

Joint Health Science Benefits Trust

Actuarial Valuation as at December 31, 2019

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April 20, 2020



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Executive Summary

Financial Position

	December 31, 2018 \$000,000s	December 31, 2019 \$000,000s
Assets	45.6	74.0
Liability	44.8	69.6
Surplus (Deficit)	0.8	4.4
Funded Ratio	101.8%	106.3%

Contribution Sufficiency

The Trustees have been presented with a draft funding policy that sets out the funding requirements for the Trust. The draft funding policy defines two metrics to be used to assess the funding requirements of the Trust:

1. Funding Ratio ("FR") – this is calculated as the ratio of the actuarial value of assets to the actuarial value of liabilities both as at the valuation date.
2. Net Income Ratio ("NIR") – this is calculated as the ratio of the expected total value of contributions to be received in the year following the valuation date to the expected value of all claims payments, expenses and reserve adjustments expected over the same period.

The draft funding policy calls for the following actions based on the calculated FR and projected NIR:

Metric	Resulting Action
NIR < 90%. FR is not applicable.	Mandatory Benefit Reductions to increase NIR to a minimum of 95%
90% ≤ NIR < 100%. FR is not applicable.	Discretionary Benefit Reductions
100% < NIR ≤ 120. FR is not applicable.	No action required.
120% < NIR ≤ 130% and FR > 110%	Discretionary Benefit Increases
NIR > 130% and FR > 110%	Mandatory Benefit increases to decrease NIR to a maximum of 125%

The FR at December 31, 2019 is 106.3% and we have projected the NIR to be 100.2% for the 2020 calendar year. As such, we conclude that contributions for 2020 are sufficient for current benefit levels – contributions plus existing assets are expected to fund outstanding obligations and benefits to be incurred in the following year, leaving the Trust in an acceptable projected financial position at the end of 2020.

Section 1 - Introduction

1.1 Purpose of Actuarial Valuation

We have been retained by the Board of Trustees (the “Trustees”) of the Joint Health Science Benefits Trust (the “Trust”) to conduct an actuarial valuation of the Trust as at December 31, 2019.

This report was prepared for its intended users, the Trustees, for the following purposes:

- to provide a summary of the results of the actuarial valuation of the Trust’s financial position to the Trustees;
- to determine the sufficiency of 2020 contributions for the current level of benefits; and
- to review the financial experience of the Trust in the year ending December 31, 2019.

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The next actuarial valuation for the Trust will be performed as at December 31, 2020.

Note: Totals within this report may not sum due to rounding.

1.2 Purpose of Trust

The Trust was implemented effective on April 1, 2017 with negotiated funding from employers and some funding from employees. The Trustees are charged with using the assets to provide health and welfare benefits to members of the Health Science Professionals Bargaining Association (“HSPBA”).

Section 2 - Financial Position

2.1 Financial Position

The following table describes the Trust's financial positions at December 31, 2019 and December 31, 2018. The liabilities are based on the costs for claims incurred prior to the valuation date.

Financial Positions	December 31, 2018 \$000,000s	December 31, 2019 \$000,000s
Assets	45.6	74.0
Liabilities		
Admitted LTD ¹ claims (reported)	23.8	41.0
LTD (IBNR ¹)	10.8	13.7
Active EHC ¹ (IBNR)	2.9	3.4
Active dental (IBNR)	0.6	0.9
Active group life and AD&D ¹ (IBNR)	0.1	0.1
EHC for disabled claimants	4.9	7.9
Dental for disabled claimants	0.7	1.2
Group life and AD&D for disabled claimants	1.0	1.5
Total Liability	44.8	69.6
Surplus/(Deficit)	0.8	4.4
Funded Ratio	101.8%	106.3%

The financial position of the Trust improved in the year ending December 31, 2019 by \$3.6 million.

¹ Long-Term Disability ("LTD"), Incurred But Not Reported ("IBNR"), Extended Health Care ("EHC"), and Accidental Death & Dismemberment ("AD&D").

2.2 Reconciliation of Financial Position

The following table reconciles the change in the financial position over the course of the inter-valuation period.

Reconciliation of Financial Position	\$000,000s
Financial Position at December 31, 2018	0.8
1. Contributions different than expected cost	5.9
2. Interest on funded position/amortizations	0.2
3. Investment return different than expected	2.8
4. LTD - Existing Claims (Terminations)	2.5
5. LTD - Existing Claims (Demographics)	(0.9)
6. LTD - New Claims (New entrants / IBNR)	(7.3)
7. Active EHC/dental/group life/AD&D experience	1.5
8. Disabled EHC/dental/group life/AD&D experience	(1.3)
9. Gain / (Loss) due to Assumption Changes	0.1
10. Gain / (Loss) due to indexing/CPP ² updates	0.0
Financial Position at December 31, 2019	4.4

² Canada Pension Plan.

