Bioeconomy Development Opportunity Zone Rating Greater Regina Area, Saskatchewan
Date of Issue: April 2, 2024
Rating Grade: **'AA'**

AA
Very High Quality

Rating Parameters:

Category	Rated Quantity	Delivered Price	BDO Zone Size
Canola Seed	3,400,000 tonnes	$600-$660/tonne	200-km drive
Canola Meal	1,928,000 tonnes	$350-$500/tonne	distance from
Canola Oil	1,472,000 tonnes	$1,000-$1,500/tonne	Regina, SK

BDO Zone Assets

- **World-leading track record for canola productivity.**
- **Well-developed supply chains by anchor agriculture companies capable of scale-up.**
- **Implementation of efficient and sustainable farming practices.**
- **Excellent transportation logistics are provided by Class 1 railroads and high-quality highways.**
- **Centre of the BDO Zone is a shovel-ready inland port with all utilities and supporting infrastructure for bio-based projects.**

BDO Zone Liabilities

- **Climate change brings uncertainties to canola productivity, particularly with the threat of drought and heat.**
- **Market volatility and global supply chain issues can significantly impact canola availability and prices.**

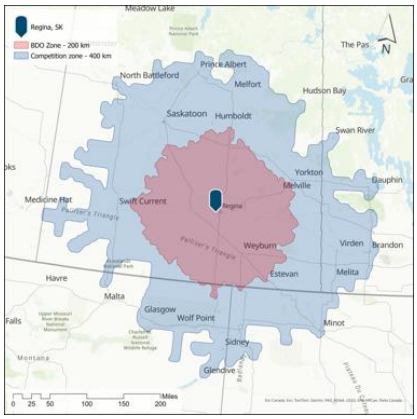
Rating Grade

The Greater Regina Area, Bioeconomy Development Opportunity Zone, is rated 'AA', or 'very low' risk.

Risk Rating Grades are defined as follows: AAA (extremely low), AA (very low), A (low), BBB (low-moderate), BB (moderate), B (moderate-high), and C (high).

'AA' ratings denote very high prospective viability of Feedstock Supply and Infrastructure and meagre expectations of default risk in the Zone. They indicate a robust ongoing capacity of a region to support new biobased plant operations using canola oil and meals as feedstock.

Greater Regina Area BDO Zone



Scoring & Rating Methodology

In assessing the feedstock supply chain risk for the Bioeconomy Development Opportunity (BDO) Zone, 88 Risk Indicators from the Canadian Standards for Biomass Supply Chain Risk (BSCR) were applied. These BDO Zone Risk Indicators are the subset of BSCR Risk Indicators applicable to evaluating feedstock risk within a BDO Zone.

Feedstock quantities are expressed in tonnes per year (tonnes/yr), while feedstock costs are expressed in Canadian dollars (CAD). Maximum transport distance is based on a 200-kilometre driving distance from the centre point (Global Transportation Hub, Regina, SK).

The BDO Zone rating is based on aggregating the scores assigned to each BDO Zone Risk Indicator (RI) assessed in this report. First, each BDO Zone Risk Indicator is given a **Raw Risk Likelihood (RRL)** score, which denotes the likelihood of a risk to future BDO Zone projects due to the Risk Indicator. RRL Scores are scaled as either very low (2), low (4), medium (6), high (8), or very high (10).

Each BDO Zone Risk Indicator is given a **Raw Risk Impact (RRI)** score, which denotes the impact on a future BDO Zone project due to the Risk Indicator. RRI scores are scaled as either very low (2), low (4),

medium (6), high (8), or very high (10). Impact level scores are based on the impact level of a risk on the successful development and deployment of a BDO Zone project with no mitigation measures.

The **Gross Risk Indicator (GRI)** score is then calculated as the product of the RRL and the RRI scores. For example, if the 'Competitor Price and Price Sensitivity' is scored at an RRL of 2 and an RRI of 8, then the GRI for this risk indicator is 2 X 8 = 16.

If the analyst deems that a typical bio-based project could implement economically reasonable measures or best practices that mitigate the likelihood (RRL), the impact (RRI), or both, then the GRI will be notched accordingly.

The **Loaded RI** score for each Risk Indicator is the product of the GRI score and any notched scores. Loaded RI is the final score for a Risk Indicator.

Loaded RI scores of 4 or less are deemed very low risk; scores between 5 and 16 are deemed low risk; scores between 17 and 36 are deemed medium risk; scores between 37 and 64 are deemed high risk; and scores of 65 and greater are deemed very high risk.

The total risk rating for the BDO Zone is the average of all Loaded RI scores. The Greater Regina Area's BDO Zone score is ***14.37 out of 100, resulting in an 'AA' designation.***

All scoring and rationale for each Risk Indicator are provided in Appendix B.

Analyst Notes

In this risk rating assessment, we analyze the availability and pricing of canola oil and meal as agricultural feedstocks for future biofuel projects in the BDO Zone. After considering factors such as current competition, supply chain constraints—including operational, accessibility, and market dynamics—and uncertainties in data and modelling, we identify the low-risk estimated quantities.

Given the production of canola seed in the BDO Zone, we believe that 3,400,000 tonnes of seed will be available for future projects. The expected farmgate price of canola seed will range between $600-$660 per tonne.

Based on the nominal capacity of the canola crushing facility under construction in the BDO Zone, we estimated that 1,472,000 tonnes of canola oil and 1,928,000 tonnes of canola meal are available for future biofuels projects at low risk. The expected delivered price range for securing these quantities is $1,000-$1,500 and $350-$500 per tonne for canola oil and meal, respectively.

Further, we evaluated the BDO Zone's capacity to support future biomass projects against a comprehensive set of risk indicators: 10 supplier risks, 10 competition risks, 46 supply chain risks, 2 feedstock scale-up risks, and 20 infrastructure risks. The analysis revealed two high-risk indicators linked to long-term weather trends and thirteen medium-risk indicators predominantly associated with global economic uncertainty and environmental concerns. The remaining 73 indicators pose low or very low risks, highlighting the strengths of the BDO Zone. These low-risk indicators largely stem from well-established canola industry supply chains and extensive experience within the Zone.

The rating delineates the BDO Zone's primary assets (low and very low risks) and liabilities (medium and high risks) for biomass projects, providing a nuanced understanding of its potential and challenges. This detailed evaluation supports informed decision-making for future regional investments and operations.

BDO Zone Assets

The BDO Zone is uniquely suited for canola-related businesses. The Greater Regina Area is home to leading agribusiness and food companies. This is an area of high canola productivity. We estimate that about 10,000 canola farmers are located in the BDO Zone, and about half of the canola farmers are in Saskatchewan. These farmers produce about 40% of Saskatchewan's canola and 21% of the Canadian.

Canola supply chains for harvesting, handling, and transportation are well-developed and can be scaled up to meet expanding production. Anchor companies such as Cargill and Viterra have invested heavily in developing cost-efficient and reliable canola supply chains and have supported farmers in increasing canola production.

Canadian canola has growers certified sustainable by the

International Sustainability and Carbon Certification (ISCC) body, a leading certification system. Organizations that support these efforts are active in the BDO Zone. These include the Canola Council of Canada, SaskCanola, and the University of Regina.

The centre point in Regina, SK, is served by the Canadian Pacific Railway, which is connected to the Canadian National Railway under construction and scheduled to be completed in 2025. This location is served by an excellent roadway system specifically designed to support the longest combination of vehicles.

BDO Zone Liabilities

The effects of climate change, specifically rising temperatures and erratic weather patterns, threaten Canadian canola production. Drought caused low canola yields in 2021. Drought and heat resistance are being addressed through efforts to develop new canola varieties with increased resistance to these stresses.

The BDO Zone is located in the Prairie region of Canada, with limited and variable water availability. While canola yield is influenced by water availability, the crop was developed explicitly for this region. Seed suppliers are responding with drought-resistant varieties that may help mitigate some dry-year impacts.

As canola seed, oil, and meal are commodities, the farmgate price is primarily driven by global supply and demand. The canola market has been highly volatile since late 2020, as weather events around the globe disrupt supply.

We see a moderate risk of upward pressure and increased volatility in Canola oil pricing as the biofuel sector increases its intake of oil seed.

Infrastructure Profile

The centre point is the Global Transportation Hub (GTH) in Regina, SK, an inland port facility. The GTH has industrial building sites available that are service-ready and have full utilities. It is ideally located and designed to accept canola by truck and train. Products can be quickly shipped to domestic locations and the United States via road or rail. Efficient rail connections with deep-water shipping ports, such as Vancouver and Seattle to the west and Montreal to the east, are also available.

The Greater Regina area enjoys support in increasing the domestic processing of canola and its products. Cargill is building a canola processing centre at the Global Transportation Hub, the BDO Zone centre point. The provincial government aims to crush 75% of the canola produced in Saskatchewan and has invested in infrastructure at the Global Transportation Hub. The provincial government also operates a program to attract and develop skilled labour. The federal AgriScience program supports canola growth, increasing its value and ensuring open trade through the Canola Council of Canada, the AgriMarketing Program, and the United States–Mexico–Canada Agreement,

Project Director

Bob Kodrzycki
Project Director
Ecostrat Inc.
bob.kodrzycki@ecostrat.com

Analyst

Shamri Hamit
Analyst
Ecostrat Inc.
shamri@ecostrat.com

Project Advisor

Mahmood Ebadian
Director of Advisory Services
Ecostrat Inc.
mahmood@ecostrat.com

Technical Contact

Marcin Lewandowski
Senior Director, Operations & Risk
Ecostrat Inc.
marcin@ecostrat.com

Business Contact

Jordan R. Solomon
President & CEO
Ecostrat Inc.
Jordan.solomon@ecostrat.com

Figure 1: Risk Indicators (Sorted by Risk Level)

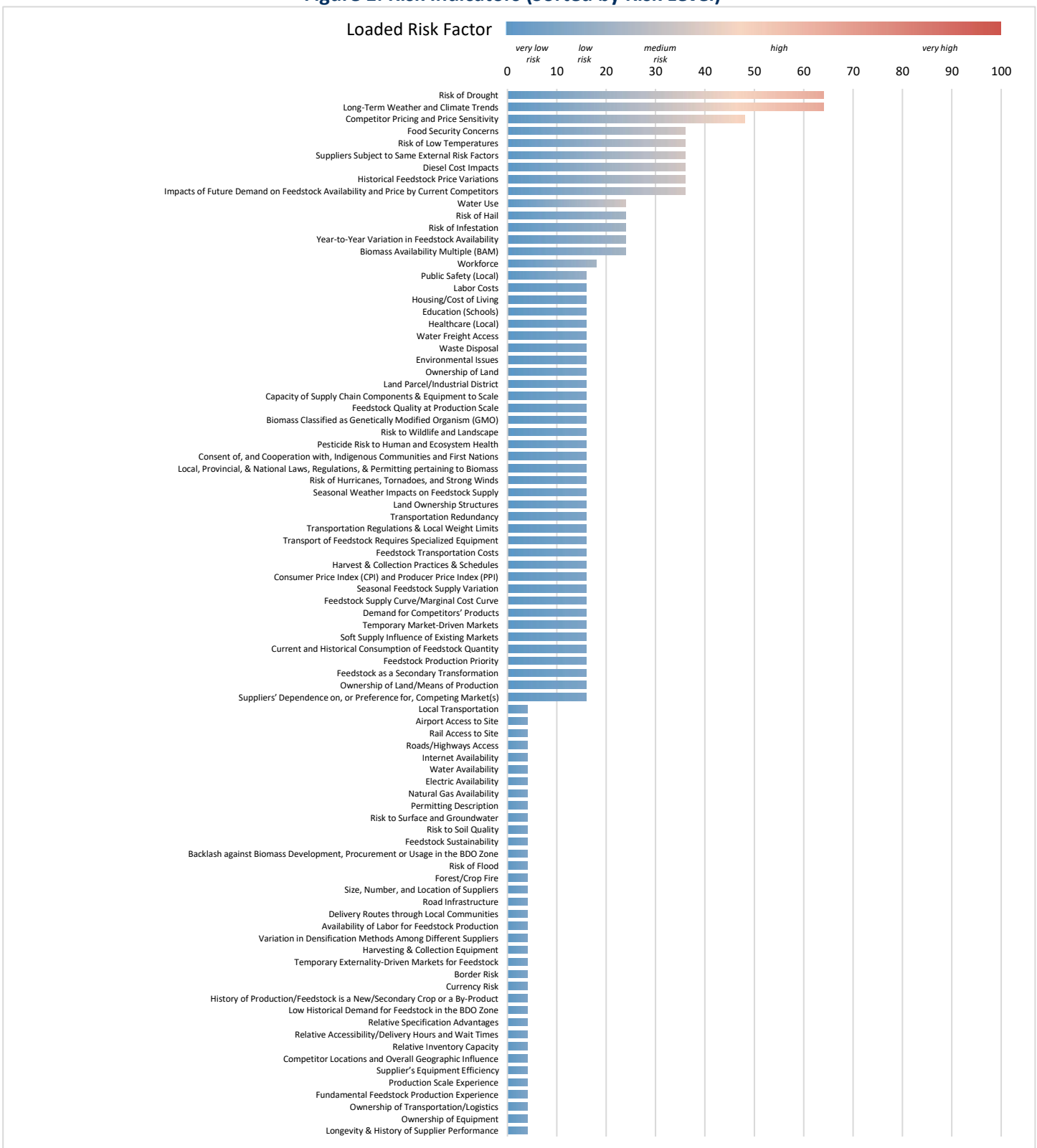


Table 1: Risk Indicators and Associated Scores

	Feedstock Supply Chain Risk Indicators	Raw Risk Likelihood	Raw Risk Impact	Gross Risk Indicator	Mitigation /Notching	Loaded RI Score
	Category 1.0: Supplier Risk					
1.1.1	Longevity & History of Supplier Performance	2	2	NN	NN	4
1.2.1	Suppliers' Dependence on, or Preference for, Competing Market(s)	4	4	16	NN	16
1.3.1	Ownership of Land/Means of Production	4	4	16	NN	16
1.3.2	Ownership of Equipment	2	2	4	NN	4
1.3.3	Ownership of Transportation/Logistics	2	2	4	NN	4
1.3.4	Feedstock as a Secondary Transformation	4	4	16	NN	16
1.4.1	Fundamental Feedstock Production Experience	2	2	4	NN	4
1.4.2	Production Scale Experience	2	2	4	NN	4
1.5.1	Supplier's Equipment Efficiency	2	2	4	NN	4
1.6.1	Feedstock Production Priority	4	4	16	NN	16
	Category 2.0: Competitor Risk					
2.1.1	Competitor Locations and Overall Geographic Influence	2	2	4	NN	4
2.1.2	Current and Historical Consumption of Feedstock Quantity	4	4	16	NN	16
2.1.3	Competitor Pricing and Price Sensitivity	6	8	48	NN	48
2.1.4	Impacts of Future Demand on Feedstock Availability and Price by Current Competitors	6	6	36	NN	36
2.1.5	Soft Supply Influence of Existing Markets	4	4	16	NN	16
2.1.6	Temporary Market-Driven Markets	4	4	16	NN	16
2.2.1	Relative Inventory Capacity	2	2	4	NN	4
2.2.2	Relative Accessibility/Delivery Hours and Wait Times	2	2	4	NN	4
2.2.3	Relative Specification Advantages	2	2	4	NN	4
2.2.4	Demand for Competitors' Products	4	4	16	NN	16
	Category 3.0: Supply Chain Risk					
3.1.1	Biomass Availability Multiple (BAM)	**4**	6	24	NN	24
3.1.2	Feedstock Supply Curve/Marginal Cost Curve	**4**	4	16	NN	16
3.1.3	Seasonal Feedstock Supply Variation	4	4	16	NN	16
3.1.4	Year-to-Year Variation in Feedstock Availability	6	4	24	NN	24
3.2.1	Historical Feedstock Price Variations	6	6	36	NN	36
3.2.2	Low Historical Demand for Feedstock in the BDO Zone	2	2	4	NN	4
3.2.3	History of Production/Feedstock is a New/Secondary Crop or a By-Product	2	2	4	NN	4
3.3.1	Consumer Price Index (CPI) and Producer Price Index (PPI)	4	4	16	NN	16
3.3.2	Currency Risk	2	2	4	NN	4
3.3.3	Border Risk	2	2	4	NN	4
3.3.4	Temporary Externality-Driven Markets for Feedstock	2	2	4	NN	4
3.4.1	Harvest & Collection Practices & Schedules	4	4	16	NN	16
3.4.2	Harvesting & Collection Equipment	2	2	4	NN	4
3.4.3	Variation in Densification Methods Among Different Suppliers	2	2	4	NN	4
3.4.4	Availability of Labour for Feedstock Production	2	2	4	NN	4
3.5.1	Feedstock Transportation Costs	4	4	16	NN	16
3.5.2	Diesel Cost Impacts	6	6	36	NN	36
3.5.3	Transport of Feedstock Requires Specialized Equipment	4	4	16	NN	16
3.5.4	Delivery Routes through Local Communities	2	2	4	NN	4
3.5.5	Transportation Regulations & Local Weight Limits	4	4	16	NN	16
3.5.6	Road Infrastructure	2	2	4	NN	4
3.5.7	Transportation Redundancy	4	4	16	NN	16
3.6.1	Size, Number, and Location of Suppliers	2	2	4	NN	4
3.6.2	Suppliers Subject to Same External Risk Factors	6	6	36	NN	36
3.6.3	Land Ownership Structures	4	4	16	NN	16
3.7.1	Seasonal Weather Impacts on Feedstock Supply	4	4	16	NN	16
3.7.2	Long-Term Weather and Climate Trends	8	8	64	NN	64
3.7.3	Forest/Crop Fire	2	2	4	NN	4
3.7.4	Risk of Infestation	4	6	24	NN	24
3.7.5	Risk of Hail	6	4	24	NN	24
3.7.6	Risk of Flood	2	2	4	NN	4
3.7.7	Risk of Drought	8	8	64	NN	64
3.7.8	Risk of Hurricanes, Tornadoes, and Strong Winds	4	4	16	NN	16
3.7.9	Risk of Low Temperatures	6	6	36	NN	36
3.8.1	Government Subsidies for Feedstock Production or Utilization	NR	NR	NR	NR	NR
3.8.2	Local, Provincial, & National Laws, Regulations, & Permitting pertaining to Biomass	4	4	16	NN	16
3.8.3	Backlash against Biomass Development, Procurement or Usage in the BDO Zone	2	2	4	NN	4
3.8.4	Consent of, and Cooperation with, Indigenous Communities and First Nations	4	4	16	NN	16

3.8.5	Food Security Concerns	6	6	36	NN	36
3.9.1	Feedstock Sustainability	2	2	4	NN	4
3.9.2	Risk to Soil Quality	2	2	4	NN	4
3.9.3	Risk to Surface and Groundwater	2	2	4	NN	4
3.9.4	Water Use	6	4	24	NN	24
3.9.5	Pesticide Risk to Human and Ecosystem Health	4	4	16	NN	16
3.9.6	Risk to Wildlife and Landscape	4	4	16	NN	16
3.9.7	Biomass Classified as Genetically Modified Organism (GMO)	4	4	16	NN	16
	Category 4.0: Feedstock Scale-up Risk					
4.1.1	Feedstock Quality at Production Scale	4	4	16	NN	16
4.1.2	Capacity of Supply Chain Components & Equipment to Scale	4	4	16	NN	16
	Category 5.0: Infrastructure					
5.1.1	Land Parcel/Industrial District	4	4	16	NN	16
5.1.2	Ownership of Land	4	4	16	NN	16
5.1.3	Permitting Description	2	2	4	NN	4
5.1.4	Environmental Issues	4	4	4	NN	16
5.2.1	Natural Gas Availability	2	2	4	NN	4
5.2.2	Electric Availability	2	2	4	NN	4
5.2.3	Water Availability	2	2	4	NN	4
5.2.4	Waste Disposal	4	4	16	NN	16
5.2.5	Internet Availability	2	2	4	NN	4
5.3.1	Roads/Highways Access	2	2	4	NN	4
5.3.2	Rail Access to Site	2	2	4	NN	4
5.3.3	Airport Access to Site	2	2	4	NN	4
5.3.4	Water Freight Access	4	4	16	NN	16
5.4.1	Healthcare (Local)	4	4	16	NN	16
5.4.2	Education (Schools)	4	4	16	NN	16
5.4.3	Local Transportation	2	2	4	NN	4
5.4.4	Public Safety (Local)	4	4	16	NN	16
5.4.5	Housing/Cost of Living	4	4	16	NN	16
5.5.1	Workforce	6	6	36	50%	18
5.5.2	Labour Costs	4	4	16	NN	16
					Average	**14.37**



Greater Regina Area, SK BDO Zone Independent Review Committee (IRC)

Megan Bradshaw – Growth Manager, Environment & Sustainability, Economic Development Regina
Tanya Hornung – Manager, Government Relations, Federated Co-operatives Limited
Chris Dekker – President and CEO, Saskatchewan Trade and Export Partnership
Chad Jedlic – Director, Economic & Business Development, City of Regina
Tracy Broughton – Executive Director, SaskCanola
Kyle Ulmer – Provincial Agribusiness Specialist, Government of Saskatchewan
Chris Lane – President and CEO, Economic Development Regina
Chris Vervaet – Executive Director, Canadian Oilseed Processors Association

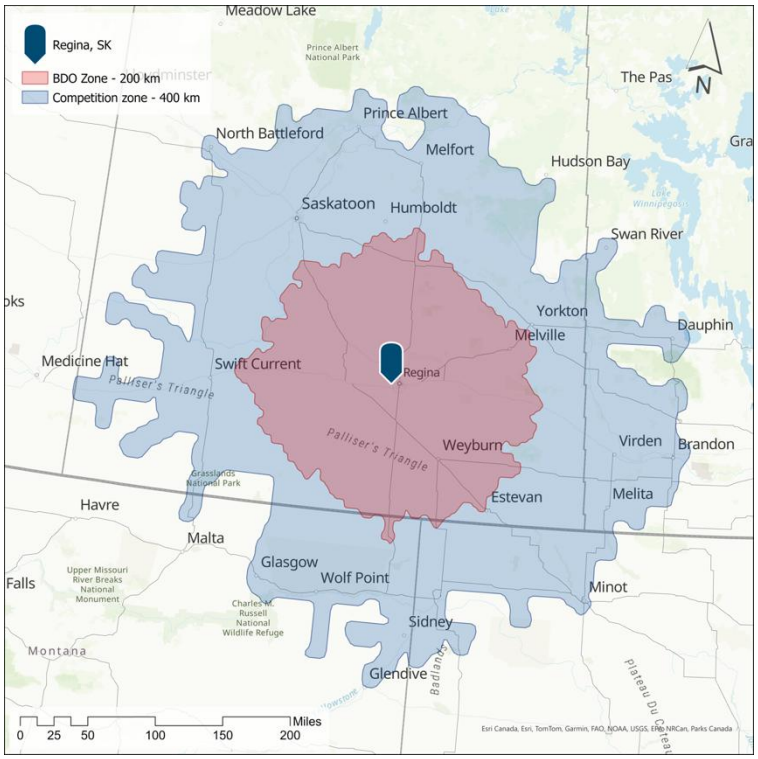
APPENDIX A: FEEDSTOCK AVAILABILITY AND PRICING

OVERVIEW

This risk rating assessment involves estimating the rated quantity and pricing of two feedstocks for future bio-conversion projects, canola oil and canola meal (the products of the canola crushing process), in a BDO Zone with Regina, Saskatchewan (SK) as the centre point. Regina, the capital of Saskatchewan, is located in the southern portion of the province. It is home to world-leading agribusiness and food companies.[1] Saskatchewan is the world's largest exporter of canola, peas, lentils, durum wheat, flaxseed, oats, and mustard seeds.[2] Dairy, livestock poultry, and specialty farms are also significant contributors to the agricultural economy in the region. Non-agricultural industries such as oil and natural gas, potash, kaolin, sodium sulphite, and bentonite contribute significantly to Regina and the area's economy.

