2017

MIPC

MIPC 2017 Case

DB Pension Fund of Lumber Corporation Inc.

Disclosure

This case was written under the direction of Professor Sebastien Betermier at the Desautels Faculty of Management of McGill University. Authors and contributors of the case include Johan Saba, Thibaud Marie-Regnault, Alexandra Djait-Paulien and Johanna Diao.

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Table of Contents

Case Introduction

LumberCo Inc. ("LBC" or "the Company") is a Canadian corporation specialized in producing wood products and selling them across North America. When the company was founded in 1956, it established a pension fund (the "DB Pension Fund") offering defined benefits to some of its employees after retirement. In 2000, the company decided to close the DB Pension Fund to new employees and instead created a defined contribution pension fund for them (the "DC Pension Fund").

Suzie Cartier has been working for the DB Pension Fund since the beginning of her career. After 40 years of hard work, she is now the president and chairman of its investment committee. Suzie recently received an updated actuarial report ringing the alarm bell. The DB Pension Fund, which currently manages C$857M of assets, is facing a shortfall of C$264M. While the shortfall itself is not news, the fund's solvency ratio just reached a new low point of 76.45%, which is below the 80% threshold commonly viewed as the minimum funding threshold.

Upon hearing the news, Jane Larsson, CFO of LumberCo, decided to consult Suzie to find a long-term solution. Jane is in a difficult situation. As the Company's CFO, she must make sure that the Company will not have to inject too much cash into its DB pension fund, otherwise she will face pressure from shareholders and risk losing her job. However, Jane must also respect the Canadian pension laws that require any corporate pension fund to meet a solvency ratio of 100% over a period of 5 years.

Jane and Suzie came to a common agreement. LumberCo. will inject $50M into the DB Pension Fund in 2018 to help with the underfunding problem. In the meantime, Suzie must completely review the asset allocation of the fund in order to minimize the future cash inflows that the Company will have to inject into its DB Pension Fund, and still be able to pay the promised pensions. To facilitate the process, Jane told Suzie that the Company would cover all the trading costs associated with the overall portfolio restructuring.

As a result, Suzie is looking for innovative ways to invest the DB Pension Fund's assets while satisfying all the parties involved, and keeping the risk level in check. On September 1st, she decided to review the Statement of Investment Policies and Procedures of the DB Pension Fund and launch a call for consultants to design a new asset allocation strategy.

Case Requirements

Your investment advisory firm has decided to answer's Suzie call. Your team has been entrusted by your firm to 1) design a new portfolio allocation for LumberCo's DB Pension Fund, which is to be implemented immediately, and 2) provide an estimate of the required cash injections from LumberCo to the DB Fund over the next 10 years. The portfolio allocation should be detailed and comprehensive (i.e. it should not simply be a broad allocation across the main asset classes).

Suzie provided the following documents to all consulting teams in order to help them better understand the DB Pension Fund's needs and constraints:

- A letter detailing the various parties involved in the DB Pension Fund, together with specific considerations your team should take into account when designing the asset allocation
- A brief summary of the company profile, provided by LumberCo's CFO
- Extracts from the Statement of Investment Policies and Procedures
- A summary of the DB Pension Fund's financial situation
- A table of the projected pension payments and solvency ratio calculations from the latest actuarial report (see: Projected Liabilities excel document)

Suzie Cartier's Letter

Throughout my experience with the Pension Fund Investment Committee, I have never found any task more challenging than that of satisfying all the stakeholders of the pension fund. Here are a few notes on the main parties to consider and their interests. I also provide below a set of specific considerations that are pertinent to the design of the DB Fund's asset allocation.

Shareholders:

LumberCo Inc. is legally attached to the DB Pension Fund. Under Canadian law, if the Pension Fund is underfunded, the Company must inject liquidity in it to make sure that it remains solvent and capable of paying its liabilities. This liquidity would be taken directly from the Company's cash reserves, thereby reducing shareholders' wealth. As a result, shareholders of the Company are particularly wary of any underfunding risk of the DB Pension Fund, and seek to ensure that the new asset allocation minimizes the need for future liquidity injections. They are likely to favour an asset allocation which emphasizes controlled risk-taking that generates healthy returns.

The Union:

The union represents all employees at the Company. If the union is not satisfied with the way the DB Pension Fund is managed, it can ask employees to go on strike, which would hurt the Company's overall operations and profitability.