2.3 Analysis of Assumption Changes

The preparation of an actuarial valuation requires the actuary to make assumptions about future economic and Trust experience. Changes in the assumptions result in gains or losses.

As noted in Section 2.2, the Trust had a \$100,000 gain due to assumption changes from the previous valuation. The following table shows the main sources of these gains and losses.

<i>Assumption change gains (losses)</i>	\$000,000s
1. Active Group Life/AD&D IBNR	n/a
2. LTD IBNR	(2.5)
3. Active Dental IBNR	(0.1)
4. Active EHC IBNR	(0.2)
5. Disabled Non-Income Benefits IBNR	n/a
6. Wage Rate Indexing	n/a
7. CPI ³ Indexing	n/a
8. EHC Escalation	n/a
9. Dental Escalation	n/a
10. Expenses	n/a
11. Termination from Disability	2.3
12. CPP ³ Approval	1.3
13. ICBC ³ Offset	n/a
14. Discount Rate	(0.6)
Total gains (losses)	0.1

³ Consumer Price Index (“CPI”), Canada Pension Plan (“CPP”), Insurance Corporation of British Columbia (“ICBC”).

Section 3 - Contribution Sufficiency

3.1 Funding Policy

The Trustees have been presented with a draft funding policy that sets out the funding requirements for the Trust. The draft funding policy defines two metrics to be used to assess the funding requirements of the Trust:

1. Funding Ratio ("FR") – this is calculated as the ratio of the actuarial value of assets to the actuarial value of liabilities both as at the valuation date.
2. Net Income Ratio ("NIR") – this is calculated as the ratio of the expected total value of contributions to be received in the year following the valuation date to the expected value of all claims payments, expenses and reserve adjustments expected over the same period.

The draft funding policy calls for the following actions based on the calculated FR and projected NIR:

Metric	Resulting Action
NIR < 90%. FR is not applicable.	Mandatory Benefit Reductions to increase NIR to a minimum of 95%
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120% < NIR ≤ 130% and FR > 110%	Discretionary Benefit Increases
NIR > 130% and FR > 110%	Mandatory Benefit increases to decrease NIR to a maximum of 125%

3.2 2020 Contributions

Employers contribute to the Trust using different contribution rates, to achieve aggregate negotiated employer contributions. In addition, employees contribute to the Trust. The anticipated contributions and payroll during 2020 are summarized in the table below:

	To March 31, 2020 \$000,000s	From April 1, 2020 \$000,000s	2020 Total \$000,000s
Anticipated Regular Employer Contributions	20.8	63.8	84.6
Anticipated Regular and Other Employee Contributions	2.3	7.2	9.6
Anticipated Total Contributions	23.1	71.1	94.2

3.3 2020 Cost of Benefits

The following table summarizes the anticipated cost of benefits by line of benefit during 2020:

	Active Benefit Payments and Expenses	Change in Active Reserve	Cost of Disabilities Incurred in 2020	2020 Cost of Benefits
	\$000,000s	\$000,000s	\$000,000s	\$000,000s
LTD	-	-	29.1	29.1
Active EHC	42.3	0.0	-	42.3
Active Dental	21.4	(0.0)	-	21.3
Active Group Life and AD&D	0.4	0.0	-	0.4
Operating Expenses	0.9	-	-	0.9
Total	64.9	(0.0)	29.1	94.0

3.4 NIR

The projected NIR is calculated as anticipated 2020 Contributions / anticipated 2020 Cost of Benefits. From the prior tables the projected NIR for 2020 is 100.2%.

3.5 Financial Position

The December 31, 2019 financial position is as follows:

	December 31, 2019 \$000,000s
Assets	74.0
Liability	69.6
Surplus (Deficit)	4.4
Funded Ratio	106.3%

3.6 NIR and Projected Financial Position

The FR at December 31, 2019 is 106.3% and we have projected the NIR to be 100.2% for the 2020 calendar year. As such, we conclude that contributions for 2020 are sufficient for current benefit levels – contributions plus existing assets are expected to fund outstanding obligations and benefits to be incurred in the following year, leaving the Trust in an acceptable projected financial position at the end of 2020.

Section 4 - Sensitivity Testing

Sensitivity tests have been conducted on certain assumptions, as prescribed by actuarial standards of practice.

4.1 Discount Rate Sensitivity

As the assumed discount rate has a significant impact on the Trust's liabilities, actuarial standards of practice require that the impact on the liabilities of a 1% decrease in the assumed discount rate be disclosed.

The following table shows the effect of a 1.0% decrease in the discount rate:

Discount Rate Change	Revised Liability (\$000,000s)	Original Liability (\$000,000s)	Change in Liability (\$000,000s)
-1%	72.8	69.6	3.2

4.2 EHC and Dental Escalation Rate Sensitivity

The EHC escalation rate used within the valuation is 10.87% in the next year, decreasing by 0.57% per year to an ultimate escalation rate of 3.5% per annum. The dental escalation rate used within the valuation is 3.5% per annum.