The BDO Zone consists of a 200 km driving distance from the centre point. The 200 km driving distance reflects a reasonable distance for farmers to transport canola by truck.[3] A Competition Zone of 400 km designates where competitors to this supply can have a meaningful effect on canola availability for a new facility. The BDO Zone and Competition Zone are shown in Figure A-1. The 200 km BDO Zone comprises about 8.9 million ha (88,977 sq km), while the Competition Zone comprises about 34.2 million ha (342,156 sq km).

Figure A-1: BDO and Competition Zones – Regina, SK



[1] Economic Development Regina. https://economicdevelopmentregina.com/sectors/agriculture/. Accessed Apr 2, 2024.
[2] Agriculture and Food. https://economicdevelopmentregina.com/wp-content/uploads/2023/09/UK-Chamber-profile_V7-1.pdf. Accessed Apr 2, 2024.
[3] Personal communication. Riley Nargang, Saskatchewan canola farmer.

Evaluated Feedstock

This rating evaluates the availability of canola oil and meal in the BDO Zone as a feedstock for future bio-conversion facilities such as transportation biofuels production (e.g., renewable diesel and sustainable aviation fuel) and renewable natural gas. As shown in Figure A-2, three canola crushing plants have been announced in the BDO Zone within the next three to four years, mainly due to the increasing demand for canola oil as a feedstock for transportation biofuels.

Table A-1 shows these facilities' status and proposed capacity in terms of annual canola seed consumption. Once operating at the nominal capacity, the projected intake is approximately 4.6 million tonnes of canola seed. This section assesses the availability of canola seed for these three facilities and the rated quantity for canola oil and meals for future biofuel projects in the BDO Zone. The rated quantity is the low-risk quantity of feedstock after considering current demands and other uncertainties, such as future supply and market conditions.

Figure A-2. BDO Zone New Canola Crush Facilities – Under Construction and Proposed

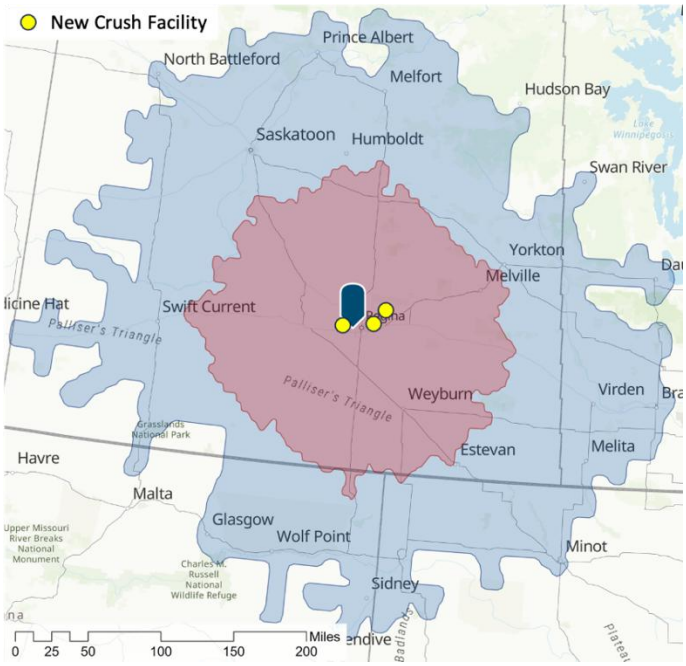


Table A-1. BDO Zone New Canola Crush Facilities – Capacities and Status

Company	Location	Type	Capacity (Million Tonnes/yr)	Status
Cargill	Regina, SK	New	1.0	Under Construction[4]
AGT/Federated	Regina, SK	New	1.1	Proposed
Viterra	Regina, SK	New	2.5	Proposed
Total New Capacity			**4.6**	

[4] Cargill. https://www.cargill.com/2024/cargill-power-canolatm-program-helps-farmers#:~:text=Cargill%20has%20made%20recent%20investments,to%20come%20online%20in%202025. Accessed May 9, 2024.

To estimate the rated quantity for canola seed, oil, and meal based on these facilities' capacity, the canola seed production and availability in the BDO Zone are first evaluated.

To estimate the rated quantity for canola seed, oil, and meal, the following steps are taken:

1. Supply Analysis: Estimate the total availability of canola seed in the BDO Zone, including the production of canola seed and the total amounts currently exported from Saskatchewan, which can be diverted to the BDO Zone.
2. Competition Analysis: Estimate the competition for canola seeds from existing crushers and those under construction in the Competition Zone.
3. Canola Seed Availability: Estimate the total availability of canola seed in the BDO Zone after considering the total consumption in Step 2.
4. Canola Oil and Meal Production: Based on nominal capacity of crushers in the BDO Zone, estimate the amount of oil and meal that can be produced in the BDO Zone.
5. Rated Quantity: Estimate the rated quantity of canola seed, oil, and meal based on industry processing yields given the net availability of the canola seed in the BDO Zone (Step 3) and then apply the BAM factor.

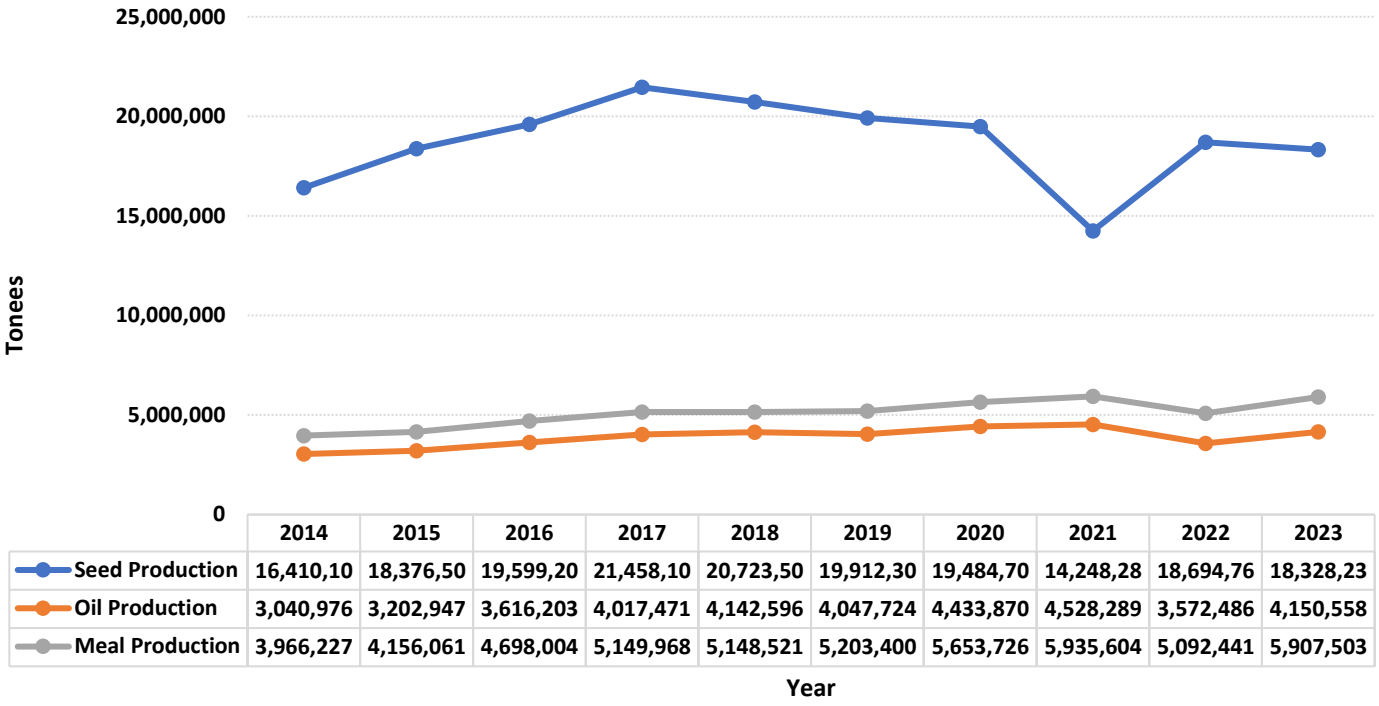
Background

Canola seeds are a significant crop in the BDO Zone. About half of the 18.3 million tonnes of canola produced in Canada in 2023 was grown in Saskatchewan. Four million tonnes, about 22% of the national total, were grown in the BDO Zone.[5]

Canola seed is exported or crushed to create canola oil and meal. Figure A-3 shows the proportions of the total Canadian canola harvest processed into oil and meal. Most oil is exported primarily to the USA and Mexico for food use or the production of renewable fuels. The meal is also largely exported and used as animal feed,[6] but it can also be used as a feedstock for biofuel production.

[5] Canadian canola production statistics. Canola Council of Canada. https://www.canolacouncil.org/markets-stats/production/. Accessed Apr 30, 2024.
[6] Canola Meal Applications. Canola Council of Canada. https://www.canolacouncil.org/canolamazing/feed-guide/. Accessed May 7, 2024.

Figure A-3. Canadian Canola Production and Processing 2014 – 2023[7]



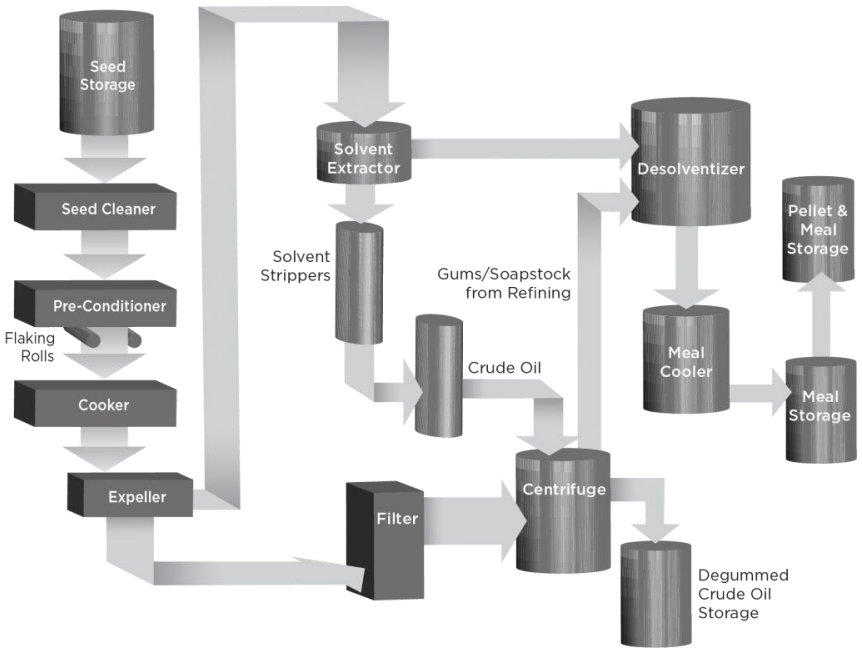
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Seed Production	16,410,10	18,376,50	19,599,20	21,458,10	20,723,50	19,912,30	19,484,70	14,248,28	18,694,76	18,328,23
Oil Production	3,040,976	3,202,947	3,616,203	4,017,471	4,142,596	4,047,724	4,433,870	4,528,289	3,572,486	4,150,558
Meal Production	3,966,227	4,156,061	4,698,004	5,149,968	5,148,521	5,203,400	5,653,726	5,935,604	5,092,441	5,907,503

- The volume of canola processed in Canada has steadily increased over the past decade
- In 2023, about 55% of all canola was processed into oil and meal

To produce finished products (canola oil and meal), canola seed is preconditioned and pressed to separate the oil from the solids. Further refining and processing create finished products ready for the market or further processing. Most Canadian companies use the same method to process canola seeds, as shown in Figure A-4.

[7] Statistics Canada. Table 32-10-0352-01 – Crushing statistics for canola.

Figure A-4. Process for Crushing Canola in Canada[8]

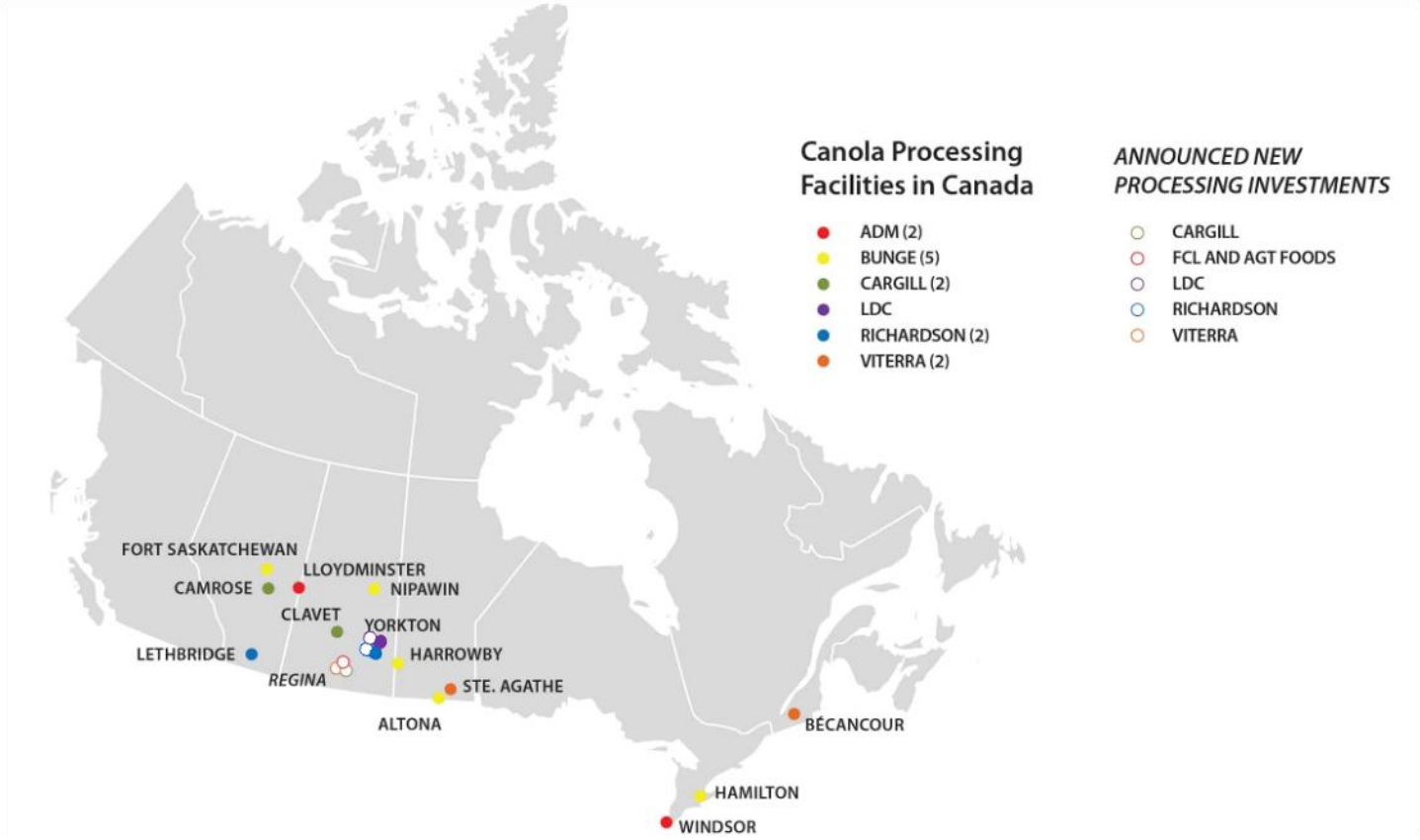


Canola crushing facilities in Canada collect and aggregate canola from 43,000 farmers.[9] They process and refine the finished products, including canola oil and meals. In addition to food markets, canola oil is used as drop-in feedstocks by domestic and international biodiesel and renewable diesel producers and, recently, sustainable aviation fuel (SAF). Canola oil (56%) and soybean oil (35%) are the primary lipid feedstock used to make biodiesel in Canada.[10] Together, the US, EU, and Canada use approximately 1.5 million tonnes of Canadian canola annually to produce biofuels, and this volume is expected to grow with increasing demand for renewable fuels in the US and Canada.[11]

Canada currently has 14 oilseed crushing plants operated by six companies (Figure A-5). These plants have a combined capacity to crush about 11 million tonnes of oilseed annually. Eleven facilities are located in the Prairie Provinces, where they predominantly crush Canola. The three plants in Quebec and Ontario crush canola and soybeans. Canadian crushing facilities have typically grown with the increase in global demand for vegetable oils. In 2023, 57% of Canada's canola crops were crushed domestically.[12]

[8] Processing canola. Canola Council of Canada. https://www.canolacouncil.org/about-canola/processing/#traditional-processing. Accessed Apr 18, 2024.
[9] Grown on Canadian farms, consumed around the world. Canola Council of Canada. https://www.canolacouncil.org/about-canola/industry/. Accessed Apr 30, 2024.
[10] Navius Research. Biofuels in Canada 2019, Tracking biofuel consumption, feedstocks and avoided greenhouse gas emissions [Internet]. 2019. Available from: https://www.naviusresearch.com/wp-content/uploads/2019/05/Biofuels-in-Canada-2019-2019-04-25-final.pdf
[11] Canadian Oilseed Processing Industry. Canadian Oilseed Processors Association. https://copacanada.com/at-a-glance/. Accessed Apr 30, 2024.
[12] Statistics Canada. Table 32-10-0352-01 – Crushing statistics of major oilseeds. Updated: February 13, 2024

Figure A-5: Existing and Announced Canola Processing Facilities in Canada[13]



Global demand for canola oil and meal continues to grow, spurring investments in new processing capacity in Canada. An additional 6.7 million tonnes of crushing capacity have been announced. This expansion represents a 60% increase from the current capacity of 11.1 million tonnes. Two existing crushers in Yorkton, SK, are expanding their processing capacity. One new crusher in Regina, SK, is under construction. The remaining two projects for Regina have yet to begin and have yet to release firm completion dates.[14]

[13] Canola processing. Canola Council of Canada. https://www.canolacouncil.org/about-canola/industry/. Accessed Apr 30, 2024.
[14] Coming canola crush capacity delayed. https://www.producer.com/news/coming-canola-crush-capacity-questioned/. Accessed May 2, 2024.