Historically, the union has pushed for an aggressive asset mix. The reason for this stance lies in the asymmetric treatment of the DB Pension Fund's shortfall and surplus. While the Company must inject liquidity into the Pension Fund in the case of a shortfall, surpluses are not redistributed to shareholders. The union considers that all contributions to the DB Pension Fund represent a form of deferred compensation to employees and therefore establishes entitlement to any surplus generated by the DB Pension Fund. In the past, this has led the union to push for more aggressive investment strategies.

Recently however, the union has changed its stance. Since the DB Pension Fund is soon about to reach the end of its cycle and is highly underfunded, the union is aware that there is unlikely to be a surplus. As a result, the union is now pushing for a highly conservative asset mix that will minimize the risk of under delivering on promised pensions. In doing so, the union is effectively putting pressure on the Company to solve the underfunding problem by injecting cash into the DB Pension fund.

The Pension Fund Investment Committee:

As the professionals in charge of managing the DB Pension Fund's assets, our primary responsibility is to do our best so that these assets will be sufficient to pay all the promised pensions to the plan members once they enter retirement. As a result, we must try to generate returns on these assets to properly match the future liabilities. The Company's board can fire us if it doesn't believe in our capacity to properly invest the DB Pension Fund's assets.

Specific Considerations:

Here is a list of specific considerations that you should keep in mind when designing the asset allocation of the DB Pension Plan.

- SIPP: you must respect the rules and guidelines outlined in the DB Pension Fund's SIPP while designing the asset allocation. Extracts of the SIPP are provided to you with this document.

- Management Fees: as outlined in the SIPP, results are shown to the board before and after management fees, which include fees paid to external managers and transaction costs. The board is sensitive to these management fees and ask that they remain minimal.

- Human Resources: due to the DB Pension Fund's limited size, it is not possible to hire additional professionals to manage it. Therefore, we must have a strategy that can be monitored and applied by a small team over the near future.

- Currencies and Liquidity: all the DB Pension Fund's liabilities are in Canadian dollars, and the majority of them are coming due in the next 5 years. This means that the fund will need enough liquidity in Canadian dollars each year to pay the pensions due, especially in the near to medium term.

- Forward-looking Guidelines: Jane Larsson, CFO of LumberCo, requires a sustainable long-term solution for the DB Pension Fund. Therefore, it would be valuable to include in your report forward-looking guidelines regarding the asset allocation of the DB Pension Fund.

Company Profile of Lumber Corporation Inc.

Introduction

Headquartered in Vancouver, BC., Lumber Corporation Inc. (“LumberCo”, “LBC” or “the Company”) is a leading North American diversified wood products producer and distributer. Its offerings include lumber products, woodchips, plywood, paper and pulp as well as other pressure-treated wood products. The Company was founded in 1956 by Mr. Stephen Woodly, an ambitious timberland foreman who purchased a small lumber mill just outside Kelowna, BC. Through the hard work and keen business insight of Mr. Woodly and his two sons LumberCo has grown, both organically and through acquisition, into the industry-leader that it is today.

Reportable Segments

LumberCo currently has ~8,000 employees and operates a collection of lumber mills and wood-treating plants across Canada and sells its products in the US (67% of LTM revenue at June 30, 2017) and Canada (33%). The Company has 4 reportable segments including Logs & Lumber, Treated Wood, Panels, and Pulp & Paper.

- Logs & Lumber: Accounting for 55% of LTM revenue, the Company’s Logs & Lumber operations boast a total of 32 lumber mills across Western Canada, which produce primarily “SPF” (Spruce / Pine / Fir) and “SYP” (Southern Yellow Pine) for large North American construction companies

- Treated Wood: Accounting for 28% of LTM revenue, the Company’s Treated Wood segment operates a collection of 34 small wood-treating plants located in Canada which produce primarily railway ties and timbers as well as utility poles for railway and utilities companies.

- Panels: Accounting for 9% of LTM revenue, LBC’s Panels segment operates 8 plywood facilities throughout Canada.

- Pulp & Paper: Accounting for 8% of LTM revenue, the Pulp & Paper Segment is comprised of 6 paper mills located in Canada.

Wood Fiber Supply

The Company’s operations are highly dependent on a consistent supply of wood fiber. LBC’s main facilities concerned with the production of lumber, plywood and other treated wood products consume primarily whole logs, while its pulp and paper facilities consume wood by-products such as wood chips, shavings and sawdust resulting from the production of lumber. The Company obtains the majority (~85%) of its required wood fiber from Timber Tenures in Western Canada, and purchases the balance from third party sources or via short-term timber harvesting contracts. As Canadian timberlands are all publicly owned, the right to harvest timber is acquired through provincially auctioned licenses called “Timber Tenures”. The Company currently holds a collection of long-term timber tenures with equally spaced expiries from 2018 through 2035, and regularly bids for additional licenses as applicable and necessary.