The following table shows the effects of a 1.0% increase in the EHC and dental escalation rates:

+1.0% Rate Change	Revised Liability (\$000,000s)	Original Liability (\$000,000s)	Change in Liability (\$000,000s)
EHC Escalation	70.2	69.6	0.6
Dental Escalation	69.7	69.6	0.1

Section 5 - Actuarial Opinion

This opinion is given with respect to the Trust. We conducted a valuation of the Trust as at December 31, 2019. The administrator has confirmed that, between December 31, 2019 and the date of this report, no subsequent events nor any extraordinary changes to the beneficiaries or plan provisions that would materially affect the results of this valuation have occurred, except as indicated in this report.

In our opinion, for the purposes of this report:

- The beneficiary data on which the valuation is based are sufficient and reliable for the purposes of the valuation;
- The assumptions are appropriate for the purposes of the valuation; and
- The methods employed in the valuation are appropriate for the purposes of the valuation.

We hereby certify that, in our opinion, as at December 31, 2019:

1. The Trust is fully funded. The assets exceed the liabilities by \$4.4 million. The funded ratio is 106.3%.
2. Anticipated contributions in 2020 are sufficient: Contributions plus existing assets are expected to fund outstanding obligations and benefits to be incurred in 2020, leaving the Trust in an acceptable projected financial position at the end of 2020.
3. COVID-19 has recently impacted market conditions and claiming patterns for certain benefits subsequent to December 31, 2019 and these impacts will be reflected in future reports. We are not aware of any other subsequent events, that have not already been taken into consideration, that could materially affect the results of this valuation.
4. The next valuation should be conducted no later than as at December 31, 2020.

The content herein has been prepared exclusively from a financial viewpoint. This report does not constitute a legal opinion on the rights and duties of the administrator, the Trustees or the beneficiaries concerning the Trust.

Actuarial valuation results are estimates only and are based on assumptions and methods developed in accordance with actuarial standards of practice. Emerging experience differing from the assumptions used will result in gains or losses which will be revealed in future valuations, and which may affect future actuarial opinions.

This report has been prepared, and our opinions given, in accordance with accepted actuarial practice in Canada.

We would be pleased to discuss any questions the user may have regarding the valuation.



Michael Greschner
Fellow, Canadian Institute of Actuaries
April 20, 2020



Kristina Leanne Percy
Fellow, Canadian Institute of Actuaries
April 20, 2020

Appendix A - Plan Provisions

A.1 Plan Provisions

The primary benefits provided by the Trust are Group Life Insurance, Accidental Death and Dismemberment (“AD&D”), Long Term Disability (“LTD”), Dental and Extended Health Care (“EHC”). The following summary was provided to us by the Healthcare Benefit Trust (“HBT”) and capture the major standard plan provisions in effect as at December 31, 2019.

Provisions	JHSBT Plan Provisions
Group Life	
Benefit Amount	\$50,000
Advance Payment	50% to a maximum of \$25,000
Reduction at age 65	None
Termination Age	None
AD&D	
Benefit Amount	\$50,000
Reduction at age 65	None
Termination Age	None
LTD	
Benefit Amount	70% of the first \$6,440* (as at Apr 1/19) of basic monthly earnings and 50% of the excess or 66-2/3% of basic monthly earnings, whichever is greater (*adjusted annually for new claims based on increases in the weighted average wage rate)
Maximum Benefit	None
Indexing	Adjustments every 4 years based on compounded annual increases in weighted average wage rate for most recent 4 years
Qualification Period	5 months
Own Occupation Period	24 months
Own Occupation Definition	The employee's inability to perform the duties of his/her own occupation or any available position that is not less than 75% of pre-disability earnings.
Any Occupation Maximum	70% of current rate of pay
Pre-Existing Condition Clause	No
Early Retirement Incentive Benefit	Provided, with 50/50 cost sharing of EHC & Dental
Termination Age	65

Provisions	JHSBT Plan Provisions
Dental	
Basic	100%
Basic - Recall Exams	2 per calendar year
Major	60%
Orthodontics	60%
Orthodontics Lifetime Maximum	\$2,750
PBC ⁴ Fee Schedule	No. 2
Termination Age	None
EHC	
Deductible	\$100.00
Reimbursement	80% up to \$1,000 claims paid per family per calendar year; 100% thereafter (except Drugs & Vision Care)
Lifetime Maximum	Unlimited
Drug Formulary	PharmaCare drugs, Prometrium and drugs that have received Special Authority reimbursed at 100%; Non-PharmaCare drugs reimbursed at 50%
Drug Pricing Restrictions	Low Cost Alternative and Reference Drug Pricing as established by BC PharmaCare
Mark-Up Limit	As established by BC PharmaCare
Dispensing Fee Cap	As established by BC PharmaCare
Pay-Direct Drug Card	Yes
Acupuncture	\$100 per person per year
Chiropractor	\$200 per person per year
Massage Therapy	Unlimited
Naturopath	\$200 per person per year
Physiotherapy	Unlimited
Podiatrist	\$400 per person per year
Registered Clinical Psychologist & Clinical Counselor	\$900 per person per year combined maximum
Speech Therapist	\$100 per person per year
Vision Care	\$350 per person every 24 months
Eye Exams	Not covered

⁴ Pacific Blue Cross.

