representations that they take complete professional responsibility for the entire content of those representations."

Big Cap Life("BCL") is a large life insurance company in Capland writing approximately half its business as individual death-only YRT and half as individual Income Protection. You are BCL's Actuary and have been in that position for four years. Two years ago a new CEO was appointed. The new CEO viewed her predecessor's approach to your liability valuation as too conservative. Shortly after her appointment she had a number of conversations with you about making the liability valuations more optimistic. As a result you relaxed some of your assumptions and have used these more optimistic assumptions at the last two valuations. You also changed the approach to the calculations of the liabilities. Under the previous CEO you used a method very similar to Australian MoS so that profit was not released when a policy was written but rather over the lifetime of the policy. Following the appointment of the current CEO, you changed your approach to release profit at inception and abandoned the MoS type approach.

The regulator has just completed an audit of the liability calculations for the valuation as at 31 December 2013. As a result they have indicated that they intend to issue a change order. They have written to the CEO and this letter is attached. The previous regulatory audit was undertaken four years ago.

The CEO has passed this letter to you and asked for your urgent attention to the drafting of the representations as to why the order should not be issued. She has emphasised that preventing the issue of a formal change order is crucial. She has insisted on reviewing the representations before they are sent to the regulator.

The BCL experience up to 31 December 2013 is attached. One of your senior staff has conducted a high level review of the experience over the latest quarter ending 31 March 2014. Her conclusion was "there is no evidence of any material change in any of our experience over the three months".

Your Task

Prepare the representations to the regulator.

Appendices

Appendix A: Regulator's letter to the CEO

Appendix B: BCL Experience

Appendix C: BCL Liability Valuation Method and Assumptions

Attachments

2) C10_LIFE_Attachment_1_BCL_Experience.xlsx (excel version of Appendix B)

Appendix A : Regulator's letter to the CEO (extract)

As a result of the recent regulatory audit of Big Cap Life's policy liability calculations we intend to issue a change order. In accordance with the regulations you may make representations in respect to this draft before it is formally issued.

Draft Change Order

The regulator is of the view that the assumptions used in the policy liability calculations are, based on the company's past experience and likely future experience, inadequate to meet the company's liabilities under policies with a suitably very high probability.

The required changes follow.

Liability Margin

The 5% increase is not regarded as high enough to give a very low probability of inadequacy.

General Approach

Previously the company used a MoS style of liability calculation. The approach now being used is regarded as dangerously optimistic. The MoS style of liability calculation must be reinstated.

Discount Rate

The discount rate must be reduced so that it is consistent with what a sensible asset allocation would be for each particular product's liabilities.

Mortality Assumptions

The use of a 5 year select period is regarded as not justified by the experience which only captures selection over the first two years. A maximum select period of two years must be used.

Disability Recovery Assumptions

Given the clear deterioration in the disability recovery experience the assumptions are regarded as too optimistic. The link drawn between recovery rates and the expected economic improvement is not regarded as demonstrated by the experience. The assumptions must not include any component which is driven by assumed improvement in economic conditions.

Expenses

The assumed improvement in expense rates due to larger volumes of business is not regarded as proven. The improvement must be removed.

Lapse Rates

The lapse rates, while consistent with BCL's experience, take no account of the Capland life insurance industry's increasing lapse rates in recent years. They are, therefore, regarded as too low.

Appendix B : Recent BCL Experience

Investment Earnings

Year Ending 31 December	Equities	Cash	Property	Fixed Interest
		% p.a.		
2008	-3.4	5.1	8.8	6.8
2009	8.6	4.3	-5.1	6.5
2010	9.5	4	2.1	6.1
2011	6.8	3.3	6.8	5.6
2012	15.8	3.8	8.9	5.1
2013	22.6	3.6	11.1	4.8

Asset Allocations

As at 31 December	Equities	Cash	Property	Fixed Interest
		%		
2008	64	4.2	21.6	10.2
2009	55	5.2	19.8	20.0
2010	54	5.3	21.1	19.6
2011	61	5.1	22.1	11.8
2012	69	4.9	15.2	10.9
2013	72	4.2	14.3	9.5

Mortality

Year Ending 31 December	Policy Duration Since Inception -Years		
	< 1	1 -2	>3
	% of BCL Standard Table Ultimate		
2008	44	58	94
2009	46	62	92
2010	42	64	88
2011	39	63	90
2012	40	58	86
2013	39	56	88

Disability Recovery

Year Ending 31 December	Policy Duration Since Incidence Months			
	< 4	4 - 6	7 - 12	> 12
	% of BCL Standard Disability Recovery Rates Table			
2008	106	99	106	95
2009	109	108	106	103
2010	118	113	108	92
2011	125	116	107	106
2012	115	109	103	89
2013	101	101	108	99

Expenses

Year Ending 31 December	Initial	Renewal
	% BCL Standard Expense Assumptions	
2008	109	114
2009	117	117
2010	113	113
2011	105	107
2012	101	108
2013	97	103

New Business Volumes

Year Ending 31 December	$ million premium
2008	541
2009	442
2010	545
2011	653
2012	728
2013	779

Lapse

Year Ending 31 December	% BCL Standard Lapse Rates
2008	93
2009	89
2010	90
2011	87
2012	83
2013	85

Appendix C

BCL Liability Valuation Method and Assumptions

Method

The value of the policy liabilities is equal to

PV(Claims) + PV(Expenses) – PV(Premiums). Negative liabilities are all included in the total of liabilities. Liabilities are increased by 5% to reduce the probability of inadequacy.

Assumptions

Discount Rate : 9.5% p.a. for all policy liabilities.

This is the expected investment earnings from BCL's assets which back the policy liabilities, assuming the current asset allocation remains unchanged.

Mortality Assumptions

% of BCL Standard Table Ultimate

Policy Duration

<1	37
1– 2	55
2 – 3	60
3 – 4	68
4 – 5	78
>5	85

Disability Recovery Assumptions (i.e. claim termination)

% of BCL Standard Disability Recovery Rates Table

Policy Duration Since Incidence – Complete months

< 4	107
4 - 6	104
7 – 12	112
>12	101

Lapse Rates – all business

85% of BCL Standard Lapse Rates Table

Expenses

% of BCL Standard Expense Assumptions

Initial	92
Renewal	97

END OF QUESTION