Supply Analysis

The supply analysis focuses on the amount of canola seed production to estimate the rated quantity for canola oil and meal production as feedstock for biofuel and other bio-based products. Canola production is primarily in the prairie provinces. Figure A-6 shows the areas where canola is grown. Dark yellow indicates higher productivity, while light green areas have lower productivity. Note that Regina and the BDO Zone are located in an area of higher productivity.

Figure A-6. Canola Growing Regions in Canada[15] -

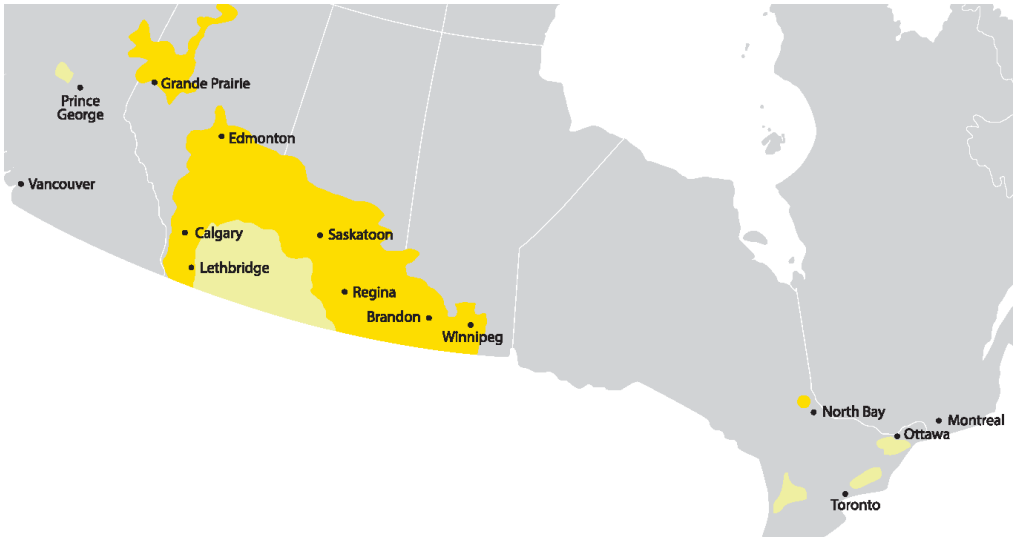
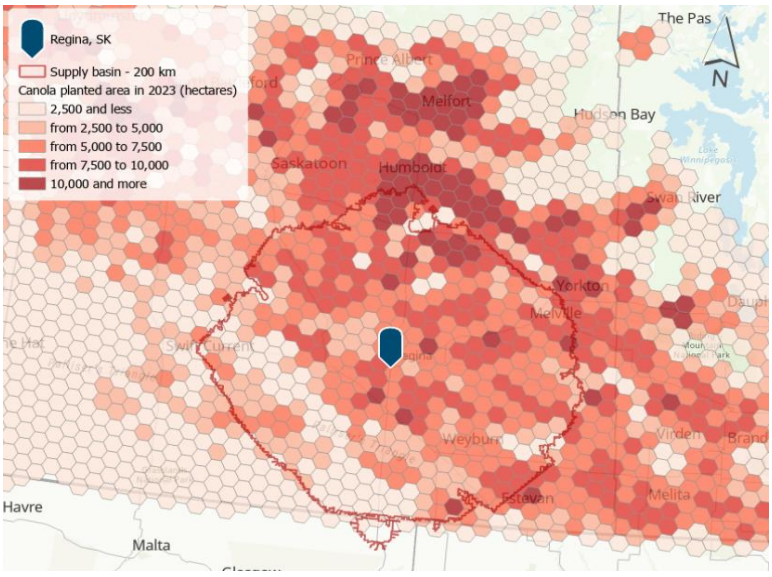


Figure A-7 shows a heat map of canola planting in the BDO Zone.

Figure A-7. Canola Planting Distribution in the BDO Zone

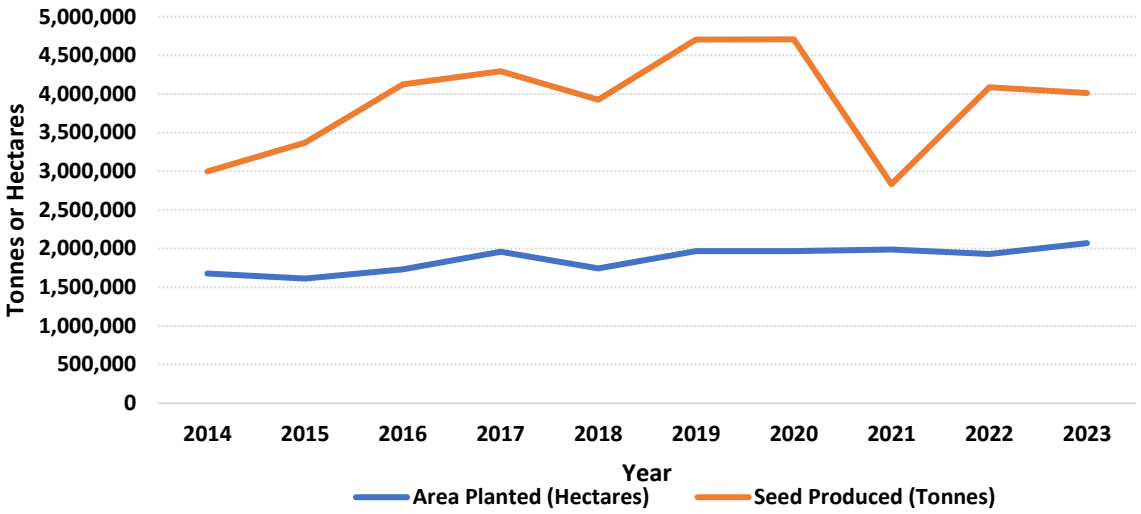


[15] Canola Production. https://www.canolacouncil.org/about-canola/industry/. Accessed May 2, 2024.

Note that canola is grown throughout the BDO Zone, with the southwestern area having lower planting density than the rest of the Zone. The average farm size is about 711 hectares.[16] There are about 20,000 canola farmers in Saskatchewan.[17] Based on a 200 km driving distance (8.9 million ha) for the BDO Zone, we estimate that there are about 10,000 suppliers of canola seed.

Figure A-8 shows the planted area and yield for canola in the BDO Zone. Canola is typically grown in rotation with wheat using no-till methods. The decision to plant how much canola from year to year is driven by market demand and weather patterns, particularly the availability of soil moisture in the planting season, to achieve a high yield of canola.

Figure A-8. Canola Planted Area and Produced in the BDO Zone

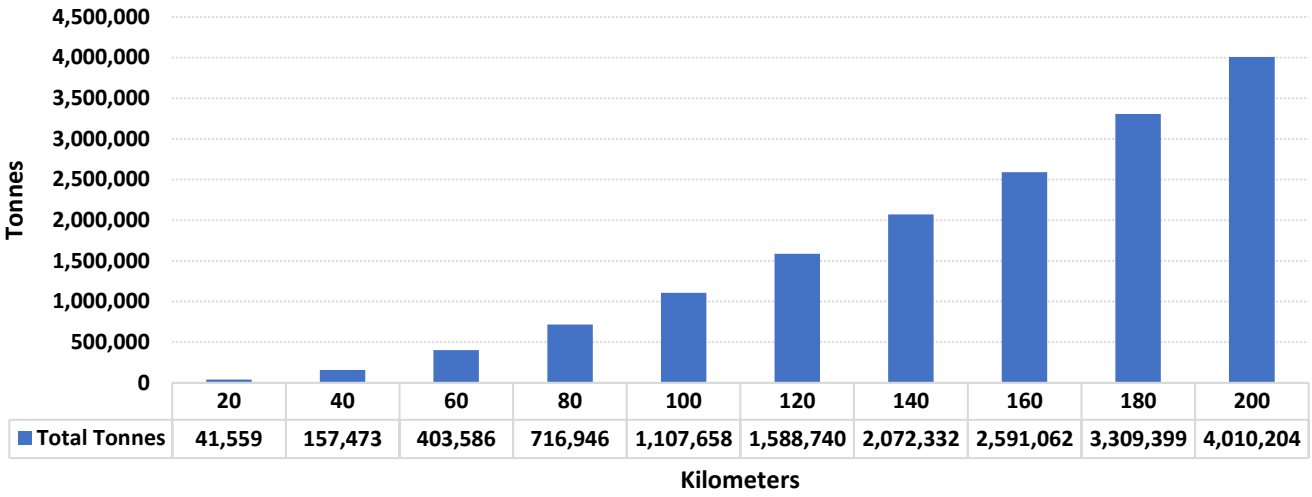


- Canola production has averaged about 4.0 million tonnes annually in the last ten years
- The planted acreage of canola has increased by about 23% over the past decade
- The dip in canola harvests in 2018 and 2021 were due to drought[18]

Figure A-9 shows the amount of canola available in the BDO Zone broken down by distance from the centre point. We anticipate that canola seed will be supplied to a new facility in Regina by a combination of truck delivery and rail delivery. Truck delivery will likely be sourced within the 200 km BDO Zone. Delivery by rail will be sourced from primary grain elevators[19] in Canada, with a preference for those in Saskatchewan.

[16] Statistics Canada. Table 32-10-0234-01 Land tenure, Census of Agriculture, 2021
[17] Farm & Food Care Saskatchewan. https://farmfoodcaresk.org/. Accessed Apr 25, 2024.
[18] Personal communication. Curtis Rempel, Canola Council of Canada.
[19] The term "grain elevator" is used to refer to a place where farmers sell grain into the global grain distribution system, and/or a place where the grain is moved into rail cars or ocean-going ships for transport. Specifically, the Canadian Grain Act defines several types of grain elevators. Primary elevators receive grain directly from producers for storage, forwarding, or both. Process elevators receive and store grain for direct manufacture or processing into other products. Terminal elevators receive grain upon or after official inspection and weigh, clean, store, and treat grain before moving it forward, often to export markets.

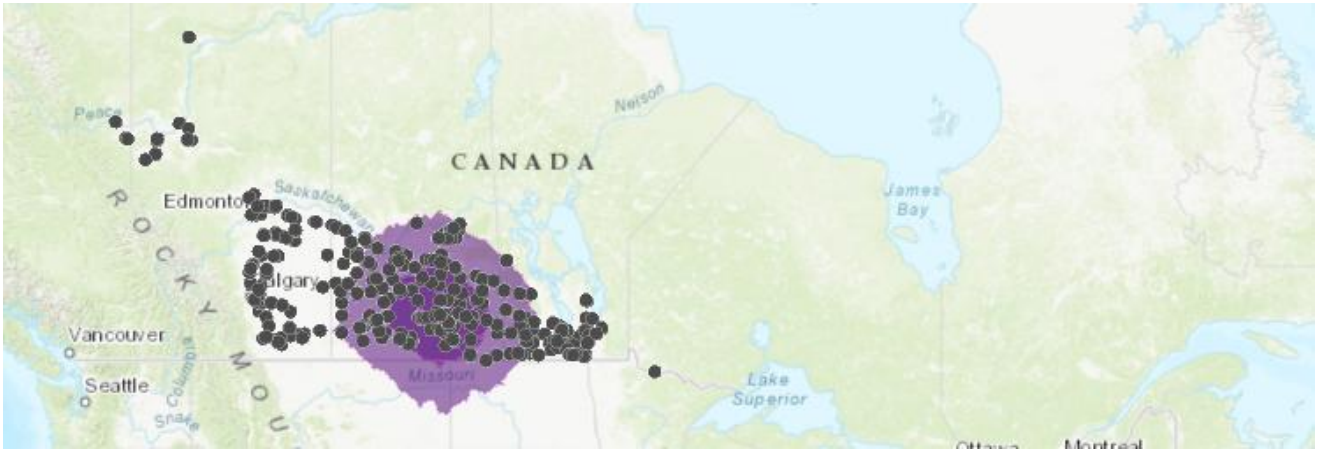
Figure A-9. Average Canola Estimated Production by Distance from the Centre Point



- Over the past decade, about four million tonnes of canola have been produced in the BDO Zone annually
- Half the amount of canola in the BDO Zone is available within 140 km

Given that canola is a commodity, we anticipate that most feedstock for new and expanded canola crush facilities will be shipped by rail from primary grain elevators. Import of canola into Saskatchewan by rail from other provinces is common.[20] There are 134 primary grain elevators in Saskatchewan and a total of 354 primary grain elevators in Canada (Figure A-10). Sixty-six of these primary elevators are located within the BDO Zone.

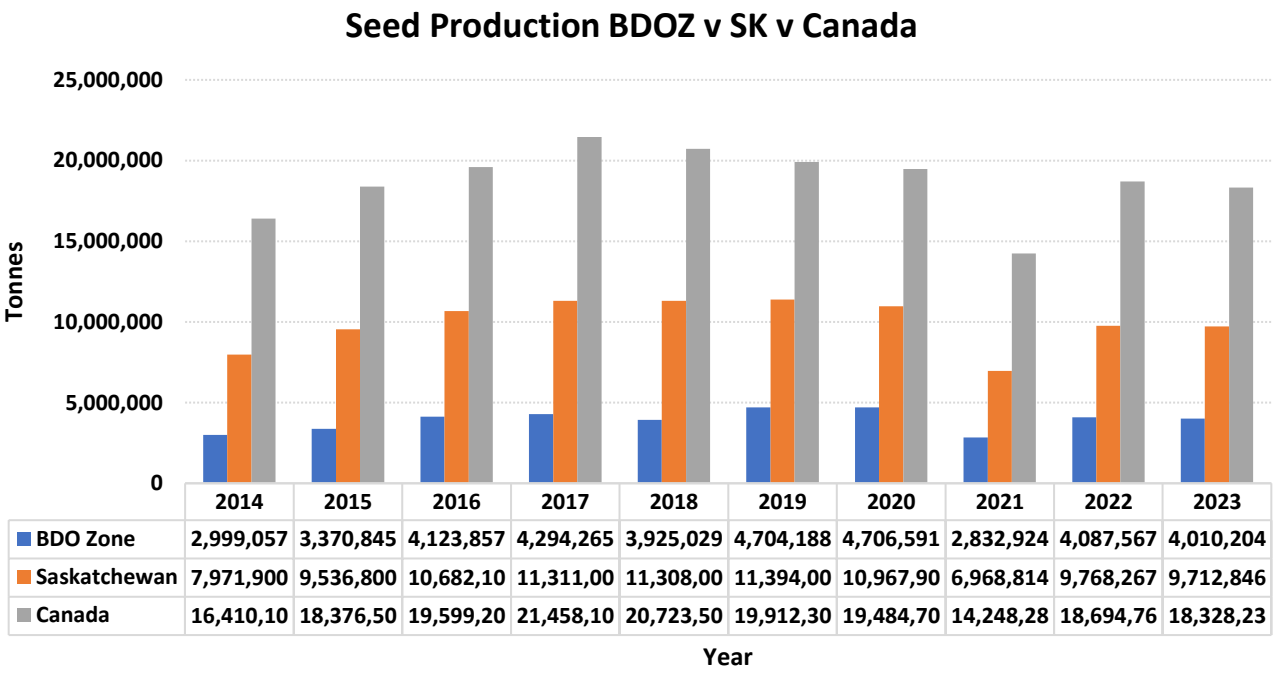
Figure A-10. Primary Grain Elevators in Canada.



[20] Statistics Canada. Table 23-10-0062-01. Rail industry origin and destination of transported commodities

The inclusion of rail as a resource substantially increases seed availability, as truck delivery limitations are no longer a factor. Thus, seed can effectively be sourced from all of Saskatchewan and, in fact, Canada. Canola historical production in the BDO Zone, Saskatchewan, and Canada is shown in Figure A-11.

Figure A-11. Canola Production: BDO Zone, Saskatchewan, Canada

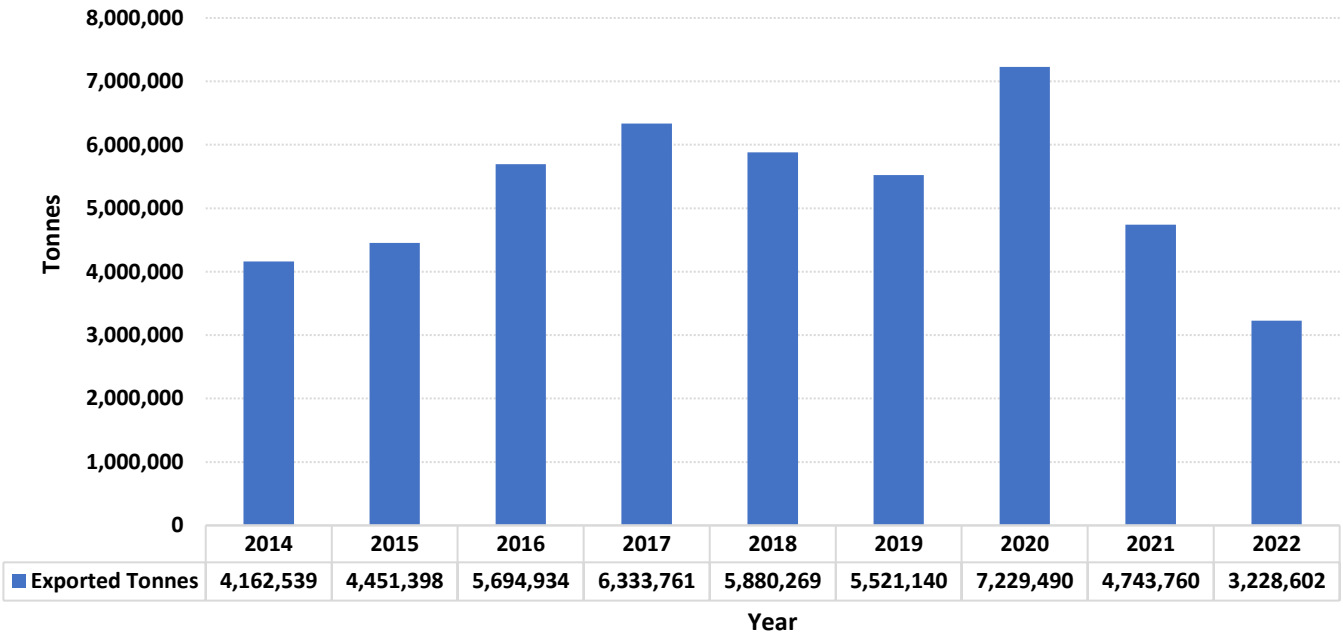


	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BDO Zone	2,999,057	3,370,845	4,123,857	4,294,265	3,925,029	4,704,188	4,706,591	2,832,924	4,087,567	4,010,204
Saskatchewan	7,971,900	9,536,800	10,682,10	11,311,00	11,308,00	11,394,00	10,967,90	6,968,814	9,768,267	9,712,846
Canada	16,410,10	18,376,50	19,599,20	21,458,10	20,723,50	19,912,30	19,484,70	14,248,28	18,694,76	18,328,23

- About 4.0 million tonnes of canola was harvested in the BDO Zone in 2023
- About 9.7 million tonnes of canola was harvested in Saskatchewan in 2023
- About 18.3 million tonnes of canola was harvested in Canada in 2023
- Canola production in the BDO Zone has averaged about 4 million tonnes annually over the past decade
- Canola production in Saskatchewan has averaged about 9.9 million tonnes annually over the past decade
- Canola production in Canada has averaged about 18.7 million tonnes annually over the past decade

Figure A-12 shows the statistics for Saskatchewan canola seed exports between 2014 and 2022.

Figure A-12. Saskatchewan Canola Exports[21]



- About 3.2 million tonnes of canola were exported from Saskatchewan in 2022
- Canola exports from Saskatchewan have averaged about 5.2 million tonnes annually between 2014 and 2022
- About 2.1 million tonnes of the total Saskatchewan export originate from the BDO Zone
- About 3.1 million tonnes of Saskatchewan export canola is available from outside of the BDO Zone
- An average of about 53% of Saskatchewan canola was exported over the past decade
- The trend since 2017 has been for declining exports of canola
- Canola exports will likely continue to fall as more processing capability is built in the province and the country

Thus, besides the amount of canola produced in the BDO Zone, the new canola crushing plants can secure canola from other parts of Saskatchewan that would be otherwise exported.

[21] Statistics Canada, Canadian International Merchandise Trade Database. https://www.canolacouncil.org/markets-stats/exports/. Accessed May 14, 2024.

Competition Analysis

Competitors to new facilities in the BDO Zone include domestic canola processors and exports of canola seed. Figure A-13 shows the existing crushers in the Competition Zone. Within the Competition Zone, these five canola facilities crush about 4.5 million tonnes of seed annually (Table A-2). An additional 2.1 million tonnes of capacity are being added to crushers located in Yorkton, SK. A crusher is under construction in Regina, SK that will add 1.0 million tonnes of capacity. The total canola demand for these existing plants will be sourced from the Competition and BDO zones. We estimate that, of the 6.6 million tonnes of competitive demand, 2.0 million tonnes will be sourced from the BDO Zone (Table A-2). The impact of each facility on the BDO Zone is determined by the degree of overlap of each competitor's supply zone (200 km) with the BDO Zone.