Provisions	JHSBT Plan Provisions
Hearing Aids	\$600 per person every 48 months
Termination Age	None

Appendix B - Claimant and Claims Data

B.1 Source of Data

In performing the calculations for this valuation, we obtained data from the Trust and its service providers.

LTD claimant data was provided to the Healthcare Benefit Trust by Canada Life (formerly Great-West Life). We received this information from the Healthcare Benefit Trust.

For benefits aside from LTD, the actuarial valuation does not require individual claim data to perform the valuation. Reserves held are based on the aggregate payments in recent periods or are held constant. Aggregate claims and contribution data are collected from the Healthcare Benefit Trust. The data is provided to the Healthcare Benefit Trust from Pacific Blue Cross (EHC and dental) and Canada Life (group life and AD&D).

In performing this valuation, we use asset data and financial statements provided to us by the Healthcare Benefit Trust. The calculation of the asset position of the Trust within this report is detailed in Appendix C.

We have reviewed the data to ensure its sufficiency and reliability and confirm that the provided data was sufficient and reliable for the purpose of this valuation.

B.2 Summary of LTD Claims Data

The following tables summarize the composition of LTD claimants at December 31, 2019:

Duration of Disability	Age at Disability					Total
	Under Age 30	30 – 39	40 – 49	50 – 59	Age 60 and Over	
< 1 year	1	18	32	31	7	89
1 to 2 years	2	31	29	36	12	110
2 to 3 years	0	4	13	20	6	43
3 to 5 years	0	0	0	0	0	0
5 to 10 years	0	0	0	0	0	0
> 10 years	0	0	0	0	0	0
Total	3	53	74	87	25	242

The following table summarizes the total net monthly LTD income after assumed CPP and Insurance Corporation of British Columbia (“ICBC”) approval of disabled employees at December 31, 2019:

Duration of Disability	Age at Disability					Total
	Under Age 30	30 – 39	40 – 49	50 – 59	Age 60 and Over	
	\$	\$	\$	\$	\$	\$
< 1 year	3,000	62,000	107,000	110,000	25,000	307,000
1 to 2 years	6,000	104,000	85,000	129,000	36,000	360,000
2 to 3 years	0	13,000	32,000	55,000	18,000	119,000
3 to 5 years	0	0	0	0	0	0
5 to 10 years	0	0	0	0	0	0
> 10 years	0	0	0	0	0	0
Total	10,000	179,000	224,000	294,000	79,000	786,000

B.3 Changes in LTD Claimant Data

The following table shows the changes in the LTD claimants since January 1, 2019:

Reconciliation of LTD Claimant Data	Number of Claimants
As at December 31, 2018	153
New entrants	209
Claim terminations	(120)
As at December 31, 2019	242

Appendix C - Assets

C.1 Asset Information

The asset position is calculated from the Trust's financial statements as provided by the Healthcare Benefit Trust.

The table below shows the development of these assets from December 31, 2018 to December 31, 2019:

Calculation of Asset Position⁵	\$000,000s
Assets – December 31, 2018	45.6
Employer contributions	81.4
Employee contributions	9.4
Investment return (net of investment expenses)	6.1
Benefit payments	
- LTD	(9.4)
- EHC	(36.0)
- Dental	(20.0)
- Group Life/AD&D	(0.5)
Non-investment expenses	(2.5)
Assets – December 31, 2019	74.0

⁵ Accrued to December 31, 2019

C.2 Asset Mix

Invested assets are held and invested by the Healthcare Investment Unit Trust (“HIUT”). The following table shows the actual and long-term policy asset mixes at December 31, 2019 of the Trust:

Asset Class	December 31, 2019 Mix	Target Mix
Fixed Income		
Cash and Money Market	7.7%	2.0%
Nominal Bonds	26.5%	8.0%
Credit	9.9%	10.0%
Subtotal	44.1%	20.0%
Equity		
Canadian	14.6%	10.0%
Global	29.8%	22.0%
Emerging Markets	8.3%	8.0%
Subtotal	52.6%	40.0%
Alternatives		
Infrastructure	3.1%	25.0%
Real Estate	0.2%	15.0%
Subtotal	3.3%	40.0%
Total	100.0%	100.0%

C.3 Asset Valuation

The asset position is taken as the market value of assets at December 31, 2019. Reliance is placed on the provided Financial Statements for the appropriate valuation of the assets.