Key Customers

The Company sells its products to a highly diversified list of large and medium sized manufacturers and retailers including but not limited to housing and construction companies, Tier-1 railroad operators, large utility and public infrastructure companies, large wood products retailers as well as paper refineries and distributors. The Company holds long-term contracts with the majority of its key customers, however no single customer accounts for more than 15% of LTM revenue June 30, 2017. Demand for LBC's core products is tied to North America's real estate and public infrastructure industries, which are subject to oscillating periods of strength and weakness.

Employee Overview

Of LBC's ~8,000 employees, approximately 4,200 work in the Logs and Lumber segment, 2,130 in the Treated Wood segment, 720 in the Panels segment, 550 in Pulp & Paper in the 400 in Corporate services and Sales.

Financial Overview

	FYE December 31,			LTM	FYE December 31,		
(C$mm)	2014	2015	2016	2017-06-30	2017E	2018E	2019E
Revenue	**$5,105**	**$5,659**	**$6,288**	**$6,587**	**$6,874**	**$7,511**	**$7,989**
% Growth	--	*10.9%*	*11.1%*	*3.7%*	*9.3%*	*9.3%*	*6.4%*
EBITDA	**753**	**687**	**935**	**1,130**	**1,134**	**1,220**	**1,347**
% Margin	*14.8%*	*12.1%*	*14.9%*	*17.2%*	*16.5%*	*16.2%*	*16.9%*
% Growth	--	*(8.8)*	*36.1*	*14.4*	*21.3*	*7.6*	*10.4*
CFO	**$530**	**$285**	**$848**	**$900**	**$884**	**$871**	**$899**
CAPEX	435	220	343	379	337	355	387
Dividends	43	23	50	25	50	50	50
FCF	**$52**	**$42**	**$455**	**$496**	**$497**	**$466**	**$462**
Total Cash and Equivalents	$21	$17	$54	$233			
Total Debt	984	1,052	1,012	864			
Shareholders Equity	2,444	2,460	2,697	2,920			
Total Cash / Revenue	0.4%	0.3%	0.9%	3.5%			
Total Debt / EBITDA	1.3x	1.5x	1.1x	0.8x			
Total Debt / Book Cap	28.7%	30.%	27.3%	22.8%			
Rating Agency	**S&P**	**Moody's**	**DBRS**				
Corporate Rating	BBB- / Stb	Baa3 / Stb	BBB (low) / Stb				

Capitalization and Liquidity

Currently, the Company has ~C$864mm of long term debt consisting of various CAD and USD senior unsecured notes maturing 2020 through 2024. In addition to Cash of C$233mm, the Company has a committed C$300mm Senior Secured Revolving Credit Facility, bringing LBC's total liquidity to C$533mm at June 30, 2017. LBC's Revolving credit facility was undrawn on June 30th 2017 and is secured by substantially all the Company's assets. The Company has both common and preferred shares and a market capitalization of ~C$8.9bn on September 1, 2017.

Risks and Hedging

The Company reports in Canadian dollars and is highly exposed the USD / CAD exchange rate. As a result, LBC issues the majority of its long-term fixed-rate debt in USD and uses Interest Rate Swaps (IRS) to reduce the impact of its variable rate debt which were valued at C$5.2mm MTM. LBC also uses FX forwards contracts to limit its exposure to USD-denominated sales which were valued at C$2.1mm MTM, as well as diesel and petroleum derivatives contracts to limit hedge against fluctuating commodity prices related to fuel purchasing costs which were valued at C$3.2mm MTM.

Acquisitions

The Company is known to engage in small tuck-in acquisitions of lumber mills and wood-treating facilities from time to time. These acquisitions do not typically exceed US$450mm in value and are located in Canada.

Extracts from the Statement of Investment Policies and Procedures (SIPP)

Defined Benefit Pension Plan of LumberCo Inc.

The following Sections are extracted from the SIPP of LumberCo's DB Pension Plan. Suzie has purposely removed the target allocation for each asset class as she would like your team to think freely about what the fund's proper asset mix should be.

Overall Principles

This Policy sets out how the assets of the Defined Benefit Plan (DB Plan later) are invested by Lumber Pension Fund Investment (the Pension Fund from here forth). Investments will be selected and held in accordance with the objectives, requirements and limitations described in this Policy.