Figure A-13. Canola Crushers in the Competition Zone

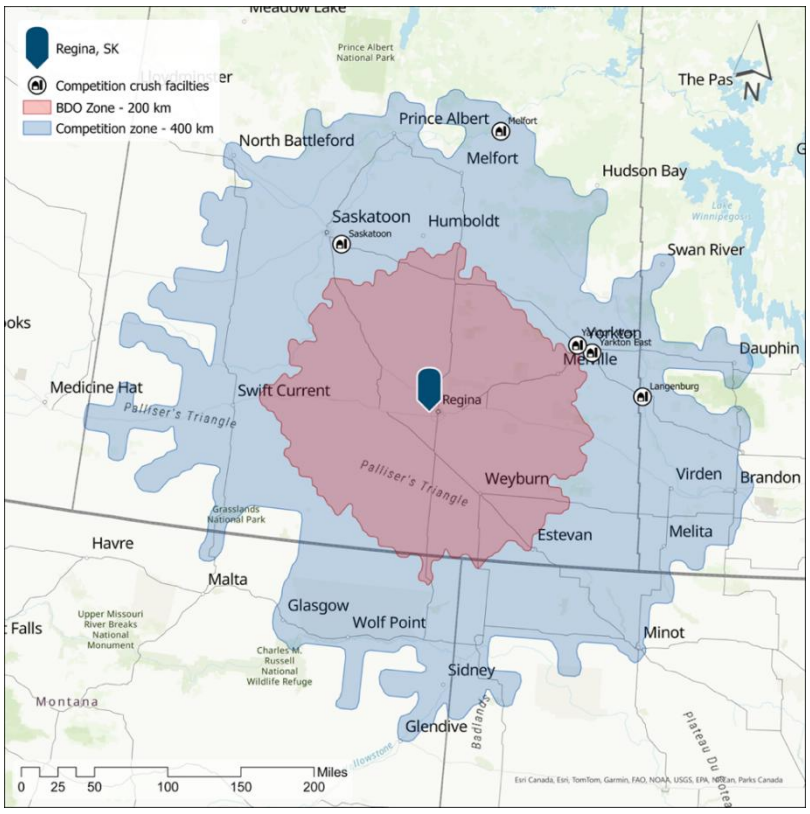


Table A-2. Canola Crusher Capacity in the Competition Zone

		Million Tonnes/yr			
Company	**Location**	**Current Capacity**	**Additional Capacity**	**Final Capacity**	**Demand from BDO Zone**
Bunge	Nipawin, SK	0.5		0.5	0.1
Bunge	Harrowby, MB	0.5		0.5	0.1
Cargill	Clavet, SK	1.5		1.5	0.3
Louis Dreyfus	Yorkton, SK	0.9	1.0	1.9	0.7
Richardson Pioneer	Yorkton, SK	1.1	1.1	2.2	0.8
Cargill	Regina, SK[22]	0.0	1.0	1.0	1.0
Total		**4.5**	**3.1**	**7.6**	**3.0**

- The total capacity of crushers in the Competition Zone is rising from 4.5 to 7.6 million tonnes per year
- These crushers, including the new capacity, will demand about 3.0 tonnes per year of seed from the BDO Zone

Although the export markets can compete with the canola seed supply in the BDO Zone, the canola processed in Canada has steadily increased over the past decade while exports have fallen (see Figures A-3 and A-12). The primary reason that canola seed is exported has been the lack of domestic canola crushing capacity. With the ongoing establishment of three canola crushing plants, we expect that the produced canola seed in the BDO Zone and other parts of Saskatchewan will be diverted to meet the canola seed demand of these plants.

Canola Seed Availability

In our supply analysis, we anticipate two primary sources of canola seed: the seed produced in the BDO Zone and the seed exported from the remainder of Saskatchewan. Table A-3 shows the total amount of canola seed available for a new crusher in the BDO Zone. Given the commercial production of canola seed and the establishment of canola supply chains by anchor companies such as Cargill and Viterra, we anticipate the three announced canola crushing plants will be able to secure the currently exported canola seed from Saskatchewan.

Table A-3. Canola Seed Availability to Crushing Facilities in the BDO Zone

Source of Canola Seed		**Available Canola Seed (Million**
BDO Zone[23]		4.0
Saskatchewan Exports Outside of BDO Zone[24]	+	3.1
Demand on BDO Zone from Existing and Under Construction	-	3.0
Total	=	**4.1**

Canola Oil and Canola Meal Production

Canola oil and meal production depends on the supply of canola seed and the availability of processing facilities. Canola crushing results in about 43.3% oil and 56.7% meal from the canola seed.[26]

[22] Regina Canola Crush Facility. https://www.cargillag.ca/farm-for-the-future/the-future-of-canola. Accessed May 22, 2024.
[23] Figure A-11.
[24] Figure A-12.
[25] Table A-2
[26] Statistics Canada. Table 32-10-0352-01 – Crushing statistics for canola.

The supply analysis above indicates that about 4.1 million tonnes of canola seed are available for the new crushing facilities under construction and proposed for the BDO Zone. Once the crusher in Regina is completed, about 344,000 tonnes of oil and 567,000 tonnes of meal annually will be available as feedstock, as shown in Table A-4.

Table A-4. Estimated Canola Processing Products in the BDO Zone Upon of Under Construction Crush Facility (tonnes/year)

Seed Processed	Oil Production	Meal Production
1,000,000	433,000	567,000

Rated Quantities and Pricing

This section estimates the low-risk availability of canola seed, oil, and meal in the BDO Zone. The rated quantity is calculated based on the average canola seed available (Table A-4) and the expected yield of oil and meal from crush operations currently under construction.

To address uncertainties in assessing this feedstock availability, the Biomass Availability Multiple (BAM) is employed to indicate the supply chain's resilience in the face of potential shortages or supplier issues. The BAM is meant to account for factors such as the impact of drought, infestation, unforeseen competition, or economic factors. A higher BAM factor signifies increased uncertainty in a project's feedstock availability.

Given the well-established nature of the canola industry in the BDO Zone and the availability of reliable historical data on canola seed production, a BAM factor of 1.2 is applied, reflecting a low risk of seed availability, resulting in the rated quantity of canola seed of about 3.4 million. Once operating, the Regina crusher will start producing canola oil and meal. After applying a BAM of 1.2 to the nominal capacity about 361,000 tonnes of oil and 473,000 tonnes of meal will be available.

The estimate of low-risk feedstocks is shown in Table A-5.

Table A-5. Estimate of Average Annual and Low-risk Quantities of Canola

Feedstock Type	Average Availability (Tonnes/yr)	BAM Factor	Low-Risk Quantity after applying BAM factor (Tonnes/yr)
Canola Seed	4,100,000	1.2	3,400,000
Canola Oil	1,775,000	1.2	1,472,000
Canola Meal	2,325,000	1.2	1,928,000

- Low-risk canola seed availability is 3,400,000 tonnes per year
- Low-risk canola oil availability is 1,472,000 tonnes per year
- Low-risk canola meal availability is 1,928,000 tonnes per year

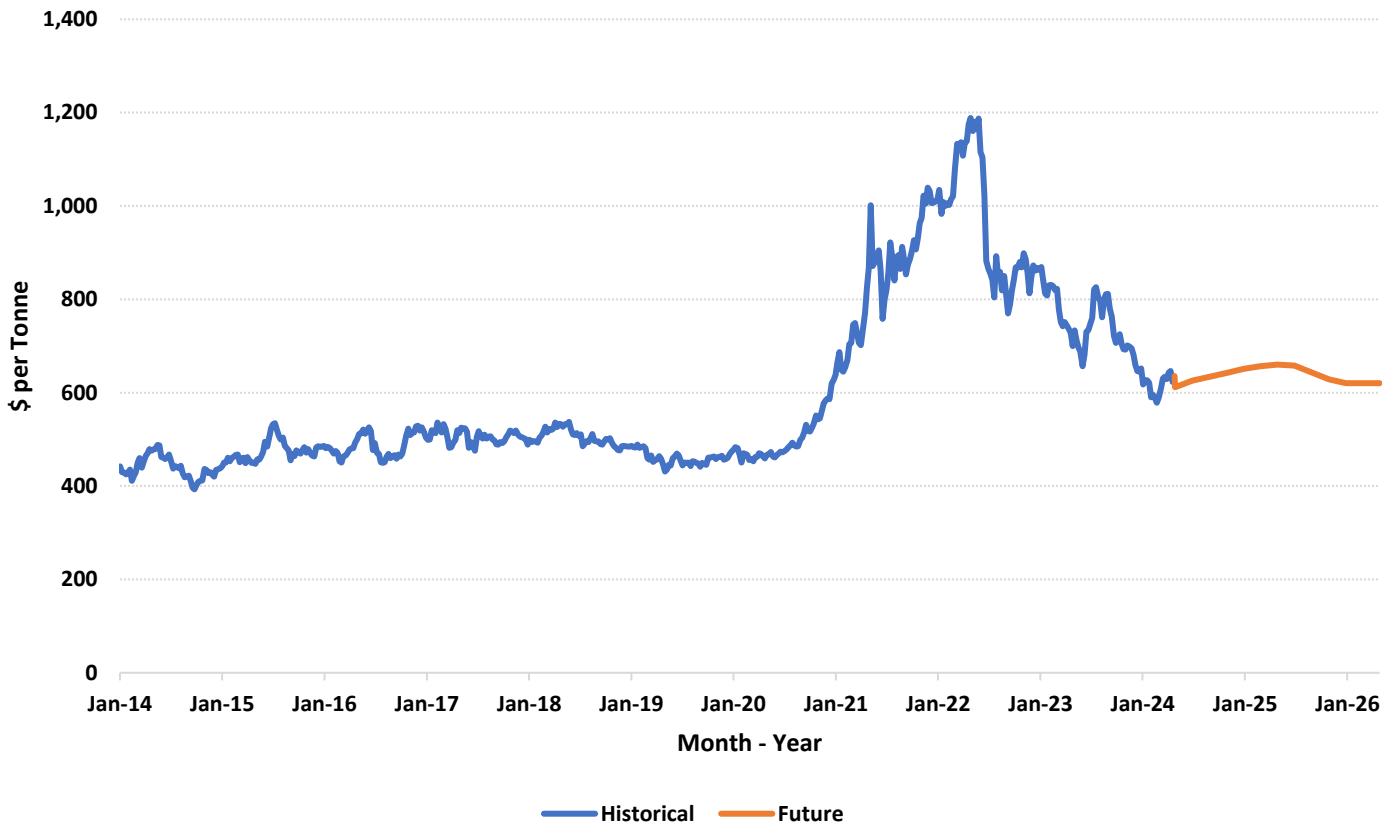
The pricing of Canadian canola is determined by several interrelated factors, primarily dictated by the commodity markets. Key to these factors are the fundamentals of supply and demand. Supply considerations include crop yields, advancements in farming technology, and the extent of canola acreage planted. On the demand side, factors such as domestic and international consumption rates and canola oil and meal utilization across various industries play a crucial role. Additionally, trading futures contracts on commodity exchanges significantly impact canola prices. These contracts stipulate the buying or selling of canola at a future date at a predetermined price and are sensitive to market perceptions of supply and demand dynamics.

Prices are also subject to fluctuations influenced by broader global market conditions, currency exchange rates, and government policies. This complex interplay of factors contributes to the daily market prices of canola, which are known

for their volatility. Stakeholders such as farmers, traders, and investors monitor these variables closely to make informed decisions.

For reference, the historical and future prices of canola are shown in Figure A-14. Historical farmgate prices were obtained from the Government of Saskatchewan,[27] and futures prices were sourced from the Intercontinental Exchange.[28]

Figure A-14. Canola Farmgate Pricing – Historical and Future



- Canola farmgate prices have been volatile since early 2020, peaking at $1,189/tonne
- Prices between 2014 and 2020 were relatively stable
- Futures contract prices of canola are predicted to be relatively stable, averaging about $636/tonne with a low of $611 and a high of $660

From 2020 to 2024, Canadian canola prices experienced significant volatility due to a combination of influential factors. The COVID-19 pandemic initially disrupted global supply chains, introducing widespread uncertainty and volatility in agricultural markets, including canola. Concurrently, trade tensions, particularly between Canada and China—a key market—impacted canola imports and prices due to geopolitical disputes. Canola exports fell by 32% due to competition

[27] Canola Farmgate Prices. Government of Saskatchewan. https://dashboard.saskatchewan.ca/agriculture/grain-and-specialty-crop-prices/canola#:~:text=At%20the%20beginning%20of%20the,%2D22%20to%202022%2D23. Accessed, Mar 19, 2024.
[28] Intercontinental Exchange Canola Futures. Barchart Inc. https://www.barchart.com/futures/quotes/RSK26/futures-prices?viewName=main. Accessed May 1, 2024.

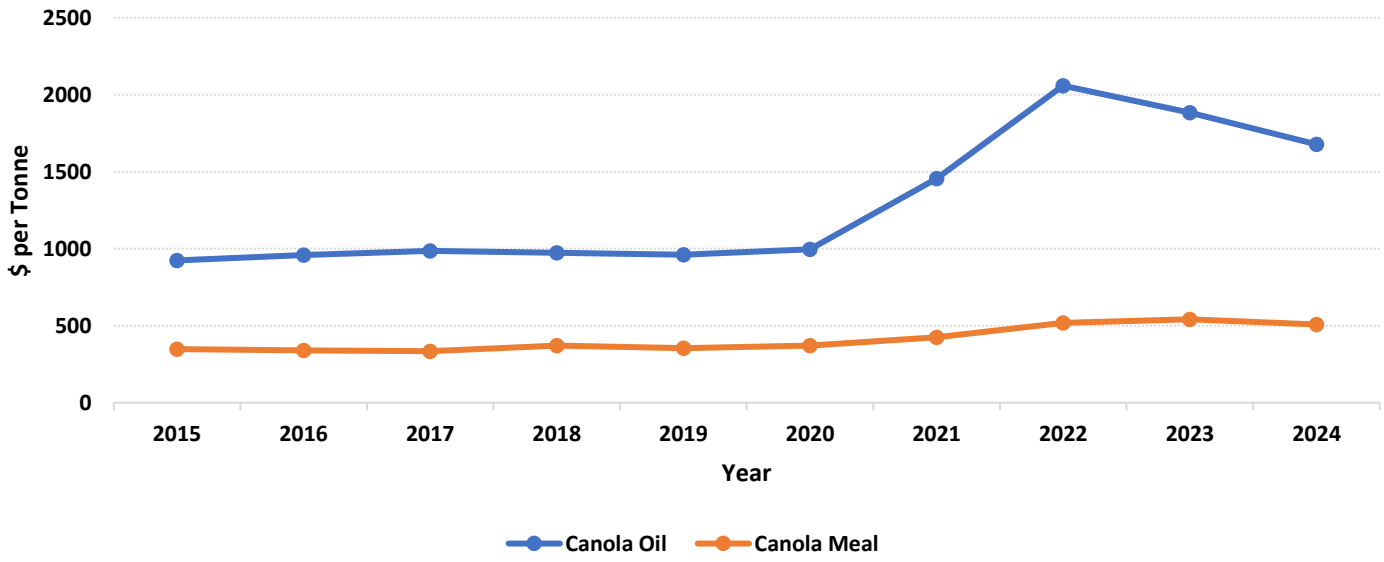
from Australia, impacting prices negatively.[29] However, domestic demand reached record highs as Canada's oilseed crushing industry expanded, which helped push prices up.[30]

Additionally, a record consumption of 170 thousand tonnes of canola oil for biofuel production in January increased prices due to heightened demand in the biofuel sector.[31] Variable weather conditions in Canada's agricultural regions also influenced canola yields, affecting supply and price levels. Additionally, a global increase in demand for vegetable oils, fueled by consumption and biofuel production, pushed prices upward when supply was tight. Currency fluctuations of the Canadian dollar against significant currencies altered export competitiveness and pricing. Furthermore, speculative trading in the futures market contributed to rapid price changes as traders responded to the news and economic indicators. These factors collectively created a complex and unpredictable market environment for Canadian canola during this period.

We believe that canola prices will be more volatile over the next three to five years than predicted by the futures market. While futures prices for the next two years are relatively stable, some factors will likely lead to a tighter market for canola. Canada's canola stocks are tight now, down 36% year-over-year and 60% compared to the five-year average.[32] Seven Canadian renewable diesel facilities are planned or under construction, which will put increasing pressure on canola production and supply.[33] Expansion of biodiesel manufacturing worldwide will put further pressure on supplies. The effect of climate change on canola yields will continue to be a factor unless new canola varieties are released to counteract the effects of heat.

The average export prices for canola oil and meal are shown In Figure A-15.

Figure A-15. Average Annual Export Prices for Canola Oil and Canola Meal[34]



[29] Trading Economics. https://tradingeconomics.com/commodity/canola. Accessed May 3, 2024.
[30] Ibid.
[31] Ibid.
[32] FCC 2024 Outlook. https://www.fcc-fac.ca/en/knowledge/economics/2024-grains-oilseeds-pulses-outlook. Accessed May 3, 2024.
[33] Canada Energy Regulator. https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2023/market-snapshot-new-renewable-diesel-facilities-will-help-reduce-carbon-intensity-fuels-canada.html. Accessed May 3, 2024.
[34] Canadian canola exports. https://www.canolacouncil.org/markets-stats/exports/. Accessed May 14, 2024.

- We project canola oil cost to vary between 1,000 and 1,500 $/tonne through 2028
- We project canola meal cost to vary between 350 and 500 $/tonne through 2028

Some growth in canola oil is expected because diet-conscious consumers desire its health qualities.[35] In addition, growth in the canola market is expected mainly through its oil being used for renewable diesel and sustainable aviation fuel applications.[36] Canola markets may become even more variable in the years ahead as the biofuel sector consumes more oilseed. The Canadian Oilseed Processors Association (COPA) forecasts that the biofuel industry will buy 6.5 million tonnes of the crop per year by 2030, up from 1.8 million tonnes in 2020.[37] This change in demand means the biofuel sector will account for 23 percent of the total demand for the crop by 2030.

The price of canola meal has been stable over the past decade. With the expected expansion of canola crush capacity, the price of canola meal is expected to remain stable and possibly dip as supply increases. The worldwide market for canola meal is likely to grow by 4% CAGR (Compound Annual Growth Rate) as global demand for feed products increases.[38]

[35] Canola oil market. https://www.kbvresearch.com/canola-oil-market/. Accessed Mar 27, 2024.
[36] Canola oil use for biofuels increases beyond forecasts. https://agupdate.com/farmandranchguide/markets/crop/canola-oil-use-for-biofuels-increases-beyond-forecasts/article_ea3a9abc-057a-11ee-b7c3-43aaa13db31a.html. Accessed Mar 27, 2024.
[37] Canola's biofuel link to raise volatility. https://www.producer.com/markets/canolas-biofuel-link-to-raise-volatility-2/. Accessed Apr 10, 2024.
[38] Canola Meal Market. Future Market Insights. https://www.futuremarketinsights.com/reports/canola-meal-market. Accessed May 15, 2024.

APPENDIX B: RISK INDICATOR SCORING METRICS

CATEGORY 1.0: SUPPLIER RISK

1.1 Risk Factor: Credit-Worthiness/Future Solvency of Suppliers

1.1.1 Longevity & History of Supplier Performance

Rationale: Number of years in business is a positive indicator of future solvency. Historical performance is an indicator of future performance.

Risk Information: Canola was developed by breeders in Saskatchewan and Manitoba 50 years ago[39] and is now at the centre of a thriving industry with international reach. Canada's canola value chain is made up of growers, seed developers, processors, and exporters. Together, they generate $29.9 billion in economic activity in Canada each year.[40]

Although canola acreage has remained fairly steady over the past decade, total production has increased because of increases in average yield.

According to Statistics Canada between 1986 and 2023 canola acreage has increased almost 5-fold in the BDO Zone. A five-year moving average yield per acre has increased from about 0.5 tonnes per acre to over 0.8 tonnes per acre during this time with some years approaching 1.0 tonnes per acre. There are about 10,000 farmers in the BDO Zone.

With the increasing global demand for canola, we expect canola to remain a major crop in rotation for farmers in the BDO Zone.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

1.2 Risk Factor: Conflicts of Interest/Vested Interest with Competing Market(s)

1.2.1 Suppliers' Dependence on, or Preference for, Competing Markets

Rationale: Suppliers may have a vested interest or preference in supplying specific competitors with biomass feedstock. Preferences may be due to historical, long-term, or personal relationships, less stringent feedstock quality requirements, more flexible operating hours by competing markets, or suppliers' dependence on competing markets

[39] About Canola. https://www.canolacouncil.org/about-canola/industry. Accessed Mar 20, 2024.
[40] Statistics Canada. https://www150.statcan.gc.ca/n1/pub/96-325-x/2007000/article/10778-eng.htm#:~:text=The%20solution%20was%20canola%20(an,that%20yielded%20food%2Dgrade%20oil. Accessed Mar 20, 2024.

to accept or purchase other products/by-products. During periods of feedstock shortage, such suppliers may be more likely to allocate the scarce supply to competitors, resulting in supply disruptions for the Issuer.