Appendix D - Actuarial Methods

D.1 Actuarial Cost Method

The liabilities at the valuation date were calculated as the expected present value of future benefits for claims incurred up to the valuation date, where future payments incorporate future indexing. This actuarial method may be referred to as a “unit credit” cost method, although a unit credit method generally implies some accumulation in liabilities rather than event-driven liabilities.

D.2 Asset Valuation Method

The market value of the assets has been used as the assets.

D.3 Provision for Adverse Deviation (“PfAD”)

The Trust’s liabilities have been calculated on a best estimate basis.

D.4 Liability Valuation Methodology

The following outlines the methodology used for calculating the liability for each line of benefit. Future costs are discounted to the present assuming cash flows occur at the middle of each month. The liabilities for reported disabled claimants are calculated on an individual basis, whereas the liabilities related to incurred but not reported claims are determined on an aggregate basis.

Admitted LTD claims (Reported)

The liability for admitted (reported) LTD claims is equal to the actuarial present value of projected future benefit payments for LTD claimants as of December 31, 2019. The actuarial present value is calculated by applying the probability of receipt of disability (i.e., probability of the claim not terminating) to the projected benefit claim costs at future ages for each LTD claimant, and further discounted by the interest rate assumption to the calculation date.

LTD (IBNR)

The liability for incurred but not reported LTD claims is calculated by taking the product of the LTD IBNR assumption shown in Appendix E, the current cost of LTD, and the Straight-Time Payroll (“STP”) for each of the prior four quarters.

Active EHC and dental (IBNR)

The liability for incurred but not reported EHC and dental claims is calculated by taking the product of the EHC and dental IBNR assumptions shown in Appendix E and the total EHC and dental claims and expenses incurred in the most recent four quarters ending December 31, 2019.

Active group life and AD&D (IBNR)

The liability for incurred but not reported group life and AD&D claims is assumed to be \$100,000.

EHC and dental for disabled claimants

The liabilities for EHC and dental costs for disabled claimants is calculated as the product of the average annuity factor for each line of benefit across all LTD claimants, the count of disabled claimants at the valuation date and the estimated annual difference between benefit claims and expected employee contributions⁶ for the average disabled claimant. The annuity factors incorporate the future benefit cost escalation assumptions listed in Appendix E.

The EHC and dental IBNRs for disabled claimants are equal to the ratio of the LTD (IBNR) to the admitted LTD claims liability, multiplied by the liabilities for EHC and dental costs for disabled claimants.

Group life and AD&D for disabled claimants

The liability for group life and AD&D is calculated as the present value of a payment at the life volume using the mortality assumption.

The group life and AD&D IBNR for disabled claimants is equal to the ratio of the LTD (IBNR) to the admitted LTD claims liability, multiplied by the liabilities for group life and AD&D costs for disabled claimants.

⁶ Actual employee contributions are adjusted to account for future increases based on actual claims experience since the last date employee contributions were adjusted.

Appendix E - Actuarial Assumptions

E.1 Liability Assumptions

The valuation is based on the assumption that the Trust will continue to pay for benefits indefinitely into the future related to disabilities already incurred at the valuation date. At each valuation, past experience is compared to the assumptions made at the last valuation to determine if, together with known changes to plan provisions, investment policy, and expectations of future trends, the assumptions should be changed.

Emerging experience differing from these assumptions will result in experience gains and losses that will be revealed in future valuations.

The table below summarizes the assumptions used in the calculation of the Trust's December 31, 2019 actuarial liabilities:

Assumptions	December 31, 2018	December 31, 2019
<i>Economic</i>		
Discount rate	5.80% per year	5.60% per year
Retroactive CPP	Where CPP is assumed, retroactive CPP to a maximum of 18 months is assumed	Where CPP is assumed, retroactive CPP to a maximum of 18 months is assumed
Potential CPP benefits	Potential CPP benefits are calculated based on the following information (as set by the Canada Pension Plan): 2019 flat CPP monthly amount: \$496.36 2019 maximum CPP monthly amount: \$1,362.30.	Potential CPP benefits are calculated based on the following information (as set by the Canada Pension Plan): 2020 flat CPP monthly amount: \$505.79 2020 maximum CPP monthly amount: \$1,387.66.
Benefit indexing (indexing to wage increases)	Annual wage increases of 1.5% are assumed, except where negotiated wage increases are known. Where negotiated wage increases are known, these apply.	Annual wage increases of 1.5% are assumed, except where negotiated wage increases are known. Where negotiated wage increases are known, these apply.
Benefit indexing (indexing to CPI)	2.0% per year	2.0% per year
Future expenses as a percentage of claims payments	Disability Income 4% Extended health 4% Dental 4% Life 4%	Disability Income 4% Extended health 4% Dental 4% Life 4%
EHC escalation	EHC costs for disabled employees are assumed to increase by 12.00% in 2018 and decrease by 0.57% per year until reaching the ultimate escalation rate of 3.5% per annum.	EHC costs for disabled employees are assumed to increase by 12.0% in 2018 and decrease by 0.57% per year until reaching the ultimate escalation rate of 3.5% per annum.
Dental escalation	Dental costs for disabled employees are assumed to increase by 3.5% per annum.	Dental costs for disabled employees are assumed to increase by 3.5% per annum.