This Policy applies to all investments of the DB Plan.

The Policy is to be reviewed on a yearly basis. The next review is scheduled for August 2018.

Defined Benefit Plan Description

The DB Plan is a contributory defined benefit pension plan. Generally, the participating employer and their employees share equally in the investment experiences of and the contributions to the DB Plan.

The DB Plan pension formula includes a bridge benefit paid to age 65, as well as survivor benefits and early retirement options. Subject to certain exceptions, pensions are indexed to the Consumer Price Index for Canada to a maximum of 6% per year with any excess carried forward to future years.

Funding of the DB Plan

Funding of the DB Plan is the joint responsibility of the Pension Fund and Lumber Corporation Inc., and is managed through three levers: contributions, benefits and investment returns.

Over the long term, the funding target is to reach and maintain a solvency ratio of 100 per cent.

Factors impacting funding include contribution and benefits levels, actuarial assumptions and methods and the long-term nature of the obligations. Funding risk results primarily from uncertainty and volatility in global economies and markets, interest rates, plan maturity, investment return experience, inflation, changes in contributory earnings, demographic experience, behaviour of employers and members, and legislative, regulatory and political uncertainties.

The DB Plan's investment policies regard to these factors as part of the determination of the strategic asset allocation

Strategic Asset Allocation:

The Pension Fund uses five strategic asset groups (fixed income, equities, real assets, derivatives and short-term instruments) as part of its long-term strategic asset mix. These asset groups are comprised of the following asset classes:

- Fixed income includes inflation linked bonds, government bonds and credit investments (public or private);
- Equities includes public equity and private equity;
- Real assets include infrastructure and real estate;
- Short term instruments include net cash and equivalents
- Derivatives include options, swaps and futures contracts.

The Pension Fund's Board of Directors has approved the following strategic asset mix allocations:

Asset Group	Min.	Target	Max.
Fixed Income	25%	TBD	75%
Equities	25%	TBD	75%
Real Assets	0%	TBD	20%
Short term instruments and derivatives	5%	TBD	-30%

Implementation of the strategic asset mix is carried out in a prudent manner subject to market conditions and investment opportunities. The Pension Fund implements the strategic asset mix through its investment committee and through external service providers or other entities (including, without limitation, external professional investment advisors, third-party managed funds, pooled funds, unit trusts and similar vehicles).

The negative weight given to the short-term instruments and derivatives represents the maximum level of exposure through derivatives and/or debt the Pension Plan can accumulate in its asset allocation at any point in time.

Performance Measurement:
Investment performance is evaluated against absolute return benchmarks that are approved annually by the Pension Fund's Board of Directors. The investment performance of the DB Plan is reported to the Investment Committee of the Pension Fund Board both before and after management expenses incurred at each regularly scheduled meeting. Performance reporting is consistent with industry recognized practices.

Categories of Investments

The Pension Fund invests directly and indirectly in the five asset classes identified above. Within each asset group there are various asset classes. Depending on the nature of the investment, it is possible that an investment could fit within the description of more than one asset class in which case the asset will be classified according to the class to which it most closely aligns based upon an assessment of its underlying characteristics. The asset groups described below may include other asset classes which share similar risk/return characteristics.

Fixed Income:
Fixed income investments typically pay a fixed or floating amount of interest at regular intervals over a period of time. Coupon payments and contractual maturities of fixed income investments provide liquidity to the DB Plan. The fixed income asset group includes the following asset classes:

- inflation linked - investments where the underlying principal or return is indexed to inflation, including derivatives that emulate such instruments;
- government bonds - investments in nominal government bonds and debentures, including derivatives that emulate such instruments;
- credit investments - derivatives or debt issued by an entity that is neither a government nor a government agency. They may have fixed or floating rates payments, be secured by other assets or be convertible into other securities, be issued by either public or private companies.

Equities:
Equities includes both public equities and private equities.

- Public equities are securities that represent ownership in a reporting issuer and include securities listed on recognized exchanges. Public equities include domestic and global equities, commodities, equity derivatives, equity pooled vehicles such as ETFs, hedge funds, closed end funds and publicly traded REITS.
- Private equity is the ownership of equity or equity-like securities in companies (including funds) that do not generally trade on a recognized exchange. Private equity investments have the potential for higher returns through active management and increased leverage but have potentially higher return volatility than other asset classes. Venture capital investments are considered to be private equity.

Real Assets:
Real assets include private investments in infrastructure and real estate.