Risk Information: Canola growers can choose to sell their seed to one of many grain elevators in the BDO and Competition Zones.[41] In addition, there is a canola crush facility in Regina, SK, as well as five other crush facilities within the BDO and Competition Zones.[42] Three new canola crush facilities are planned for the Greater Regina area that will add to suppliers' choices.[43] Suppliers tend to sell to the buyers with the best price given their situation.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

1.3 Risk Factor: Supplier Control Over Production and Transportation

1.3.1 Ownership of Land/Means of Production

Rationale: Suppliers that own land or a production facility where feedstock is produced tend to have better control of supply chains and present lower degrees of supply risk.

Risk Information: According to Statistics Canada,[44] land tenure for agricultural use in the BDO Zone consists of 61% ownership, 31% leased from others, and 7% leased from governments. The high degree of private ownership presents low risk with regard to supply chain control.

In addition, the crushing facilities for the production of oil and meal are privately owned by large corporations.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch)	**NN**

[41] Western Canada Grain Elevator Directory. http://www.cn.ca/grain. Accessed Apr 8, 2024.
[42] Industry Overview, Canola Council of Canada. https://www.canolacouncil.org/about-canola/industry/. Accessed Apr 8, 2024.
[43] Sask. Canola industry in for "drastic change" as crop gets crushed. https://leaderpost.com/business/agriculture/sask-canola-industry-in-for-drastic-change-as-crop-gets-crushed#:~:text=Canadian%20farmers%20produce%20about%2020,17%20million%20will%20become%20oil. Accessed Apr 8, 2024.
[44] Statistics Canada. Table 32-10-0234-01 Land tenure, Census of Agriculture, 2021

No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

1.3.2 Ownership of Equipment

Rationale: In most cases, suppliers that own or lease equipment for harvest, collection, and processing feedstock are at lower risk than those that are not. For example, third-party harvesting equipment may not be available when required. Short harvest windows may be missed if a supplier and contractor cannot schedule convenient harvest times, and quantity shortages can result. However, in some circumstances, reliance on third-party equipment to harvest or produce feedstock can decrease supply chain risk. For example, when harvesting agricultural residues such as corn stover, using a third-party company with standard equipment specializing in harvesting, collection, and transportation may decrease quality variations (e.g., ash content) of the final feedstock.

Risk Information: The majority of canola farmers own planting and harvesting equipment as well as storage bins for the grain.[45] Some of these farmers also provide custom harvesting services to other farmers who do not own the planting and harvesting equipment.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

1.3.3 Ownership of Transportation/Logistics

Rationale: In most cases, suppliers that own or lease transportation equipment necessary to transport feedstock from forests or fields are at lower risk than those that do not. However, in some circumstances, reliance on third parties to transport feedstock is common practice and does not contribute to risk.

[45] Personal Communication. Gerry Hertz, Saskatchewan farmer; Curtis Rempel, Roger Chevraux. Canola Council of Canada.

Risk Information: While a large proportion of canola farmers own trucks for delivering their grain to buyers there are still a considerable number that contract for trucking.[46, 47] One local farmer reports no problems with getting enough trucking capacity.[48]	
Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

1.3.4 Feedstock as a Secondary Transformation

Rationale: Secondary transformation is dependent upon the production of primary products. Forest residues, corn stover, bark, and sawmill chips (unless from a dedicated chip mill) are all secondary transformations of a primary product.

Risks are higher if the feedstock is a secondary transformation of a primary, more valuable product. In the absence of markets for the primary product, it may not be economical for suppliers to produce feedstock on their own. For example, a supplier may produce dimensional lumber as its primary product and wood chips as a by-product, therefore relying on the health of the housing market for production levels. If the demand for dimensional lumber drops, so can the availability of sawmill residues.

In the case of agricultural feedstocks, such as corn stover, the feedstock is a by-product of a primary crop. Since the primary crop is significantly more lucrative than the residue, it will be a priority for the producer. If the production of the primary crop requires resources to be taken away from the production of the secondary crop (e.g., shorter harvesting windows due to weather), the secondary feedstock supply will suffer. In times of stretched resources, suppliers may also perceive the harvest and collection of the feedstock as a nuisance, potentially decreasing production levels.

Understanding the economic drivers for suppliers' primary products can help gauge risk levels for secondary transformation feedstock products.

Risk Information: Canola is a cash crop with multiple markets. Canola oil demand is the primary driver for canola seed production. Canola meal production is a secondary transformation. Some growth in canola oil is expected because of diet-conscious consumers desire its health qualities.[49] In addition, growth in the canola market is expected to occur

[46] Keep On Truckin'. https://grainswest.com/2020/03/keep-on-truckin/. Accessed Apr 17, 2024.
[47] Custom truckers face competition from farmers. https://www.producer.com/opinion/custom-truckers-face-competition-from-farmers/. Accessed Apr 17, 2024.
[48] Personal Communication. Gerry Hertz, Saskatchewan farmer.
[49] Canola oil market. https://www.kbvresearch.com/canola-oil-market/. Accessed Mar 27, 2024.

mainly through its oil being used for renewable diesel and sustainable aviation fuel applications.[50] While market dynamics suggest a robust expansion in canola oil production capacities, this trajectory is contingent upon sustained policy support and technological advancements to ensure oilseed supply meets the escalating demand. Additionally, the cost competitiveness of renewable diesel, vis-a-vis conventional diesel and other renewable energy sources remains a critical factor in determining the pace and scale of growth in this sector.

Overall, canola seeds, oil, and meal have established regional and global markets, and farmers grow canola seeds to meet food, feed, and fuel demands.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

1.4 Risk Factor: Supplier Experience

1.4.1 Fundamental Feedstock Production Experience

Rationale: Risk is higher when suppliers have limited experience with planting, growing, harvesting, processing, and/or collecting feedstock. Limited experience may be common for stover or forest residue supply chains where farmers or forestry producers may have no previous experience.

Risk Information: Canola first started to be grown and processed in the BDO Zone about 50 years ago[51] and the planted area has steadily risen since then. Processing canola oil and meal from seed is a major industry in the region and nationwide. The capacity for processing has remained between about 16 to 18 million tonnes since 2014 across Canada (Figure C-1), with some decline in 2021 due to severe drought. Of the 14 existing canola crush facilities in Canada, five are located in Saskatchewan (Figure A-5). Currently, there are no crushers in the BDO Zone. One facility is under construction in the BDO Zone near the centre point and is expected to come online in 2025.[52]

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**

[50] Canola oil use for biofuels increases beyond forecasts. https://agupdate.com/farmandranchguide/markets/crop/canola-oil-use-for-biofuels-increases-beyond-forecasts/article_ea3a9abc-057a-11ee-b7c3-43aaa13db31a.html. Accessed Mar 27, 2024.
[51] About Canola. https://www.canolacouncil.org/about-canola/industry. Accessed Mar 20, 2024.
[52] Cargill. https://www.cargill.com/2024/cargill-power-canolatm-program-helps-farmers#:~:text=Cargill%20has%20made%20recent%20investments,to%20come%20online%20in%202025. Åccessed May 10, 2024.

The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

1.4.2 Production Scale Experience

Rationale: Scale-up entails risk. Risk is higher when suppliers have limited experience producing the required quantity of feedstock.

Risk Information: Production of canola has grown since its introduction in the 1970s. According to Statistics Canada, between 1986 and 2023, canola acreage had increased almost 5-fold in the BDO Zone. This steady growth is indicative of the ability to scale-up production and processing capability.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

1.5 Risk Factor: Supplier Harvesting/Collection/Processing Capacity

1.5.1 Supplier's Equipment Efficiency

Rationale: Equipment efficiency significantly influences the supplier's feedstock production capacity. Understanding the supplier's equipment capability enables understanding of their ability to produce feedstock of suitable quality.

Risk Information: There is a great deal of canola growing and planting experience in the BDO Zone, with nearly a 5X increase in planted area since 1986. Over this time period, harvest has increased from 1.4 tonnes to 2.1 tonnes per hectare (a 50% increase). In addition, they have established experience in harvesting, storing, and hauling commercial quantities of canola seed and with support from large agri-food companies, they are investing in more efficient planting and harvesting equipment.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI)	**Score**

The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

1.6 Risk Factor: Supplier Motivation

1.6.1 Feedstock Production Priority

Rationale: When feedstock is a secondary or non-core line of business, a by-product, or a residual from a more valuable product, suppliers may not put in sufficient effort for consistent production. The risk of breach increases when feedstock production and/or delivery compromise a supplier's ability to make a primary product.

When biomass feedstock is a by-product of another main higher margin or main product such as corn stover (e.g., corn) or forest residues (e.g., pulpwood), supply may not be a top priority for a supplier.

Risk Information: Canola seed is a primary crop for the farmers in the BDO Zone. The area planted has risen about 23%, and its production has been increasing about 24% in the last decade (Figure A-8). Given the increasing demand for canola seed for food, feed, and biofuels, more attention has been paid to the farmers in the BDO Zone to grow more canola seed and improve yield.

Figures A-17 and A-18 shows the relative value of canola seed, oil, and meal. As a value-added product, oil is the production priority with meal being a co-product. As a priority product, oil will continue to be produced given its high market value and increasing demand as a biofuel feedstock. Meal is less of a priority by comparison but, given its value as animal feed, it will continue to be produced as long as a feed market exists. We see continued demand for both canola oil and seed.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

CATEGORY 2.0: COMPETITOR RISKOU WA

2.1 Risk Factor: Influence on Feedstock Supply of Existing Markets

2.1.1 Competitors' Locations and Overall Geographical Influence

Rationale: Competitors' locations relative to siting locations within a BDO Zone can affect the viability of procuring feedstock and the cost of that feedstock. Accurate and detailed competitor mapping provides an understanding of a competito''s geographical influence on new plants within a BDO Zone, including competitive advantages such as short hauling.

Risk Information: As canola seed, oil, and meal are commodities that are freely traded worldwide via rail and ship, competitors' locations are not as critical as if only truck transport was involved. For the purposes of this rating, we are limiting competitors to Canadian processors and exporters with grain elevators (Table C-1). There are 53 process elevators in Canada. While the majority of these handle canola, there are a small number that specialize in malt or other grains. For export, there are 34 terminal elevators that transfer grains to ships. As canola moves primarily by rail within Canada, including into Saskatchewan from other provinces, the risk is very low as the location of competitors is not a limiting factor to supply as long as the buyer can afford to pay a competitive price.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

2.1.2 Current and Historical Consumption of Feedstock Quantity

Rationale: Clear understanding of feedstock consumption by key competitors for each rated feedstock type in the BDO Zone is essential to quantifying competitor risk.

Understanding current consumption and historical trends of feedstock utilization can provide valuable information about feedstock price elasticity during shortages and insight into events that may impact future supply conditions. It can enable more accurate estimates of the sensitivity of feedstock availability to potential future consumption levels or the impact of external events (e.g., weather events, structural economic changes, seasonality, or policy change).

Risk Information: Canola seed, oil, and meal production are shown in Figure C-1, while export is given in Figure C-2 between 2014 and 2023. Canola seed, oil, and meal production over this period have increased. Exports of seed have fallen while the exports of oil and meal have risen. Given that the majority of seed, oil, and meal produced are exported, the diversion of these feedstocks to domestic buyers is a strong possibility. We expect the availability of these

feedstocks to a new venture in the BDO Zone to be low risk going forward, with competition from world markets being the concern.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

2.1.3 Competitor Pricing and Price Sensitivity

Rationale: Understanding how much competitors pay (or receive) for different feedstock types is essential in determining the Issue''s competitiveness and accurately assessing the delivered cost range in the BDO Zone rating.

Current and historical prices paid/received by competitors provide insight into their procurement behaviours and exert pressure on suppliers in the BDO Zone, such as the ability/willingness to pay premiums for feedstock during times of feedstock shortage or reduce prices (or cut-off deliveries) during gluts. Competitors that have the ability to offer higher prices for feedstock during feedstock shortages can pose a significant risk to the Issuer.

Knowledge of competitor pricing and price sensitivity is also an essential prerequisite to formulating a feedstock cost curve, which can enable predictions of feedstock redundancy, i.e., how much feedstock could become available at different pricing levels (see Category 3–Supply Chain Risk 3.1.3).

Risk Information: As canola seed, oil, and meal are commodities, the farmgate price is driven largely by global supply and demand. The market for canola has been highly volatile since late 2020 (Figure A-14) as weather events around the globe cause disruptions in supply. Canola markets may become even more variable in the years ahead as the biofuel sector consumes an increasing amount of oilseed. The Canadian Oilseed Processors Association (COPA) is forecasting that the biofuel industry will be buying 6.5 million tonnes of the crop per year by 2030, up from 1.8 million tonnes in 2020.[53] This change in demand means the biofuel sector will account for 23 percent of the total demand for the crop by 2030.
Recent price volatility and higher demand by the fuels sector deems this risk likelihood medium. The risk impact is high given the destabilizing effect of volatile pricing.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed medium, therefore the RRL is 6 out of 10.	**6**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed high, therefore the RRI is 8 out of 10.	**8**
Gross Risk Indicator (GRI)	**Score**

[53]Canola's biofuel link to raise volatility. https://www.producer.com/markets/canolas-biofuel-link-to-raise-volatility-2/. Accessed Apr 10, 2024.

The Gross Risk Indicator (RRL X RRI) is 36 out of 100.	**48**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 48 out of 100.	**Score** **48**

2.1.4 Impacts of Future Demand on Feedstock Availability and Price by Current Competitors

Rationale: Feedstock utilization in a BDO Zone can change over time. Expansion of feedstock demand by current competitors can put additional pressure on feedstock and lead to higher prices, feedstock disruptions, shortages, supplier breaches, or other types of supply chain disruption.

If current markets for feedstock have been publicly signalling the potential for increased demand for feedstock (in the case of a sawmill adding a shift or pulp mill potentially expanding into the production of renewable chemicals, for example), high interest in a BDO Zone can make suppliers overconfident, leading to a supplier-controlled market where short-term contracting becomes the norm and supply chain reliability is compromised for the Issuer. If and when it occurs, increased demand on feedstock may decrease availability and increase cost for new plants within the BDO Zone.

Risk Information: A strategic plan is being implemented to increase the production of canola through improved plant varieties, growing methods, and increasing area planted.[54] The supply of canola oil and canola meal in the BDO Zone, as well as across Canada, is forecast to increase as crush capacity expands and new crush facilities are built. Three new canola crush facilities are planned near the centre point that will bring an additional 4.6 million tonnes of canola seed processing capacity.[55, 56, 57] Two crush mills in Yorkton, within the BDO Zone, are currently expanding capacity by about 2.5 million tonnes.[58, 59] We anticipate that the feedstock for this increased crush capacity will come from seed currently exported. However, the price will continue to fluctuate, as discussed in 2.1.3.

Raw Risk Likelihood (RRL) The risk likelihood is deemed medium, therefore the RRL is 6 out of 10.	**Score** **6**
Raw Risk Impact (RRI) The risk impact is deemed medium, therefore the RRI is 6 out of 10.	**Score** **6**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 36 out of 100.	**Score** **36**
Mitigation/Notching *RRL Mitigation (Notch)*	**Notch** **NN**

[54] Investment to strengthen Canada's canola sector. https://www.canada.ca/en/agriculture-agri-food/news/2023/11/minister-macaulay-announces-investment-to-strengthen-canadas-canola-sector.html. Accessed May 10, 2024.
[55] Viterra plans major canola crusher for Regina. https://www.agcanada.com/daily/viterra-plans-major-canola-crusher-for-regina#:~:text=Construction%20would%20begin%20in%20early,tonnes%20of%20canola%20per%20year.. Accessed Apr 10, 2024.
[56] Regina Canola Crush Facility. https://www.cargillag.ca/farm-for-the-future/the-future-of-canola#:~:text=Construction%20of%20our%20new%20canola,in%20food%20and%20fuel%20markets. Accessed Apr 10, 2024.
[57] Co-op Energy Roadmap. https://www.fcl.crs/news-reports/news/article/Energy-Roadmap. Accessed Apr 10, 2024.
[58] Saskatchewan to see major increase in canola crushing. https://www.saskatchewan.ca/government/news-and-media/2023/june/01/saskatchewan-to-see-major-increase-in-canola-crushing. Accessed Apr 10, 2024.
[59] Richardson Yorkton crush to double capacity. https://www.richardson.ca/richardson-yorkton-crush-plant-to-double-annual-crush-capacity-to-2-2-million-metric-tonnes/. Accessed Apr 10, 2024.

No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 36 out of 100. **36**

2.1.5 Soft Supply Influence of Existing Markets

Rationale: In some cases, existing markets for feedstock may be able to exert high degrees of pressure over local suppliers, effectively enabling control of feedstock, especially during times of shortage. This control can derive from qualitative or "soft" factors, such as long previous relationships between local suppliers and existing markets for feedstock.

Risk Information: Canola farmers store a significant volume of harvested seed in bins and sell seed throughout the year according to their individual sales strategy. This stored seed is also used to meet demand during low production years, such as the drought-impacted 2021 growing season. Figure C-2 shows historic canola production and exports between 2014 and 2023. During this time, exports of oil and meal remained steady while production varied. The export of seed was more variable than that of oil and meal. We expect this trend to continue as significant amounts of seed are stored.

Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed low, therefore the RRL is 4 out of 10. **4**
Raw Risk Impact (RRI) **Score** The risk impact is deemed low, therefore the RRI is 4 out of 10. **4**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 16 out of 100. **16**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* **NN** No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100. **16**

2.1.6 Temporary Market-Driven Markets

Rationale: Alternative, non-traditional, market-driven competitors for feedstock can drive feedstock demand in unusual circumstances. A BDO Zone Rating Issuer based on corn stover as a feedstock, for example, would not typically compete with higher-end animal feed markets due to quality issues. However, in times of significant hay shortage (e.g., during drought), farmers use corn stover in place of hay, driving the price of feedstock and decreasing availability for bio-projects.[60]

Risk Information: We did not find non-traditional, market-driven competitors for canola seeds, oil, and meal. However, the production of other oilseed crops such as soybean and palm oil can impact the demand and price of canola.

[60] Bergtold, 2018.

With the growing global demand for oilseeds for biofuel production, the production and consumption of canola seed and oil have been steady in the BDO Zone.
Raw Risk Likelihood (RRL) **Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10. **4**
Raw Risk Impact (RRI) **Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10. **4**
Gross Risk Indicator (GRI) **Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100. **16**
Mitigation/Notching **Notch**
RRL Mitigation (Notch) **NN**
No adjustment.
RRI Mitigation (Notch)
No adjustment.
The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100. **16**

2.2 Risk Factor: Specific Competitors' Competitive Advantage

2.2.1 Relative Inventory Capacity

Rationale: The more inventory a competing biomass facility is able to store, the more competitive pressure it can exert on supply. Ability to store large inventories allows competitors to purchase inventory when the prices are low, potentially giving it an economic advantage. Additionally, the ability to store inventory during feedstock supply surpluses can enable competitors to continue to intake feedstock when the Issuer's plant (with lesser inventory capacity) may be forced to put suppliers on quota. Larger inventory capacity on the part of competing markets creates supplier loyalty and can make it more difficult for new projects to secure supply without paying a significant premium.
Risk Information: The on-farm storage capacity for canola seed is extensive. In Saskatchewan there is on-farm oilseed storage capacity of over 43 million tonnes.[61] This compares to about 21.4 million tonnes of canola produced in the province.[62]
Raw Risk Likelihood (RRL) **Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10. **2**
Raw Risk Impact (RRI) **Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10. **2**
Gross Risk Indicator (GRI) **Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100. **4**
Mitigation/Notching **Notch**
RRL Mitigation (Notch) **NN**
No adjustment.
RRI Mitigation (Notch)
No adjustment.

[61] Statistics Canada. Table 32-10-0003-01 Storage capacity of grain and oilseeds at December 31, in metric and imperial units. Accessed Apr 22, 2024.
[62] Statistics Canada. Table 32-10-0359-01. Estimated areas, yield, production, average farm price and total farm value of principal field crops, in metric and imperial units. Accessed Apr 22, 2024.

The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

2.2.2 Relative Accessibility/Delivery Hours and Wait Times

Rationale: The value attributed by suppliers to local competing markets for feedstock is often directly related to the degree of flexibility the market provides in terms of delivery hours, and the more efficient discharge can occur.	
Risk Information: The BDO Zone has well-established downstream logistics due to the existence of world-class elevators and crushing plants. Unloading at canola elevators or crushing facilities is typically less than 30 minutes.[63]	
Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

2.2.3 Relative Specification Advantages

Rationale: When choosing a market for biomass feedstock, suppliers not only look at price, but also at relative quality requirements or specifications. It is important to understand feedstock quality specifications for competing markets within the BDO Zone, in order to accurately quantify the risk that competitors can exert on the Issuer's supply chain.	
Risk Information: In Canada, canola seed is graded based on quality standards set by the Canadian Grain Commission (CGC). These standards ensure that the canola seed is suitable for various uses, including oil production and meal for livestock feed. No. 1 Canola is the highest grade, making up over 95% of the harvest in Saskatchewan in recent years.[64]	
Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)*	**Notch** **NN**

[63] Personal Communication. Hank Frosese, Prairie Clean Energy.
[64] Grains Canada. https://grainscanada.gc.ca/en/grain-research/export-quality/oilseeds/canola/. Accessed Apr 12, 2024.