Assumptions	December 31, 2018	December 31, 2019
<i>Demographic</i>		
Termination from disability	Assumed based on adjustments for the Trust's experience applied to the aggregate female non-Quebec termination table published in of the CIA ⁷ Report entitled "Canadian Group Long-Term Disability Termination experience 2004-2008." Tables of adjustments are provided below.	Assumed based on adjustments for the Trust's experience applied to the aggregate female non-Quebec termination table published in of the CIA Report entitled "Canadian Group Long-Term Disability Termination experience 2004-2008." Tables of adjustments are provided below.
Mortality	Assumed to be in accordance with the mortality tables for males and females in the CIA report entitled "Canadian Group Long-Term Disability Termination Experience 1988-1994".	Assumed to be in accordance with the mortality tables for males and females in the CIA report entitled "Canadian Group Long-Term Disability Termination Experience 1988-1994".
ICBC offset	2.5% of the net benefit for claimants disabled between April 1, 2017 and March 31, 2018	2.5% of the net benefit for claimants disabled between April 1, 2017 and May 17, 2018
CPP approval	Rates are based on age and duration since disability. Where CPP is approved, retroactive CPP to a maximum of 18 months is assumed. Table of approval rates is provided later in this report.	Rates are based on age and duration since disability. Where CPP is approved, retroactive CPP to a maximum of 18 months is assumed. Table of approval rates is provided later in this report.
<i>Incurred but not reported</i>		
Group life and AD&D	\$100,000	\$100,000
LTD	Proportion of cost remaining at quarter end: 5.1%: Three quarters prior to latest quarter 18.1%: Two quarters prior to latest quarter 72.5%: Quarter prior to latest quarter 100.0%: Latest quarter	Proportion of cost remaining at quarter end: 6.0%: Three quarters prior to latest quarter 21.8%: Two quarters prior to latest quarter 86.4%: Quarter prior to latest quarter 100.0%: Latest quarter
Active EHC	As a percentage of claims paid to date with an incurral date from the prior four quarters, plus expenses: 1.0%: Three quarters prior to latest quarter 2.4%: Two quarters prior to latest quarter 5.5%: Quarter prior to latest quarter 28.0%: Latest quarter	As a percentage of claims paid to date with an incurral date from the prior four quarters, plus expenses: 0.9%: Three quarters prior to latest quarter 2.3%: Two quarters prior to latest quarter 5.8%: Quarter prior to latest quarter 29.5%: Latest quarter

⁷ Canadian Institute of Actuaries.

Assumptions	December 31, 2018	December 31, 2019
Active dental	As a percentage of claims paid to date with an incurral date from the prior four quarters, plus expenses: 0.1%: Three quarters prior to latest quarter 0.2%: Two quarters prior to latest quarter 0.8%: Quarter prior to latest quarter 12.5%: Latest quarter	As a percentage of claims paid to date with an incurral date from the prior four quarters, plus expenses: 0.1%: Three quarters prior to latest quarter 0.3%: Two quarters prior to latest quarter 1.2%: Quarter prior to latest quarter 16.0%: Latest quarter
Disabled non-income benefits (EHC, dental and group life/AD&D)	Ratio of LTD IBNR liability to reported LTD liability applied to the corresponding liability for reported active LTD claims	Ratio of LTD IBNR liability to reported LTD liability applied to the corresponding liability for reported active LTD claims

Termination from disability

For the December 31, 2018 and December 31, 2019 valuation, we used the CIA 2004-2008 non-Quebec, female termination table with the following adjustments:

Duration (months)	December 31, 2018	December 31, 2019
Less than 24	80%	80%
24-30	270%	285%
31-60	75%	95%
Greater than 60	150%	135%

CPP approval

The following table presents the assumption for the probability of eventual CPP qualification for claims that are not in receipt of a CPP offset:

Duration (months)	December 31, 2018	December 31, 2019
Less than 24	30%	40%
24-36	40%	45%
37-60	50%	40%
Greater than 60	20%	10%

E.2 Projection Assumptions

In our projections we have assumed the following:

Assumption		Source
EHC IBNR as a percentage of claims paid to date for incurred claims from:		
Three quarters prior to latest quarter	0.9%	Assumptions Review
Two quarters prior to latest quarter	2.3%	
Quarter prior to latest quarter	5.8%	
Latest quarter	29.5%	
Dental IBNR as a percentage of claims paid to date for incurred claims from:		
Three quarters prior to latest quarter	0.1%	Assumptions Review
Two quarters prior to latest quarter	0.3%	
Quarter prior to latest quarter	1.2%	
Latest quarter	16.0%	