- Infrastructure investments are expected to produce predictable and stable cash flows in excess of those obtained in the more liquid public fixed income markets.
- Real estate investments include investments in industrial, office, retail, hotel and residential income producing properties and development properties. A diversified portfolio of real estate investments is expected to produce predictable and stable cash flows.

Short-Term Instruments and Derivatives:
Short term instruments and derivatives consist of cash and equivalent short-term investments, options, swap and futures contracts used to maintain plan liquidity and to achieve economic leverage and/or hedge risks. Economic leverage is generally achieved through the use of derivative instruments to gain exposure to a variety of asset classes.

Defined Benefit Plan Governance

Annual Review and Filing Requirements:
This Policy is reviewed and approved by the Pension Plan's Board of Directors at least annually.

Delegation of Voting Rights:
The Pension Plan retains overall responsibility for voting proxies related to public securities owned by the Primary Plan. The Pension Plan exercises judgment in connection with the voting of any proxy on a case by case basis and may also engage a proxy voting service provider.

Consideration of Environmental, Social and Governance Factors:
The Pension Fund believes that companies that incorporate environmental, social and governance ("ESG") factors into their business practices are more likely to be resilient and create value over the long-term. The Pension Fund encourages the adoption of policies and practices that maximize financial performance including responsible corporate behavior with respect to ESG.

The Pension Fund incorporates ESG factors into its investment decision-making process and asset management practices for all asset classes, on a case-by-case basis, where relevant, as such factors could have a material impact on investment performance. The Pension Fund does not engage in the practice of excluding investments through ethical screening. The Pension Fund may also encourage responsible corporate behavior through direct engagement with the public and private companies in which it invests.
The Pension Fund believes that the consideration of ESG factors is consistent with its objective to meet its long-term payment obligations to members.

Other investment matters

Exposure to Foreign Assets:
Foreign investments are permitted as they provide the benefit of diversification to the Pension Fund. Such investments could include components of any of the asset classes described above. The Pension Plan's Board of Directors limits the exposure to foreign assets to 75% of the gross exposure of the Pension Fund.

Use of Derivatives:
The Pension Fund uses exchange-traded and over-the-counter derivative contracts to gain, reduce or hedge exposure to interest rates, foreign exchange rates, credit, debt instruments, commodities, public equities and other indices. Types of derivatives used include listed futures, options (listed and over-the-counter), swaps and forwards. Exchange-traded derivatives and cleared over-the-counter positions are regularly valued using quoted market prices, where available, while bilateral over-the counter derivatives are marked-to-market. Derivatives are only used after full consideration of the related risks and in accordance with internally approved limits and applicable laws and regulations.

Short Selling:
The Pension Fund may short sell securities in public market assets at any time to enhance expected returns or protect capital.

Securities Lending:
The Pension Fund may not engage at any time in securities lending activities of its own securities to third parties in order to facilitate collateral transformation and/or to support its securities borrowing activities.

Collateral:
The Pension Fund may pledge, charge or otherwise grant a security interest in assets or post margin as required to complete derivative transactions, secure a permitted borrowing or to complete a short sale in accordance with all applicable laws. Assets that can be posted as collateral are set out in legal agreements or are defined by exchanges. The level of collateral pledged is determined and monitored as part of the Pension Fund's management of liquidity risk.

Derivatives, Counterparties and Documentation:
The Pension Fund has established procedures that regulate the approval and ongoing assessment of all counterparties with whom it transacts. In addition, the Pension Fund ensures these relationships are governed by appropriate documentation that contains specific procedures for close-out netting and termination rights following the default of a counterparty.

Investment Risk Management

The Pension Fund is exposed to a variety of investment risks. These include but are not limited to:

- Market risk (e.g., interest rate risk, foreign currency risk);
- Liquidity risk;
- Credit risk.

These risks are measured and managed using systematic quantitative and qualitative approaches that assist the Pension Fund in assessing the total risk associated with the DB Plan's investment activities. The risk management function assesses key investment risks across the enterprise.

Diversification

Diversification is an important risk management tool because it reduces the variability of returns by distributing the Primary Plan's exposure among:

- Asset classes
- Countries and industries
- Asset holding periods
- Currencies
- Securities

The Pension Plan regularly reviews the composition of its portfolios and adjusts its exposures based upon its risk appetite.

Financial Situation – LumberCo DB Pension Plan

This document provides a brief summary of the DB Pension Plan's financial situation. The numbers have been simplified to highlight the key aspects of the Plan's assets and liabilities.