No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

2.2.4 Demand for Competitors' Products

Rationale: Increased demand for the competito''s final product can cause an increased demand for feedstock by the competitor. For example, an increased demand for wood pellets due to high energy prices in Europe or for biofuels due to a favorable clean fuels policy can cause increased pellet/biofuel production by competing markets. Thereby driving demand for feedstock within a BDO Zone.

Risk Information: In 2022, the international market for canola oil was estimated at USD 29.24 million and is projected to expand at a compound annual growth rate (CAGR) of between 3.4%[65] to 5.6%[66] over the next six to eight years, depending on the forecasting source. This growth trajectory is largely fueled by the increasing adoption of canola oil, favoured for its beneficial composition of monounsaturated and polyunsaturated fats, along with omega-3 fatty acids and minimal saturated fat content. Beyond its health advantages, canola oi''s versatility is also driving market expansion, with applications extending into non-food sectors such as biodiesel, renewable diesel, industrial lubricants, and bioplastics manufacturing.

According to the Canola Council of Canada (CCC), the market for Canadian canola meal in China, specifically within the dairy feed segment, is expected to experience considerable expansion. Additionally, the current utilization of Canadian canola meal in the aquaculture of Chinese carp and tilapia is robust, with prospects for further growth. Over the past decade, exports to this market have consistently increased, culminating in a total of 1.8 million tonnes in 2023. There is also an anticipated rise in demand for canola meal within the aquaculture industries of Thailand and Vietnam.[67]

The increased demand for canola oil and meals should encourage the domestic processing of canola seeds in the BDO Zone.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score	**Score**

[65] Canola Oil Market Forecast. KVB Research. https://www.kbvresearch.com/canola-oil-market/. Accessed Apr 16, 2024.
[66] Canola Oil Market Forecast. Polaris Market Research. https://www.polarismarketresearch.com/industry-analysis/canola-oil-market. Accessed Mar 16, 2024.
[67] Robust Canola Markets Outlook. https://nuseed.com/us/robust-canola-markets-outlook/. Accessed Apr 16, 2024.

The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

CATEGORY 3.0: SUPPLY CHAIN RISK

3.1 Risk Factor: Feedstock Availability

3.1.1 Biomass Availability Multiple (BAM)

Rationale: Biomass Availability Multiple (BAM) indicates the degree of redundancy in an Issuer's supply chain in relation to the rated quantity in the BDO Zone. BAM is the mean ratio of biomass feedstock available to a project in relation to delivered cost, divided by the Issuer's mean rated quantity. BAM is a strong indicator of supply chain resilience when stressed by supply shortage and/or supplier breach. BAMs of 1.5 or higher are generally signals of lower feedstock risk for new projects in BDO Zones.

Risk Information: The likelihood of the BAM factors being incorrect is deemed low, as sources consulted for the availability of canola seed were in agreement, providing a solid foundation for feedstock availability. Additional details on the BAM estimation can be found in Appendix A.

However, it is crucial to acknowledge that assumptions regarding future feedstock supply and demands are inherent in the BAM factors. Unforeseen supply and market factors, such as the emergence of new competitors, weather events, and shifts in economic conditions, can exert a medium level of impact on these assumptions and consequently influence feedstock availability. Continuous monitoring and adaptation to dynamic external factors are essential to maintaining the accuracy and reliability of BAM estimations.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed medium, therefore the RRI is 6 out of 10.	**6**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 24 out of 100.	**24**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 24 out of 100.	**24**

3.1.2 Feedstock Supply Curve/Marginal Cost Curve

Rationale: The greater the feasible transport distance, the more feedstock is accessible to the Issuer, but at a higher delivered cost. The feedstock supply curve, sometimes referred to as the marginal cost curve, is a function of feedstock availability over its cost, which is primarily, but not exclusively, a function of distance. The feedstock supply curve is used to determine the availability of redundant feedstock at various price points, as well as the cost of replacing feedstock with substitutes located at different distances.

Feedstock cost curves are useful in determining supply chain resilience; they provide information about the cost of feedstock availability in times of supply disturbance. Feedstock supply chains are prone to supply disturbances over time; suppliers can become insolvent, or weather events can temporarily disrupt feedstock availability. When a

disturbance occurs, the Issuer may need to source replacement feedstock from different suppliers at different locations and costs. A feedstock supply curve indicates quantities of feedstock available at various price levels from suppliers generally located further away than the core supplier.

Risk Information: Canola availability in the BDO Zone increases steadily with distance from the centre point. Figure A-9 shows the amount of canola available from suppliers in the BDO Zone in increments of 20 km up to 200km. With the BDO Zone, about 4 million tonnes of canola are available. Note that this amount is the total available and does not account for competition or the BAM factor. This analysis demonstrates that canola will need to be sourced by rail from elevators outside the BDO Zone. As canola is a commodity that is primarily moved by rail and the bulk of Canadian canola is exported, the risk associated with this indicator is low.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

3.1.3 Seasonal Feedstock Supply Variation

Rationale: Feedstock supply can present significant seasonal supply variations. Seasonal supply variations combined with limitations associated with longer-distance transportation and storage can lead to BDO Zone feedstock supply imbalances[68] and can manifest in shortages and higher costs for Issuers.

Risk Information: While canola seed is harvested between August and October, farmers store a significant amount of the harvested seed in bins throughout the year according to their individual sales strategy. This maintains a steady supply for the export of seed and production of oil and meal.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)*	**Notch** **NN**

[68] Golecha & Gan, 2016.

No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.1.4 Year-to-Year Variation in Feedstock Availability

Rationale: Feedstock can have significant year-to-year supply variations due to variability in yield from feedstock harvesting operations, particularly with agricultural feedstock.

Risk Information: While canola harvest can vary significantly from year-to-year as shown in Figure A-8, year-to-year variation is usually due to drought, heat, or infestation. The storage of seed described in 3.1.3 somewhat offsets the risk of availability and reduces this risk.

Raw Risk Likelihood (RRL) The risk likelihood is deemed medium, therefore the RRL is 6 out of 10.	**Score** **6**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 24 out of 100.	**Score** **24**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 24 out of 100.	**Score** **24**

3.2 Risk Factor: Historical Issues

3.2.1 Historical Feedstock Price Variations

Rationale: If the historical feedstock price shows volatility, then the risk of future price fluctuation is elevated. If feedstock prices have historically exceeded the price at which the Issuer would have to cease operations or breach a financial covenant (i.e., the "red line" feedstock cost), then mitigation measures should be put in place.

Risk Information: Export prices for seed and oil have shown volatility since 2020 while the price of meal has fluctuated little over this time period (Figure A-15). Between 2015 and 2020, the prices for these items remained steady. The volatility of seed and oil is directly attributable to lower supply as a result of drought and heat. The farmgate price for canola seed is shown in Figure A-14.

Raw Risk Likelihood (RRL) The risk likelihood is deemed medium, therefore the RRL is 6 out of 10.	**Score** **6**
Raw Risk Impact (RRI) The risk impact is deemed medium, therefore the RRI is 6 out of 10.	**Score** **6**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 36 out of 100.	**Score** **36**
Mitigation/Notching *RRL Mitigation (Notch)*	**Notch** **NN**

No adjustment.

RRI Mitigation (Notch)
No adjustment.

The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).

Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 36 out of 100.	**36**

3.2.2 Low Historical Demand for Feedstock in the BDO Zone

Rationale: If Issuer BDO Zone does not have a history of developed large-scale feedstock procurement, suppliers may not have sufficient expertise in feedstock production to ensure reliable supply, especially in the early years. This can be particularly true for forest residues, where typically, the infrastructure for collection, processing, and delivery is immature.

Where supply chains are not well-established, risk can be mitigated when new bio-based plants control a higher degree of feedstock processing. For example, if a BDO Zone rating is issued for clean wood chips and the historical demand in the Zone has been exclusively for pulpwood, then supply chain risk will be decreased for new bio-based plants that intake pulpwood and manage log debarking and chipping internally. Rather than requiring inexperienced suppliers to deliver debarked wood chips.

Risk Information: Canola supply chains are well established. This includes seed production and storage, as well as processing into oil and meal, and transport and markets. We also expect the capabilities for processing to become more robust. The operators in the BDO Zone have demonstrated the ability to continue reliable supply chains even in years of low seed production.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

3.2.3 History of Production/Feedstock is a New/Secondary Crop or By-Product

Rationale: If feedstock is a new/secondary crop or a by-product, suppliers may either lack sufficient experience to mitigate risk or be unable to react to such risk. Secondary crop or by-product producers may be less likely to prioritize production.

For new crop types, inexperience in planting, harvest, collection, and yield data may pose higher levels of risk.

If feedstock is a secondary transformation (i.e., wheat straw, corn stover, or forest residue), then production can be subject to variables beyond suppliers' control (e.g., changing demand for sawtimber, or primary crop prices).
Risk Information: Canola seed is a major cash crop for farmers in the BDO Zone and it has been grown and processed at industrial scale in the BDO Zone for decades. The high degree of experience poses a very low risk for this indicator.
Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed very low, therefore the RRL is 2 out of 10. **2**
Raw Risk Impact (RRI) **Score** The risk impact is deemed very low, therefore the RRI is 2 out of 10. **2**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 4 out of 100. **4**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* **NN** No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100. **4**

3.3 Risk Factor: Non-Weather Based Externalities

3.3.1 Consumer Price Index (CPI) and Producer Price Index (PPI)

Rationale: CPI and PPI can impact feedstock cost of harvest and collection over time. Sensitivities to worst-case scenarios should be run.
Risk Information: The overall Consumer Price Index (Figure C-3) over the past decade has risen steadily. Because there is low volatility in the CPI, this risk is low.
Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed low, therefore the RRL is 4 out of 10. **4**
Raw Risk Impact (RRI) **Score** The risk impact is deemed low, therefore the RRI is 4 out of 10. **4**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 16 out of 100. **16**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* **NN** No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100. **16**

3.3.2 Currency Risk

Rationale: Where feedstock is purchased in a currency different than that which a new bio-based plant will locate in a BDO Zone, currency exchange rates and volatility can constitute risk exposure. BDO Zones that cross the US-Canada border, for example, which intake feedstock from both countries, are exposed to such currency risk.

Risk Information: Most canola is sold to Canadian grain elevators or canola crushing facilities. However, some canola is sold to US grain elevators depending on price offered. While the Canadian dollar has weakened compared to the US dollar (Figure C-4) canola trade risk with the US is low due to implementation of the Canada-United States-Mexico Agreement (CUSMA) creating the worl''s largest free trade region.[69] Furthermore, as canola is an international commodity, the US dollar is the primary currency for pricing and transactions.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

3.3.3 Border Risk

Rationale: Where feedstock is transported cross-border to another country, risk exposure to border closures and crossing delays becomes present. The availability of trucks willing to do cross-border runs is limited, which can decrease supply chain flexibility and resilience. Plants near the US-Canada border, which intake feedstock from both countries, are exposed to these risks.

Risk Information: The United States–Mexico–Canada Agreement reduces border risk for agricultural products like canola seed, oil and meal. The products can move across the borders of these three countries without additional tariffs, helping to stabilize prices and supply chains. The agreement also streamlines processes and standards for product quality and safety, reducing trade barriers. US Department of Transport permits are required for border crossings with grain and weight restrictions per axle, which are lower in the USA but can be overcome with installation of "pusher axles."[70]

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**

[69] The Canada-United States-Mexico Agreement. https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/cusma-aceum/index.aspx?lang=eng. Accessed May 10, 2024.
[70] Trucking Grain. https://canoladigest.ca/september-2019/trucking-grain-diy-or-custom-all-the-way/. Accessed Apr 17, 2024.

The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.3.4 Temporary Externality-Driven Markets for Feedstock

Rationale: Alternative, non-traditional, externality-driven competitors for feedstock can drive feedstock demand (and cost) in unusual circumstances. For example, an Issuer using corn stover as a feedstock would not typically compete with the higher-end animal feed market. However, in times of significant hay shortage (e.g., during drought), farmers may use corn stover as hay replacement, driving the price of stover feedstock and decreasing its availability for bio-projects.[71]

Risk Information: Canola seed, oil, and meal are sold as commodities, thus have very low risk to temporary externally driven markets.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.4 Risk Factor: Risks Related to Feedstock Production, Harvest, and Collection

3.4.1 Harvest & Collection Practices & Schedules

Rationale: Differences in harvest timing and practices used can create risk to both the quantity and quality of feedstock. For example, feedstock harvested by different suppliers in different windows can undergo varying levels of exposure to sun, wind, and moisture, leading to variations in delivered feedstock quality.

[71] Bergtold, 2018.

For example, agricultural feedstocks and energy crops have optimal harvesting windows to ensure minimal moisture content. In certain BDO Zones, these harvesting windows may coincide with heightened weather risks, such as frost or rain.

For forestry biomass, unsightly clear-cuts and slash piles (even on plantation forests and especially when located near communities) can provoke unwanted public backlash even when suitable and sustainable replanting regimes are followed.

Risk Information: Harvesting, collection, and storage practices have been developed over several decades and are standardized and reliable. The most common risks to quality are early frosts or wet weather at harvest time or lack of soil moisture at the planting time which is not very common in the BDO Zone given the historical data.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

3.4.2 Harvesting & Collection Equipment

Rationale: Different types of harvesting and collection equipment used by suppliers in a BDO Zone can have a significant impact on the quality and availability of feedstock. Using different types and combinations of harvesting, collection, and processing equipment among suppliers can lead to non-homogeneous feedstock. Equipment that is not designed specifically for biomass cultivation, harvesting, and collection can increase feedstock quality risks.

Relevant equipment should be specified for the sake of product consistency and risk reduction.

Risk Information: Canola harvesting and collection equipment are standardized across the BDO Zone. Methods and equipment used include swathing to cut plants, combine to harvest seeds, and trucks to move the seed to storage bins, elevators, or crushing facilities.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)*	**NN**

No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.4.3 Variation in Densification Methods Among Different Suppliers

Rationale: The shape and density of the unit in which feedstock is supplied can impact feedstock cost and quality. Standard feedstock densification modes for biomass consist of round or square bales, pellets, cubes, chips, or grindings. The size of wood fibre processed in a grinder is less homogenous than if a chipper is used.

Bales of different densities can absorb moisture at different rates. In certain cases, round bales have been viewed as problematic due to their uneven moisture content distribution.[72]

Risk Information: Canola seed, oil, and meal are commodities with known quality parameters and are handled and transported similarly across the suppliers to meet the market requirements.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.4.4 Availability of Labour for Feedstock Production

Rationale: Skilled labour shortages can be difficult to remedy in the short term. The availability of suitable labour in an area can impact the ability to procure sufficient feedstock quantities on required schedules. Labour risks are higher where supply chains are not yet active or for Issuers for whom large feedstock requirements or the development of new (or expanded) supply chains demand significant additions to the local labour force.

Risk Information: Several local experts[73] report that sufficient labour for normal operations is not limiting. As no additional labour would be needed to deliver the rated quantity to a new facility, we expect that this favourable situation will continue.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**

[72] Huhnke, 2018.
[73] Roger Chevraux, Saskatchewan farmer; Curtis Rempel, Canola Council of Canada.

Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

3.5 Risk Factor: Transportation

3.5.1 Feedstock Transportation Costs

Rationale: Transportation can be one of the most significant cost components of biomass supply chains. The average transport cost and percentage of total feedstock cost attributable to transport should be known.

Transport distances of 80-120 km for biomass feedstocks are typical, but larger distances can be common. Where the average transport distance from suppliers to Issuers is high, the supply chain is subject to greater sensitivities to risks, such as increases in diesel cost, weather impacts, mechanical breakdown, and the demand for scarce feedstock from competitors closer to the source.

Understanding average transport distance can help flag higher-risk BDO Zones where transport distance materially exceeds the average.

Risk Information: Canola is typically transported by truck from the farm to an elevator or crushing facility. Trucks are typically tridems (31-tonne cargo capacity) or Super B-Trains (42-tonne cargo capacity).[74] Average cost for truck transport is $0.1000 to $0.1250 per tonne-km.[75]

From elevators, the grain moves by rail on dedicated grain cars carrying either 90 or 100 tonnes, depending on design.[76] Cost to transport canola by rail is standardized by the government at $0.0545 per tonne-km.[77]

Overall, the BDO Zone has an established logistics network for canola. Standardized methods for loading, unloading, and modes of transport make this a low risk.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment.	**NN**

[74] Personal communication. Doug Harle, Saskatchewan canola farmer.
[75] Personal communication. Roger Chevraux, Canola Council of Canada;
[76] The future of grain: greater supply chain capacity and efficiency. https://www.pwrs.ca/. Accessed Apr 29, 2024.
[77] International comparison of railway freights. https://www.railcan.ca/. Accessed Apr 25, 2024.

RRI Mitigation (Notch) No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.5.2 Diesel Cost Impacts

Rationale: Changes in diesel costs impact transport costs over time. Sensitivities to worst-case scenarios should be run.

Risk Information: Diesel prices in Regina, Saskatchewan, have exhibited significant volatility from March 2019 to February 2024, oscillating between a low of CAD 0.894/L in June 2020 and peaking at CAD 2.118/L in June 2022 before stabilizing to CAD 1.652/L by December 2023 (Figure C-5). This fluctuation reflects acute sensitivity to global crude oil market dynamics, COVID-19 pandemic impacts, and recovery-driven demand surges. This risk is offset partially by low government-standardized costs for grain transport via rail at $0.0545 per tonne-km.[78]

Raw Risk Likelihood (RRL) The risk likelihood is deemed medium, therefore the RRL is 6 out of 10.	**Score** **6**
Raw Risk Impact (RRI) The risk impact is deemed medium, therefore the RRI is 6 out of 10.	**Score** **6**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 36 out of 100.	**Score** **36**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 36 out of 100.	**Score** **36**

3.5.3 Transportation of Feedstock Requires Specialized Equipment

Rationale: Requirements for specialized transport equipment (e.g., walking-floor trailers) can increase supply chain risk. Where there is low availability of required transportation equipment, equipment owners have increased leverage over transportation prices and supply chain resiliency can be lower.

Risk Information: Delivery of canola to a new facility will occur by using Super B trailers (42 tonne capacity) or Tridems (24 tonne) for local delivery. These are standard throughout the BDO Zone and no specialized equipment will be needed to deliver the rated quantity.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching	**Notch**

[78] International comparison of railway freights. https://www.railcan.ca/. Accessed Apr 25, 2024.

RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.5.4 Delivery Routes through Local Communities

Rationale: Transportation of feedstock can become a nuisance to local communities, especially if a large number of trucks pass through residential and school areas. Local communities often have the power to force regulations regarding truck transport, impeding the ability of BDO Zone suppliers to transport feedstock.

Risk Information: Transportation of canola seed would use trucks and the same road network as used for haulage of other agricultural products common to the region such as wheat and flax. The centre point for this BDO Zone is an industrial park outside of the urban area of Regina. This location is served by wide highways specifically designed for transport of industrial products.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.5.5 Transportation Regulations & Local Weight Limits

Rationale: In many BDO Zones, transportation is regulated based on seasonal road conditions. These regulations (e.g., "frost laws") often take the form of weight restrictions or limits on the number of trucks allowed on roads. Such regulations can impede the project's ability to source sufficient feedstock or increase the cost of doing so at certain times of the year.

Risk Information: Truck weights are regulated by the Government of Saskatchewan. Specifically, the 63,500, CTP and Weight Classification map[79] includes all weight classes in Saskatchewan including primary weight highways, 63,500 kg weight highways, 9-month primary weight highways, secondary weight. In addition, the map identifies bridge restrictions, restricted highways and the clearing the path corridor.

[79] Truck Weight Classifications and Restrictions. https://www.saskatchewan.ca/business/transportation-and-road-construction/information-for-truckers-and-commercial-trucking-companies/regulations-and-road-restrictions. Accessed Apr 16, 2024.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.5.6 Road Infrastructure

Rationale: Feedstock cost and availability can be a function of road infrastructure, in particular the accessibility the infrastructure provides to feedstock. Issues with road networks will translate directly to risks to feedstock supply.

Risk Information: The local road network is designed for access to growing areas and delivery to potential buyers. Additionally, roads serving the centre point are specifically designed for accessibility for the longest combinations of vehicles as well as high volume and speed.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.5.7 Transportation Redundancy

Rationale: Transport equipment redundancy is important for dealing with seasonally variable feedstock supplies as well as the risk of equipment breakdowns.

Risk Information: The rated quantity of 5.2 million tonnes of canola seed in the area is based on the amount exported. No additional transportation resources will be needed as the rated quantity will be redirected from export seed to a new facility.

Raw Risk Likelihood (RRL)	**Score**

The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.6 Risk Factor: Supply Chain Resiliency

3.6.1 Size, Number, and Location of Suppliers

Rationale: In general, a supply portfolio involving multiple suppliers of various sizes (and from multiple BDO Zones) is important for ensuring steady and uninterrupted feedstock supply with minimal price fluctuations. If a small number of large suppliers provides a high proportion of total feedstock, a disruption or supplier breach will have greater impact on the supply chain. In such cases the risk of disruption is lower, but the impact of those disruptions is higher. Conversely, many small suppliers are less likely to have the capacity to withstand internal disruptions and thus may be more likely to breach. Here, risk of disruption is higher, but their likely impact is lower. The number of suppliers as well as the ratio of small to large suppliers should be optimized.