Assumption		Source
Projected Claims Adjudication Expenses as a percentage of claims paid		
EHC	2.61%	HBT
Dental	2.25%	HBT
Life/AD&D	2.98%	HBT
LTD	2.95%	HBT
Projected Operating Expenses		
January 1, 2020 to March 31, 2020	\$228,000	HBT
Investment Return		
From January 1, 2020	5.60%	George & Bell
Other		
LTD Service Cost – to March 31, 2020	2.66% of STP	JHSBT April 1, 2019 Self-Pay Rates
LTD Service Cost – from April 1, 2020	2.65% of STP	JHSBT April 1, 2020 Self-Pay Rates
Group Life/AD&D IBNR	\$100,000	Assumptions Review
April 1, 2019 wage rate increase	3.79%	HEABC ⁸
April 1, 2020 wage rate increase	2.22%	HEABC
April 1, 2021 wage rate increase	2.05%	HEABC
Discount Rate	5.60%	Assumptions Review
EHC Trend Rate	Increase by 12.0% in 2018 and decreasing by 0.57% per year until reaching the ultimate escalation rate of 3.5% per annum	Assumptions Review
Dental Trend Rate	3.5% per annum	Assumptions Review
Operating Expense Trend Rate	1.50% per annum	George and Bell

Straight-time Payroll Projection

STP is projected based on the following:

- Estimates provided by Health Authorities for April 1, 2019 to March 31, 2020 and April 1, 2020 to March 31, 2021;
- Reported STP from January 1, 2019 to December 31, 2019 for Affiliates with negotiated wage rate increases applied at April 1, 2020; and
- Assumed wage rate increases at April 1, 2020 and April 1, 2021.

⁸ Health Employers Association of British Columbia.

Contributions Projection

Employer and employee contributions are estimated based on the negotiated/estimated rates and the projected STP.

Claims/Liability Projection

LTD claims payments are projected on a monthly basis based on:

- (A) A listing was developed of open claims at June 30, 2018 with a date of disability (“DOD”) in the prior five years. The monthly claims payments from January 1, 2014 for these claims were estimated based on the net benefit from the Date of Benefit Start to June 30, 2018. These monthly claims payments were then assumed to approximate claims payments from April 1, 2017, adjusted for actual claims payments made;
- (B) The net benefit between January 1, 2014 and June 30, 2018 for terminated claims with a DOD in the five years prior to June 30, 2018. The same methodology in (A) was applied to these claims, assuming claims payments from the Date of Benefit Start to the Termination Date;
- (C) The assumed Non-Operating Expense LTD Cost Factor is applied to (A) and (B) to cover costs allocated to LTD which are not paid directly to claimants, such as rehabilitation program and early intervention program costs.

The LTD liability is projected to be:

- (A) LTD liability at valuation date;
- (B) Plus: projected STP from the last valuation date to the projection date x the assumed LTD service cost;
- (C) Less: projected claims payments from the last valuation date;
- (D) Less: the estimated LTD portion of claims adjudication and operating expenses; and
- (E) Plus: estimated interest.

EHC and Dental active claims are projected based on active claims incurred for the prior year and paid to date plus the assumed IBNR liability, adjusted for the assumed trend rate.

EHC and Dental disabled claims are projected based on the average disabled claims in the prior three months and increasing monthly at the same rate as the projected LTD claims.

The EHC and Dental active IBNR liabilities are projected to be equal to the projected active claims and allocated expenses x the IBNR assumption.

Group Life and AD&D claims are projected based on actual claims paid in the past three years. The Group Life and AD&D active IBNR liability is assumed to be \$100,000.

Expense Projection

Estimated operating expenses have been provided by HBT to March 31, 2021. For April 1, 2021 onwards, operating expenses were projected based on the estimated operating expenses for the prior three months, adjusted for assumed trend rate.

Asset Projection

The asset is projected to be:

- (A) Current asset;
- (B) Plus: projected contributions;
- (C) Less: projected claims payments;
- (D) Less: projected claims adjudication expenses;
- (E) Less: projected operating expenses; and
- (F) Plus: estimated investment income.

Appendix F - Detailed Results and Claims Movement

F.1 LTD Liability Results

The table below shows the results of the LTD Income (Reported) liability by duration of disability and age at disability (\$000,000s).