Plan Characteristics

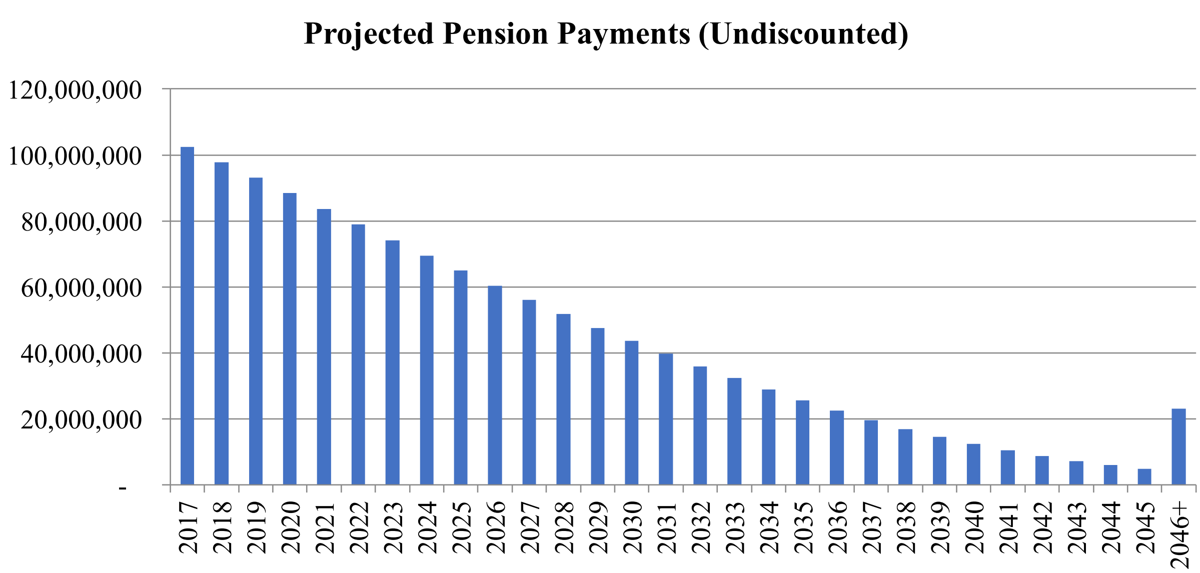
The DB Pension Plan of LumberCo is the one and only defined benefit plan sponsored by the company. It is currently responsible for the pensions of 2,000 members. In 2000, the plan stopped accepting new members as LumberCo switched to a Defined Contribution Scheme. The DB plan did not 'freeze' however, which means that existing members have been able to continue accruing pension benefits after 2000.

Today, the DB Pension Plan is very mature and has entered its decumulation phase as almost all plan members have entered retirement. The average age of the plan members is 72 years.

As of September 1st, 2017, the DB Pension Plan has C$857M of assets under management.

Projected Payments

The chart below illustrates the schedule of future projected (undiscounted) payments to pensioners. The Excel table with exact numbers is provided with this document.



These projected liabilities are based on the CPM 2014 Private Sector Mortality Table. The DB Pension Plan estimates that an annual nominal return of 6% on average is necessary to match the liabilities given the current capital of $C857M.

Solvency Funding Requirement

As a Canadian corporate pension plan, the DB Pension Fund is subject to solvency funding requirements. Essentially, it must have enough assets to pay for the liabilities in the event LumberCo becomes insolvent and the DB Pension fund has to wind-up.

The solvency ratio of the DB Pension Fund is defined as the ratio of the fund's current assets to the present value of its liabilities. The discount rate for these liabilities is typically chosen to be the rate of long-term government bonds. The DB Fund is required to maintain a solvency ratio of 100%. If the Fund faces a shortfall, then the Company has several years to inject liquidity into the fund and bring the solvency ratio back to 100%.

Actuaries currently estimate that, with a discount rate of 2%, the DB Fund's liabilities amount to C$1,121M. The Fund therefore faces a shortfall of C$264M and a solvency ratio of 76.45%, which represents the lowest-ever solvency ratio in the fund's history. As a reference point, solvency ratios below 80% are considered to be in the danger zone according to ratings agency DBRS.

Several factors have contributed to the DB Pension Plan's current situation. Lower mortality rates have increased the fund's liabilities by 10% over the past 3 years. Lower interest rates have also led to an unprecedented increase in the present value of these liabilities. Finally, some of the fund's investments underperformed in the past decade, which means the capital base did not grow as much as expected.