There is no pre-determined number or optimal ratio of suppliers, although having too many or too few can both pose higher degrees of risk.

Risk Information: Canola is grown throughout the BDO Zone with an average farm size of about 711 hectares.[80] There are about 20,000 canola farmers in Saskatchewan.[81] Based on a 200 km driving distance (8.9 million ha) for the BDO Zone there are about 10,000 suppliers of canola seed.

Supply of canola seed will also be sourced from Primary grain elevators as these facilities have rail access, and this mode of transport is common for the movement of canola. Inclusion of rail increases the availability of seed substantially as the limitations of truck delivery are no longer a factor. There are 66 primary grain elevators in the BDO Zone, 134 in Saskatchewan and a total of 354 primary grain elevators in Canada.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)*	**Notch** **NN**

[80] Statistics Canada. Table 32-10-0234-01 Land tenure, Census of Agriculture, 2021
[81] Farm & Food Care Saskatchewan. https://farmfoodcaresk.org/. Accessed Apr 25, 2024.

No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100. **4**

3.6.2 Suppliers Subject to Same External Risk Factors

Rationale: When a single risk event can impact the feedstock production ability of all (or most) suppliers, then feedstock risk is higher and supply chain resiliency is lower. Resilience is maximized when feedstock supply chains exhibit diversity in spatial location (i.e., geography), production practices and other elements of supply chain structures such that the impact of single high-risk events have varying impacts on suppliers.
Risk Information: Suppliers in the BDO Zone are all subject to the same weather impacts that affect production. Figure A-3 shows productivity over the past ten years, with large dips occurring during drought years. Likewise, as the feedstock is sold as a commodity, economic impacts have the same effects on suppliers. Suppliers counter these external impacts by storing significant amounts of canola seed on the farm. This supply is sold according to market demand and price, allowing a consistent supply of seed to be available, as was demonstrated in the 2021 drought year, where export volumes were maintained despite lower production.
Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed medium, therefore the RRL is 6 out of 10. **6**
Raw Risk Impact (RRI) **Score** The risk impact is deemed medium, therefore the RRI is 6 out of 10. **6**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 36 out of 100. **36**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* **NN** No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 36 out of 100. **36**

3.6.3 Land Ownership Structures

Rationale: The ownership (or control) of the land base on which feedstock is produced can have a significant impact on the Issuer's feedstock risks. Risk of long-term variation in stumpage cost for wood fibre (i.e., the cost that one pays to a landowner for the right to cut and purchase their wood fibre), for example, is much higher in the US, where >90% of the land is private, and thus stumpage cost is determined on a competitive auction basis. Conversely, in Canada, >90% of the land is owned by the Crown, and stumpage is allocated by the government.

Risk Information: According to Statistics Canada,[82] land tenure for agricultural use in the BDO Zone consists of 61% ownership, 31% leased from others, and 7% leased from governments. The high degree of private ownership presents low risk with regard to supply chain control.	
Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.7 Risk Factor: Climate and Natural Risks

3.7.1 Seasonal Weather Impacts on Feedstock Supply

Rationale: Seasonal weather impacts are defined as those deriving from natural weather variations (i.e., spring thaws, rainy seasons, or dry seasons – as opposed to from singular weather events like fires, droughts, or hurricanes). Seasonal weather changes can be a significant risk factor affecting feedstock availability, quality, and price.

Given the major influence that weather has on multiple aspects of growing, harvesting, and transporting feedstock, it is difficult to predict the availability of feedstock at a specific location at different points in the future with a high degree of certainty. However, it is still possible, using past data and statistical models, to generate reasonable upper/lower bound estimates of feedstock production in any given year in a wider BDO Zone. Such estimates are important in assessing feedstock risk and enable accurate assessment of the efficacy of Issuer's mitigation methods.

Risk Information: As an annual crop, canola is harvested once a year in the BDO Zone between August and October. Seed is stored and available all year long to provide a steady feedstock supply for canola oil and meal production. Consistent and rising exports of oil and meal demonstrate the reliability of the current methods (Figure C-2).	
Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)*	**Notch** **NN**

[82] Statistics Canada. Table 32-10-0234-01 Land tenure, Census of Agriculture, 2021

No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.7.2 Long-Term Weather and Climate Trends

Rationale: In certain BDO Zones, climatic trends and significant potential changes to future weather patterns can create feedstock risk.

Risk Information: Climate change is a threat to canola productivity especially with rising temperatures and erratic weather patterns.[83] Significant economic impact has occurred in 2021 due to severe drought. Excess heat can affect productivity by lowering pollination efficiency. Improved varieties are being bred to counteract climate effects. We anticipate that climate change will continue to have negative effects on canola production and that improved varieties and growing practices will be needed over the long term.

Raw Risk Likelihood (RRL) The risk likelihood is deemed high, therefore the RRL is 8 out of 10.	**Score** **8**
Raw Risk Impact (RRI) The risk impact is deemed high, therefore the RRI is 8 out of 10.	**Score** **8**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 64 out of 100.	**Score** **64**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 64 out of 100.	**Score** **64**

3.7.3 Forest/Crop Fire

Rationale: Forest/crop fires, especially when occurring on a large scale, destroy feedstock and create shortages.

Fire-prone conditions are predicted to increase across Canada. This could potentially result in a doubling of the amount of area burned by the end of this century compared with amounts burned in recent decades. Boreal forests, which have been historically greatly influenced by fire, will likely be especially affected by this change.

Other climate change impacts that could add damaged or dead-wood to the forest fuel load (e.g., as a result of insect outbreaks, ice storms, or high winds) may increase the risk of fire activity. New research is aimed at refining these climate change estimates of fire activity and investigating adaptation strategies and options to deal with future fire occurrences. There is growing consensus that as wildfire activity increases, fire agency suppression efforts will be increasingly strained. However, analyses of fire history suggest that the effect of climate variability on precipitation regimes is the primary reason for the decreasing fire activity in the southern BDO Zone of Canada.

[83] Canola: Climate Change: Risks to Canola Production. https://hsat.space/climate-change-the-looming-risk-for-the-canola-production. Accessed Apr 9, 2024.

Risk Information: According to the Canadian National Fire Database (CNFDB), the risk of fire is very low in the BDO Zone.[84]	
Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.7.4 Risk of Infestation

Rationale: Risk of future infestation, including its estimated consequences on feedstock supply, should be calculated into the overall risk profile.

Since forest insect populations are influenced by environmental conditions, future changes in climate can be expected to significantly alter the outbreak dynamics of certain forest insect species. In some cases, larger and more frequent insect outbreaks may occur, but in other cases, recurring outbreaks may be disrupted or diminished. As climate continues to change, we can expect more situations, particularly at the margins of tree ranges, where sub-optimal conditions for tree growth and reduced tree vigour can lead to outbreaks of forest insects.

Risk Information: Canola can be impacted by a number of pests. Common pests in the BDO Zone are blackleg and grasshoppers. These and other pests can be controlled by integrated pest management and using best agronomic practices. Effective chemical treatments are available, and breeders continue to make resistant varieties available.[85]	
Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed medium, therefore the RRI is 6 out of 10.	**Score** **6**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 24 out of 100.	**Score** **24**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**

[84] https://cwfis.cfs.nrcan.gc.ca/ha/nfdb?type=nbac&year=9999
[85] Personal Communication. Roger Chevraux, Canola Council of Canada.

Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 24 out of 100.	**24**

3.7.5 Risk of Hail

Rationale: Hail has negligible impact on forestry biomass but is one of the principal destroyers of agricultural crops in North America.

There is much uncertainty about the effects of anthropogenic climate change on the frequency and severity of extreme weather events like hailstorms and their subsequent economic losses. Some studies indicate a strong positive relationship between hailstorm activity and hailstorm damage, as predicted by minimum temperatures using simple correlations. This relationship suggests that hailstorm damage may increase in the future if global warming leads to further temperature increases.

Risk Information: Most regions in Saskatchewan receive between one and two days with hail every year. The BDO Zone is in an area with above average incidence of hail[86] but the amount of potential damage varies with the stage of growth and can often be managed with nutrient or fungicide treatment.[87]

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed medium, therefore the RRL is 6 out of 10.	**6**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 24 out of 100.	**24**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 24 out of 100.	**24**

3.7.6 Risk of Flood

Rationale: Floods can cause catastrophic disruption and delay in feedstock supply. Where there is high risk of flood and thus negative impact to feedstock supply, the BDO Zone rating should account for this risk.

Risk Information: The BDO Zone is unlikely to experience flooding.[88]

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**

[86] Saskatchewan Flood and Natural Hazard Risk Assessment. Prepared for Saskatchewan Ministry of Government Relations. SRC Publication No. 14113-2E18. 2018.

[87] Hail damage: Economic loss depends on crop stage. https://www.canolacouncil.org/canola-watch/2014/06/18/hail-damage-economic-loss-depends-on-crop-stage/. Accessed May 10, 2024.

[88] Saskatchewan Flood and Natural Hazard Risk Assessment. Prepared for Saskatchewan Ministry of Government Relations. SRC Publication No. 14113-2E18. 2018.

The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.7.7 Risk of Drought

Rationale: Droughts can cause significant disruptions to feedstock supplies across entire BDO Zones for extended periods of time, especially in case of agricultural residues and energy crops. Parts of Western Canada are experiencing more frequent and severe droughts, and scientists expect drought to affect new areas across Canada going forward.

Tree species are adapted to specific moisture conditions. Having less water available through drought has a range of negative impacts on the health of forest ecosystems. Direct impacts include reduced growth, increased tree mortality, and failure to regenerate. Indirect impacts include reduced ability to defend against insects and disease and increased fire risk. These impacts can affect the availability of wood fibre for an Issuer.

Risk Information: The BDO Zone is susceptible to frequent and often severe droughts.[89] Canola production in 2018 and 2021 was significantly impacted by drought.[90]

Raw Risk Likelihood (RRL) The risk likelihood is deemed high, therefore the RRL is 8 out of 10.	**Score** **8**
Raw Risk Impact (RRI) The risk impact is deemed high, therefore the RRI is 8 out of 10.	**Score** **8**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 64 out of 100.	**Score** **64**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 64 out of 100.	**Score** **64**

3.7.8 Risk of Hurricanes, Tornadoes, and Strong Winds

Rationale: Hurricanes, tornadoes, and strong winds can destroy timber stands, crops, and feedstock piles. They can also delay forestry and agricultural operations. Hurricanes and tornadoes can indirectly cause temporary shortages of available transportation as available trucking moves to handle higher-value disaster-related contracts. For example,

[89] The Encyclopedia of Saskatchewan. https://www.esask.uregina.ca/entry/drought.html. Accessed Apr 9, 2024.
[90] History of Drought Impacts in Saskatchewan. https://www.saskatchewan.ca/. Accessed Apr9, 2024.

Katrina cleanup limited availability of live-bottom trailers in the North and South-East of the US for several months as truckers shifted operations to handle more lucrative government contracts.

Although scientists are uncertain whether climate change will lead to an increase in the number of hurricanes, warmer ocean temperatures and higher sea levels are expected to intensify their impacts.

Recent analyses conclude that the strongest hurricanes occurring in some BDO Zones, including the North Atlantic, have increased in intensity over the past two to three decades.

Risk Information: The southern part of Saskatchewan has between five and 10 days with winds at least 63 km/h or stronger and is deemed a low risk.[91]

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is Choose	**16**

3.7.9 Risk of Low Temperatures

Rationale: Low temperatures can cause crop failure, leading to shortages of feedstock. Additionally, low temperatures can have adverse impacts on the operations of feedstock processing equipment in Northern BDO Zones.

Risk Information: Canola seed quality and yield can be impacted by early frosts and occur to some degree every three to four years.[92]

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed medium, therefore the RRL is 6 out of 10.	**6**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed medium, therefore the RRI is 6 out of 10.	**6**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 36 out of 100.	**36**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)*	**NN**

[91] Saskatchewan Flood and Natural Hazard Risk Assessment. Prepared for Saskatchewan Ministry of Government Relations. SRC Publication No. 14113-2E18. 2018.

[92] Frost in Canola. https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/field-crops/oilseeds/frost-and-green-seed-in-canola. Accessed May 24, 2024.

No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 36 out of 100.	**Score** **36**

3.8 Risk Factor: Political and Social

3.8.1 Government Subsidies for Feedstock Production or Utilization

Rationale: Feedstock that is directly subsidized through government programs can pose greater long-term risk than feedstock that is not. Subsidies may be subject to amendment or repeal, sometimes with minimal notice.

NOTE: This risk indicator refers to direct feedstock subsidies only; it does not apply to government subsidies that pertain indirectly to the Issue''s operations, such as Loan Guarantees, or to the markets for products produced by the Issuer.

Risk Information: Our research did not reveal any subsidies available for canola production or utilization.

Raw Risk Likelihood (RRL) The risk likelihood is deemed not relevant, therefore the RRL is not rated (NR).	**Score** **NR**
Raw Risk Impact (RRI) The risk impact is deemed not relevant, therefore the RRI is not rated (NR).	**Score** **NR**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is not rated.	**Score** **NR**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NR (Not Rated).	**Notch** **NR**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is not rated.	**Score** **NR**

3.8.2 Local, Provincial, & National Laws, Regulations, & Permitting Pertaining to Biomass

Rationale: Feedstock whose production is directly dependent on local, provincial, or national laws or government regulations can pose greater long-term risk than feedstock that is not, since laws and regulations may be subject to amendment or repeal.

If feedstock utilization requires specific permits (e.g., percentage removal of forest residues or corn stover, allowable cut limits, air emission, storage permits, rights-of-way, overweight permits for trucks, cross-border permitting for shipment of feedstock, chain of custody, or certification of sustainability), the likelihood of obtaining such permits and/or complying with permitting requirements should be examined.

Risk Information: The *Canada Grains Act and Regulations* provide a series of protections for canola growers and buyers.[93] Growers are entitled to fair business practices and are prohibited from delivering infested or contaminated grain. The driver for the increased production of canola has been mainly market-oriented for high-quality oils for food application, but it should be noted that the recent international, regional, and national decarbonization policies have impacted the demand for feedstocks such as canola oil, but none of these policies are designed especially for the use

[93] Canadian Grain Commission. https://grainscanada.gc.ca/. Accessed Apr 16, 2024.

of canola oil, and canola oil needs to compete with other bio-based feedstocks such as used cooking oil and soybean oil.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.8.3 Backlash Against Biomass Development, Procurement, or Usage in the Region

Rationale: Public backlash against biomass development in the Issuer BDO Zone can directly impact Issuer's ability to procure, transport, trans-load, store, or utilize feedstock by affecting local policies, regulations, and Issuer's ability to obtain necessary permitting.

Risk Information: Our research did not reveal any significant backlash against canola growth or utilization. Canola is a significant economic driver in the BDO Zone.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.8.4 Consent of, and Cooperation with, Indigenous Communities and First Nations

Rationale: Where new project development on or near Indigenous or First Nation land, or where near Indigenous or First Nations exert influence over feedstock producing areas, consent of, and cooperation with, Indigenous communities and First Nations decreases Issuer risk.

Risk Information: Saskatchewan and Regina have good economic development programs with Indigenous Communities.[94] Regina is on treaty-ceded land and the signatories are known. New companies must complete a process of Duty to Consult to establish that there will be non-detrimental effect. Statistics Canada reports that approximately 2.8% of the farm population self-identified as Indigenous.[95]
Raw Risk Likelihood (RRL) — **Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10. — **4**
Raw Risk Impact (RRI) — **Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10. — **4**
Gross Risk Indicator (GRI) — **Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100. — **16**
Mitigation/Notching — **Notch**
RRL Mitigation (Notch) — **NN** No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score — **Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100. — **16**

3.8.5 Food Security Concerns

Rationale: Despite the fact that any significant correlation between food prices and biofuel production is unclear, claims that biofuel production has driven up food prices, taken food from communities or had a negative impact on land use can fuel public backlash. For example, the removal of biomass may raise public concerns relating to food security if Issuer feedstock requires the use of land that would otherwise be used for growing food.
Risk Information: The Canadian Canola Growers Association (CCGA) has advocated for limiting use of canola in renewable fuels to less than 10%[96] but that goal seems unlikely given that use of oilseeds in renewable fuels is being promoted. The use of canola residues and wastes in conversion to fuel will help limit oilseed conversion to fuel to some degree. Despite the increased use of canola oil for renewable fuel production, the annual production of canola oil and other oilseeds such as soybean have been increasing, resulting in the less pressure on the food markets. Most of the recent biofuel policies are about the carbon credit of feedstock rather than the blending volume which encourage the use of feedstock such as used cooking oil but we would like to acknowledge that with the increase demand for low-carbon biofuels, this could impact the price and availability of canola oil for the food market.
Raw Risk Likelihood (RRL) — **Score**
The risk likelihood is deemed medium, therefore the RRL is 6 out of 10. — **6**
Raw Risk Impact (RRI) — **Score**
The risk impact is deemed medium, therefore the RRI is 6 out of 10. — **6**
Gross Risk Indicator (GRI) — **Score**
The Gross Risk Indicator (RRL X RRI) is 36 out of 100. — **36**

[94] Personal Communication. Chris Lane. Economic Development Regina.
[95] The socioeconomic portrait of the Indigenous farm population in Canada, 2021. https://www150.statcan.gc.ca/n1/pub/96-325-x/2021001/article/00020-eng.htm. Accessed May 13, 2024.
[96] https://www.producer.com/news/canola-risks-exceeding-food-vs-fuel-target/. Accessed Mar 5, 2024.

Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 36 out of 100.	**36**

3.9 Risk Factor: Sustainability and Environmental Concern

3.9.1 Feedstock Sustainability

Rationale: Public concerns about the sustainability of feedstock production can jeopardize biomass feedstock operations. Sustainability certification schemes should be utilized where applicable to ensure that feedstock comes from sustainable sources.

Canada leads all countries with 166 million hectares of certified forests, a figure that is nearly four times more than second-place United States at 47 million hectares.

Risk Information: Canadian canola growers follow sustainability standards implemented and monitored by the Canadian Canola Council.[97] These standards target the reduction of greenhouse gas emissions, sustainable use of land, and the protection of natural habitats. Canadian canola has growers certified sustainable by the International Sustainability and Carbon Certification (ISCC) body.[98] Canadian canola is a qualified feedstock for use in EU biofuels.[99] The Canola Council of Canada encourages suppliers to adopt Best Management Practices through their Canola 4R Advantage program that provides cost sharing.[100] The Canadian Clean Fuel Regulations[101] assure progress to sustainability in use of canola oil for fuels while the Cargill Power Canola program gives farmers an outlet to assure markets that Canadian canola is sustainably grown.[102]

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**

[97] https://www.canolacouncil.org/about-us/strategic-plan/. Accessed Mar 5, 2024.
[98] International Sustainability and Carbon Certification Website, www.iscc-system.org. Accessed Mar 5, 2024.
[99] https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biofuels_en. Accessed Mar 5, 2024.
[100] Canola 4R Advantage. https://www.canolacouncil.org/4r-advantage/. Accessed Apr 9, 2024.
[101] Clean Fuel Regulations. https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations.html. Accessed May 13, 2024.
[102] Cargill Power Canola Program. https://www.cargill.com/2024/cargill-power-canolatm-program-helps-farmers. Accessed May 13, 2024.

Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

3.9.2 Risk to Soil Quality

Rationale: Soil sustainability can be defined as the management of soil in a way that does not exert any negative or irreparable effects either on the soil itself or any other systems. There is a diversity of approaches to soil sustainability in jurisdictional guidelines for forest feedstock harvesting and production. For different feedstock types, there are also different thresholds at which feedstock removal causes significant negative consequences on the soil.

Poor soil quality that negatively impacts the long-term sustainability of the feedstock can entail long-term feedstock risk. Sub-optimal soil management can leave exposed soil post residue-harvest, which can lead to soil wash-off and soil carbon loss from precipitation and wind. Over-harvesting of feedstock also depletes the carbon stock in the soil and creates a negative feedback loop that can degrade the soil and its nutrients.

Risk Information: Soil quality is protected by implementing practices that are part of sustainability goals described in 3.9.1. Low- and no-till practices have been implemented that have led to increased soil carbon, preserve organic matter in the soil, conserve moisture, and reduce erosion.[103] Between 1991 and 2016 western Canadian farmland seeded with low- and no-till have increased from 7% to 65%.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

3.9.3 Risk to Surface and Groundwater

Rationale: Excessive nutrient runoff from biomass feedstock production can accumulate in surface waters and result in algal blooms and hypoxia, which can lead to habitat loss for aquatic species higher up the food chain and alter aquatic ecosystem food webs. Damage to aquatic ecosystems can cause social and regulatory backlash. Water intake issues can also increase risk.

Risk Information: Soil quality is protected by implementing practices that are part of sustainability goals described in 3.9.1. Water quality if protected through management of chemical applications according to program guidelines.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**

[103] Conservation tillage describes practices that leave agricultural soil relatively undisturbed, such as low-till and reduced-till, as well as practices that seed directly into soil, such as zero-till and no-till.