Duration of Disability	Age at Disability					Total
	Under Age 30	30 – 39	40 – 49	50 – 59	Age 60 and Over	
	\$	\$	\$	\$	\$	\$
< 1 year	0.1	3.2	5.8	4.8	0.4	14.2
1 to 2 years	0.3	6.6	5.6	6.0	0.6	19.1
2 to 3 years	0.0	1.4	2.8	3.3	0.2	7.8
3 to 5 years	0.0	0.0	0.0	0.0	0.0	0.0
5 to 10 years	0.0	0.0	0.0	0.0	0.0	0.0
> 10 years	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	11.1	14.2	14.1	1.2	41.0

F.2 LTD Claims Movement

The table below shows the movement of active LTD claims by major employer group within the Trust.

Employer	Claims as at Dec 31, 2018	Termination Reasons							New Entrants	Claims as at Dec 31, 2019
		Age 65	Death	Return to Work	ERIB ⁹	Change of Definition	Retired / Resigned	Other		
Fraser	23	0	0	(15)	0	(3)	(1)	(1)	30	33
Coastal	32	0	0	(17)	0	(3)	(1)	(2)	51	60
Island	35	0	(3)	(16)	0	(3)	(3)	(1)	39	48
Interior	21	0	0	(13)	0	(1)	0	(1)	32	38
Northern	8	0	0	(9)	0	(1)	0	0	16	14
Provincial	22	(1)	(1)	(7)	0	(5)	(1)	0	19	26
Providence	6	0	0	(4)	0	0	0	0	10	12
Affiliates	6	0	(1)	(5)	0	0	(1)	0	12	11
Total	153	(1)	(5)	(86)	0	(16)	(7)	(5)	209	242

⁹ Early Retirement Incentive Benefit.

F.3 LTD Cost by Date of Disability and Reported Claim

The table below shows the development of LTD costs (including non-income related benefits) by date of disability and date of reported claim. Reserves are calculated using latest assumptions, including:

- LTD Reported reserve; and
- Estimated LTD Unreported reserve.

In \$000s

DOD	Present Value of Claims Payments at December 31, 2019 (by Date of Reported Claim)											LTD Reserve ^{10,11}	Total	Straight-time Payroll		Total Cost as % of STP	
	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019			Actual	PV	Unadjusted	Adjusted ¹²
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$			\$	\$		
Q2 2017	0	5	242	373	374	326	315	271	244	228	149	3,045	5,573	237,204	273,714	2.04%	2.42%
Q3 2017	0	0	14	286	537	455	357	297	205	203	203	2,199	4,755	240,653	273,947	1.74%	2.07%
Q4 2017	0	0	0	13	275	380	302	205	182	107	85	2,244	3,792	241,324	270,963	1.40%	1.67%
Q1 2018	0	0	0	0	13	406	551	504	518	361	363	4,982	7,698	244,234	270,531	2.85%	3.39%
Q2 2018	0	0	0	0	0	5	264	385	377	411	344	4,962	6,747	247,939	270,929	2.49%	2.96%
Q3 2018	0	0	0	0	0	0	61	245	399	308	323	3,819	5,155	251,499	271,111	1.90%	2.26%
Q4 2018	0	0	0	0	0	0	0	17	293	428	366	4,603	5,708	253,403	269,438	2.12%	2.52%
Q1 2019	0	0	0	0	0	0	0	0	0	288	426	5,920	6,634	257,291	269,880	2.46%	2.93%
Q2 2019	0	0	0	0	0	0	0	0	0	18	381	8,202	8,601	265,757	275,000	3.13%	3.72%
Q3 2019	0	0	0	0	0	0	0	0	0	0	0	6,374	6,374	269,710	275,324	2.32%	2.76%
Q4 2019	0	0	0	0	0	0	0	0	0	0	0	6,054	6,054	271,972	273,846	2.21%	2.63%
Total	0	5	256	671	1,199	1,571	1,849	1,924	2,218	2,353	2,641	52,403	67,090	2,780,988	2,994,683	2.24%	2.67%

¹⁰ At December 31, 2019.

¹¹ Includes estimated LTD IBNR.

¹² Adjusted for assumed cost of non-income related benefits for disabled employees, rehabilitation costs, and expenses.

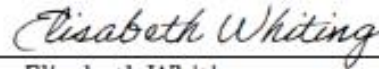
Appendix G - Data Certificate

With respect to the information used within this report, I hereby confirm that to the best of my knowledge and belief:

- LTD claimant data provided to the actuaries and summarized in Appendix B and Appendix F are a complete and accurate description of all individuals meeting the definition of disability under the Trust;
- The financial data provided to the actuaries and summarized in Appendix B are a complete and accurate representation of the contributions, claims and expenses by benefit line and notional pool;
- The plan provisions summarized in Appendix A are an accurate description of the plan provisions in effect at the valuation date; and
- There have been no events subsequent to the valuation date, up to the report date, that would materially change the December 31, 2019 valuation results or the Trust's financial position or cost.



Mick Maguire
Chief Financial Officer
Date: March 25, 2020



Elisabeth Whiting
Vice President, Operations &
Administration
Date: March 25, 2020