The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

3.9.4 Water Use

Rationale: Biomass feedstock operations can have significant impacts on the hydrological flux (infiltration, groundwater recharge, interception, and transpiration) of ecosystems. This can lead to water shortages, lower yields, and backlash from regulatory bodies if management plans are not properly instituted.

Risk Information: The BDO Zone is located in the Prairie region of Canada, an area with limited and variable water availability. While canola yield is influenced by water availability, the crop was specifically developed for this region. Currently only about 2% of farmland of farmland is irrigated in Saskatchewan[104] and the Saskatchewan Government is evaluating a project to increase irrigation capacity within the Macrorie Irrigation District from 3,000 to 7,000 acres by 2030 which would help productivity for that specific region.[105] Research to develop heat and drought resistant canola varieties are underway.[106] Sustainable farming practices, such as crop rotation and conservation tillage, are actively practiced and can improve soil health and water retention, potentially reducing the need for irrigation and its impact on the water table.

Raw Risk Likelihood (RRL) The risk likelihood is deemed medium, therefore the RRL is 6 out of 10.	**Score** **6**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 24 out of 100.	**Score** **24**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score	**Score**

[104] Irrigated Land in Saskatchewan. https://cawkwellgroup.com/irrigated-land-in-saskatchewan/#:~:text=Although%20Statistics%20vary%2C%20Alberta%20has,and%20valuable%20commodity%20in%20Saskatchewan. Accessed May 28, 2024.
[105] Macrorie Irrigation Expansion. https://www.wsask.ca/macrorie-irrigation-expansion/. Accessed Apr 9, 2024.
[106] Generation of canola lines with increased heat and drought tolerance. https://www.canolacouncil.org/research-hub/canola-lines-with-increased-heat-drought-tolerance/. Accessed Apr 9, 2024.

The Loaded RI Score ((1-Total Notch) X GRI Score) is 24 out of 100.	**24**

3.9.5 Pesticide Risk to Human and Ecosystem Health

Rationale: Application of pesticides (i.e., herbicides, fungicides, and insecticides) on agricultural and forest landscapes can result in adverse health effects for humans and ecosystems. If pesticide application is required in feedstock production, the impact must be considered in the BDO Zone rating.

Risk Information: Pesticide use practices are part of sustainability goals described in 3.9.1. Herbicide tolerant varieties of canola have been grown since 1997 in Canada. The practices put in place in 1996 have reduced herbicide use by 20% since that time.[107] Other practices such as seed treatments have been put in place to allow beneficial insects to thrive, increasing canola health.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

3.9.6 Risk to Wildlife and Landscape

Rationale: Feedstock production and supply chain operations with negative impacts on wildlife and landscape are at a greater long-term risk of encountering project setbacks and disruptions.

Risk Information: The overall risk to wildlife and landscape is low due to the sustainable practices that are part of sustainability goals described in 3.9.1.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)*	**NN**

[107] Graham Brookes and Peter Barfoot, "Environmental impacts of genetically modified (GM) crop use 1996 – 2015: Impacts on pesticide use and carbon emissions" (2017) 8 GM Crops & Food 117 – 147.

No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

3.9.7 Biomass Classified as Genetically Modified Organism (GMO)

Rationale: There are various risks associated with GMOs, such as migration or dispersion across the landscape, which can generate community backlash and create supply chain risk. GMOs can also be heavily regulated. If planning to grow or procure GMO feedstocks, especially purpose-grown energy crops, it is important to understand the risks.

Risk Information: Approximately 95% all of canola grown in the BDO Zone is genetically modified to impart herbicide tolerance.[108] These GMO crops have been grown in Canada since 1997. In 2020 Health Canada and the Canadian Food Inspection Agency approved a GMO canola that produces a healthier oil. This canola is not yet grown in Canada.[109] GMO crops are regulated at the federal level in Canada. The GMO canola does not impact the bio-based projects but in fact, it will improve the economics of canola oil use in the bio-based projects as it can increase the field and conversion yield and reduce the overall feedstock cost.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is Choose	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

CATEGORY 4.0: FEEDSTOCK SCALE-UP RISK

4.1 Risk Factor: Feedstock Scale-Up

4.1.1 Feedstock Quality at Production Scale

Rationale: The physical and chemical properties of feedstock used in lab, pilot and field testing can fail to be representative of feedstock generated by large-scale operations.

It is important to conduct tests on feedstock representative of that which will be produced by large-scale operations. Failure to adequately test the full range of parameter values can result in severe problems during scale-up.

Risk Information: The BDO Zone has decades of experience in producing canola at scale. Equipment and know-how are common and readily available. With regard to processing canola into oil and meal, there are three proposed crush

[108] https://cban.ca/gmos/products/on-the-market/canola/
[109] Ibid.

facilities for the Regina area. The companies involved are large with significant experience as they operate existing canola crush facilities.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

4.1.2 Capacity of Supply Chain Components & Equipment to Scale

Rationale: Scale-up risk increases if supply chain components, or underlying feedstock infrastructure necessary for these components, cannot scale to handle Issuer feedstock requirements and throughput capacity. Capacity to scale should be demonstrated.

Risk Information: Suppliers and processors in the BDO Zone have decades of experience and have gone through the process of scale-up many times. Experience and means for expanding the needed infrastructure is in place or available.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

CATEGORY 5.0: INFRASTRUCTURE RISKS

5.1 Risk Factor: Physical Infrastructure

5.1.1 Land Parcel/Industrial District

Risk Information: The centre point of this BDO Zone is the Global Transportation Hub (GTH), an inland port located in Regina, SK.[110] The 1800-acre park offers lots between 2.5 acres up to 250 acres. The lots can be tailored to suit the size of business requirements. The GTH is a Foreign Trade Zone centrally located between Canada's two largest seaports with integrated rail intermodal and highway infrastructure that are specifically designed to meet the needs of heavy-haul transportation and logistics operation. The GTH is home to 13 industrial clients facilitating collaboration. The land is rough-graded and service ready with all utilities.

The centre point location is specifically designed for industrial use deeming the risk low.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

5.1.2 Ownership of Land

Risk Information: The land is owned by a Crown Corporation[111] formed between the Government of Saskatchewan and GTH. As a Crown Corporation, the GTH is an autonomous and self-governing authority, that oversees all stages of development and regulation. Crown Corporation status acts in the interest of public needs, like a utility, and enjoy lower costs of operation compared to a private corporation. Lots are available for sale or lease. This status deems the ownership low risk.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment.	**NN**

[110] Global Transportation Hub. https://thegth.com/. Accessed Mar 19, 2024.
[111] Crown Corporations. https://www.saskatchewan.ca/government/government-structure/crown-corporations. Accessed Mar 19, 2024.

RRI Mitigation (Notch) No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

5.1.3 Permitting Description

Risk Information: The GTH is its own municipal regulatory body and approves all development, building, and occupancy permits. Development permit approval turnaround time averages 18 days. All forms and permit related information are available on the GTH website. As the GTH administers its own permits within a short time frame the risk is deemed very low.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

5.1.4 Environmental Issues

Risk Information: Environmental requirements are regulated through the Saskatchewan Ministry of Environment. It is dependent on the project if additional environmental approvals not handled through GTH are required through the Ministry. The GTH has had significant environmental assessments done in the past with no concerns noted. Risk is deemed low.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**

Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

5.2 Risk Factor: Utilities

5.2.1 Natural Gas Availability

Risk Information: SaskEnergy/TransGas provides natural gas service with to high pressure and elevated pressure pipelines in the area. Regular service is 4,000 GJ per day with over 10,000 GJ per day available for high users. Cost of natural gas is $3.30/GJ[112] (variable). The risk is deemed very low.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

5.2.2 Electric Availability

Risk Information: SaskPower is on site with 72kv and 25kv lines are readily available and with over 40Mw close by. Cost of service is ¢11.987 for the first 16,750 kWh and ¢7.674/kWh for the balance. Risk is deemed very low.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching	**Notch**
RRL Mitigation (Notch) No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

[112] Global Transportation Hub. Utility Information sheet – 2022.

5.2.3 Water Availability

Risk Information: Access to potable water through the City of Regina. Processed Water is delivered through SaskWater through a 24" pipeline and there is still room for roughly 250L/s to 300L/s in capacity still available. The one-time costs to purchase the capacity per 1ML of water and wastewater per day is estimated at $10.8M and $2.2M respectively.

Domestic water and sanitary service is $4.16 per cubic meter. The presence of existing service provides a very low risk rating.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

5.2.4 Waste Disposal

Risk Information: Solid waste disposal is offered by private companies. The City of Regina operates a landfill located approximately 21km from the centre point. The City of Regina Wastewater Treatment plant is about 3km directly north of the GTH and is available to GTH clients. The risk is low.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

5.2.5 Internet Availability

Risk Information: Full fibre internet service is available to clients of the GTH. This risk is deemed very low.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

5.3 Risk Factor: Transportation/Logistics

5.3.1 Road/Highway Access

Risk Information: Major highways are easily accessible. The Trans-Canada Highway 1 is approximately 14km away providing east-west travel through British Columbia, Alberta, Saskatchewan, and Manitoba as well as access to other highways in the Trans-Canada system. Provincial highways 6, 33, and 46 are less than 21km away and provide east-west and north-south travel, respectively. Winnipeg is a five-hour drive to the east. Calgary is a 7.5-hour drive westward. Trucking connections to Canada, the US, and Mexico are free-flowing without bottlenecks of urban ports. This risk is deemed very low.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**2**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**2**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**4**

5.3.2 Rail Access

Risk Information: The centre point is equipped with its own intermodal yard and is connected Canadian Pacific Railway providing access to North American rail networks. Direct rail access from Regina includes the Ports in Vancouver,

Montreal, Toronto, the Gulf Coast, and Great Lakes.[113] A connection to the Canadian National Railway is under construction and will be available in 2025. The risk is deemed very low.
Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed very low, therefore the RRL is 2 out of 10. **2**
Raw Risk Impact (RRI) **Score** The risk impact is deemed very low, therefore the RRI is 2 out of 10. **2**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 4 out of 100. **4**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* **NN** No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is Choose
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100. **4**

5.3.3 Airport Access

Risk Information: The Regina International Airport is 11km from the site. This risk is deemed very low.
Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed very low, therefore the RRL is 2 out of 10. **2**
Raw Risk Impact (RRI) **Score** The risk impact is deemed very low, therefore the RRI is 2 out of 10. **2**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 4 out of 100. **4**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* **NN** No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100. **4**

5.3.4 Water Freight Access

Risk Information: Water freight access is not available but the site is well-connected to road and rail transportation network that can ship products to the major Canadian ports in West and East side of the country.
Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed low, therefore the RRL is 4 out of 10. **4**
Raw Risk Impact (RRI) **Score** The risk impact is deemed low, therefore the RRI is 4 out of 10. **4**

[113] VIA Rail Canada. https://www.viarail.ca/en. Accessed Mar 20, 2024.

Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

5.4 Risk Factor: Social Infrastructure

5.4.1 Healthcare (Local)

Risk Information: Healthcare access is extensive and anchored by the Regina General Hospital, a full-service facility with 380 beds. The city also has numerous other two additional hospitals, medical centres, and long-term care facilities. An urgent care facility is under construction and expected to open during the summer of 2024. The availability of healthcare is low risk.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**
The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score	**Score**
The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**16**

5.4.2 Education (Schools)

Risk Information: Regina has three main elementary and secondary school systems: Regina Board of Education, Regina Catholic Schools, and the Conseil des Écoles Fransaskoises (provincial Francophone school division). The higher education system of Regina is represented by two universities, which offer 88 study programs, including 30 Bachelor's programs, 38 Master's programs, and 20 PhD programs. Several career training colleges are also available. The risk is deemed low.

Raw Risk Likelihood (RRL)	**Score**
The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**4**
Raw Risk Impact (RRI)	**Score**
The risk impact is deemed low, therefore the RRI is 4 out of 10.	**4**
Gross Risk Indicator (GRI)	**Score**

The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**16**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100.	**Score** **16**

5.4.3 Local Transportation

Risk Information: The City of Regina operates a bus system with city-wide coverage and offers an online route planner. At least seven taxi companies, plus Uber and Lyft are available. Passenger train service is available through Via Rail Canada along primarily east-west routes from coast to coast. Regina has a network of walking-biking paths as well. This risk is deemed very low. Commuting time by car from the city centre is less than 20 minutes.

Raw Risk Likelihood (RRL) The risk likelihood is deemed very low, therefore the RRL is 2 out of 10.	**Score** **2**
Raw Risk Impact (RRI) The risk impact is deemed very low, therefore the RRI is 2 out of 10.	**Score** **2**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 4 out of 100.	**Score** **4**
Mitigation/Notching *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).	**Notch** **NN**
Loaded RI Score The Loaded RI Score ((1-Total Notch) X GRI Score) is 4 out of 100.	**Score** **4**

5.4.4 Public Safety (Local)

Risk Information: The Regina Police Force is a modern organization that includes SWAT, crisis negotiation, explosives disposal, and other services. Regina Fire & Protective Services operates seven fire stations with a fleet of 18 front-line apparatus. The nearest fire station to the GTH is Regina Fire Station #4, 9.3 km away. This risk is deemed low.

Raw Risk Likelihood (RRL) The risk likelihood is deemed low, therefore the RRL is 4 out of 10.	**Score** **4**
Raw Risk Impact (RRI) The risk impact is deemed low, therefore the RRI is 4 out of 10.	**Score** **4**
Gross Risk Indicator (GRI) The Gross Risk Indicator (RRL X RRI) is 16 out of 100.	**Score** **16**
Mitigation/Notching *RRL Mitigation (Notch)*	**Notch** **NN**

No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100. **16**

5.4.5 Housing/Cost of Living

Risk Information: The inventory of housing in Regina is tight, and average housing prices have dropped 4.4% year-over-year between 2022 and 2023.[114] The projected average price of a home in 2024 is about 300,000 CAD. Cost of living in Regina is 75% of the Canadian national average and 90% of the Saskatchewan provincial average.[115] The tight housing market would indicate a medium risk, but it is partially offset by the comparatively low cost of living and availability of land to expand the residential housing. The risk indicator is deemed low.

Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed low, therefore the RRL is 4 out of 10. **4**
Raw Risk Impact (RRI) **Score** The risk impact is deemed low, therefore the RRI is 4 out of 10. **4**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 16 out of 100. **16**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* **NN** No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch).
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100. **16**

5.5 Risk Factor: Labour

5.5.1 Workforce

Risk Information: As of Feb 2024, unemployment in Canada stands at 5.8%, while the Saskatchewan rate is 5.0%.[116] Unemployment in Regina is 4.7%.[117] To address the need for skilled labour in a growing economy, the Saskatchewan government launched the Saskatchewan Labour Market Strategy in March 2024.[118] Regarding employee training and trade schools, the City of Regina has Campus Regina Public (CRP), a career-centred educational institution available to all Grade 11 and 12 students registered with Regina Public Schools. The Trades and Skills Centre delivers in-demand programs that are responsive to employer needs, while the Regina Work Preparation Centre offers a variety of vocational services.

[114] Housing Market Outlook Regina, SK. https://blog.remax.ca/regina-housing-market-outlook/. Accessed Mar 7, 2024.
[115] Living Cost. https://livingcost.org/cost/canada/sk/regina. Accessed Mar 7, 2024.
[116] Statistics Canada. https://www150.statcan.gc.ca/n1/daily-quotidien/240308/mc-a001-eng.htm. Accessed Mar 13, 2024.
[117] https://discoverweyburn.com/articles/southeast-saskatchewan-sees-rise-in-unemployment. Accessed Mar 13, 2024.
[118] Building the Workforce for a Growing Economy. https://www.saskatchewan.ca/-/media/news-release-backgrounders/2024/mar/saskatchewan-labour-market-strategy-web.pdf. Accessed Mar 13, 2024.

The low unemployment rate in Regina compared to the national rate indicates medium risk for new employers seeking a large pool of candidates. However, the availability of training programmes and efforts by the government to recruit skilled workers warrants a notch of 25% for both likelihood and impact.
Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed medium, therefore the RRL is 6 out of 10. **6**
Raw Risk Impact (RRI) **Score** The risk impact is deemed medium, therefore the RRI is 6 out of 10. **6**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 36 out of 100. **36**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* Recruitment programs warrants a notch of 25%. *RRI Mitigation (Notch)* Availability of workforce training warrants a notch of 25%. The Total Notch (RRL Notch) X (RRI Notch) is 50%. **50%**
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 18 out of 100. **18**

5.5.2 Labour Costs

Risk Information: Minimum wage Saskatchewan $14, will rise to $15 Oct 1, 2024.[119] Even with the anticipated increase, Saskatchewan has a low minimum compared to other provinces and the national average.[120] This risk is deemed low.
Raw Risk Likelihood (RRL) **Score** The risk likelihood is deemed low, therefore the RRL is 4 out of 10. **4**
Raw Risk Impact (RRI) **Score** The risk impact is deemed low, therefore the RRI is 4 out of 10. **4**
Gross Risk Indicator (GRI) **Score** The Gross Risk Indicator (RRL X RRI) is 16 out of 100. **16**
Mitigation/Notching **Notch** *RRL Mitigation (Notch)* No adjustment. *RRI Mitigation (Notch)* No adjustment. The Total Notch (RRL Notch) X (RRI Notch) is NN (No Notch). **NN**
Loaded RI Score **Score** The Loaded RI Score ((1-Total Notch) X GRI Score) is 16 out of 100. **16**

[119] Government of Saskatchewan. https://www.saskatchewan.ca/business/employment-standards/payment-of-wages-and-payroll-administration/minimum-wage-and-reporting-for-duty-pay. Accessed Mar 13, 2024.
[120] Minimum hourly wage rates. https://www.retailcouncil.org/resources/quick-facts/minimum-wage-by-province/. Accessed Mar 20, 2024.

APPENDIX C: TABLES AND FIGURES

Figure C-1. Canadian Canola Production, Processing, and Oil Production[121]

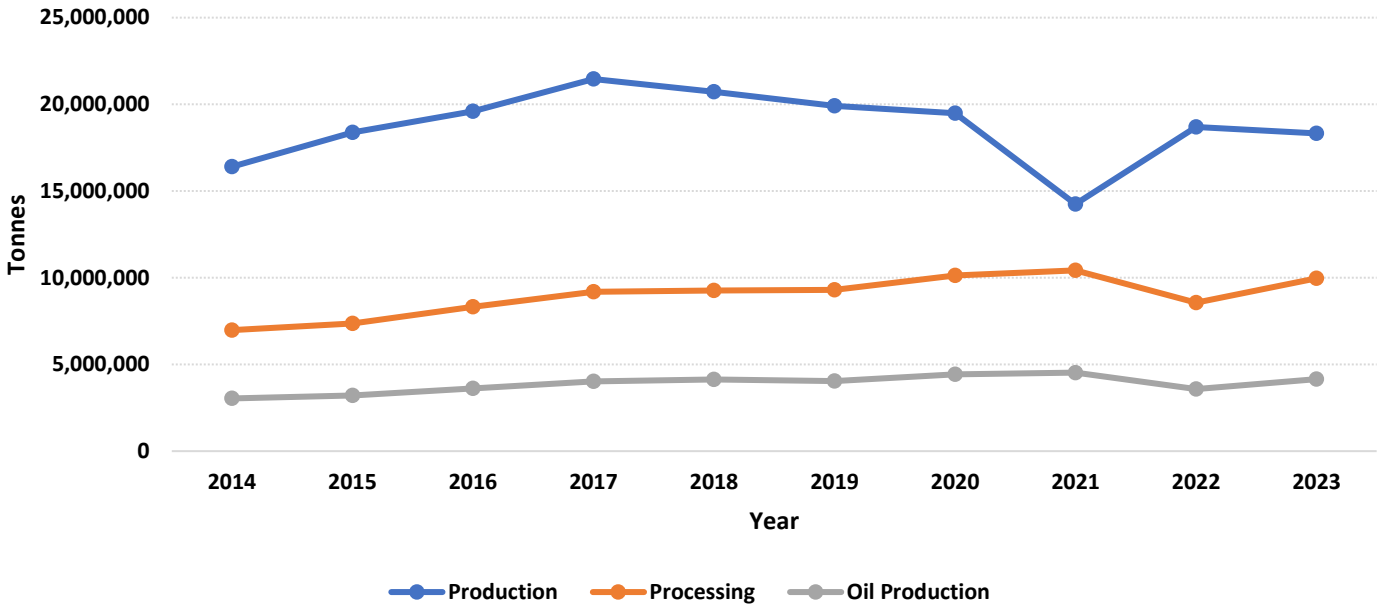


Table C-1. Grain Elevators in Canada

	Provinces								
Type	**AB**	**BC**	**MB**	**NS**	**ON**	**QU**	**SK**	**Total Counts**	**Capacity (Tonnes)**
Primary	91	5	82	0	1	0	175	354	8,400,000
Process	12	1	14	0	1	0	25	53	1,000,000
Terminal	0	10	1	1	15	7	0	34	5,300,000
Totals	103	16	97	1	17	7	200	441	14,700,000

[121] Statistics Canada. Table 32-10-0352-01 – Crushing statistics for canola. https://www.canolacouncil.org/markets-stats/processing/. Accessed Apr 12, 2024.

Figure C-2. Canadian Canola Exports vs Production 2014 – 2023[122, 123]

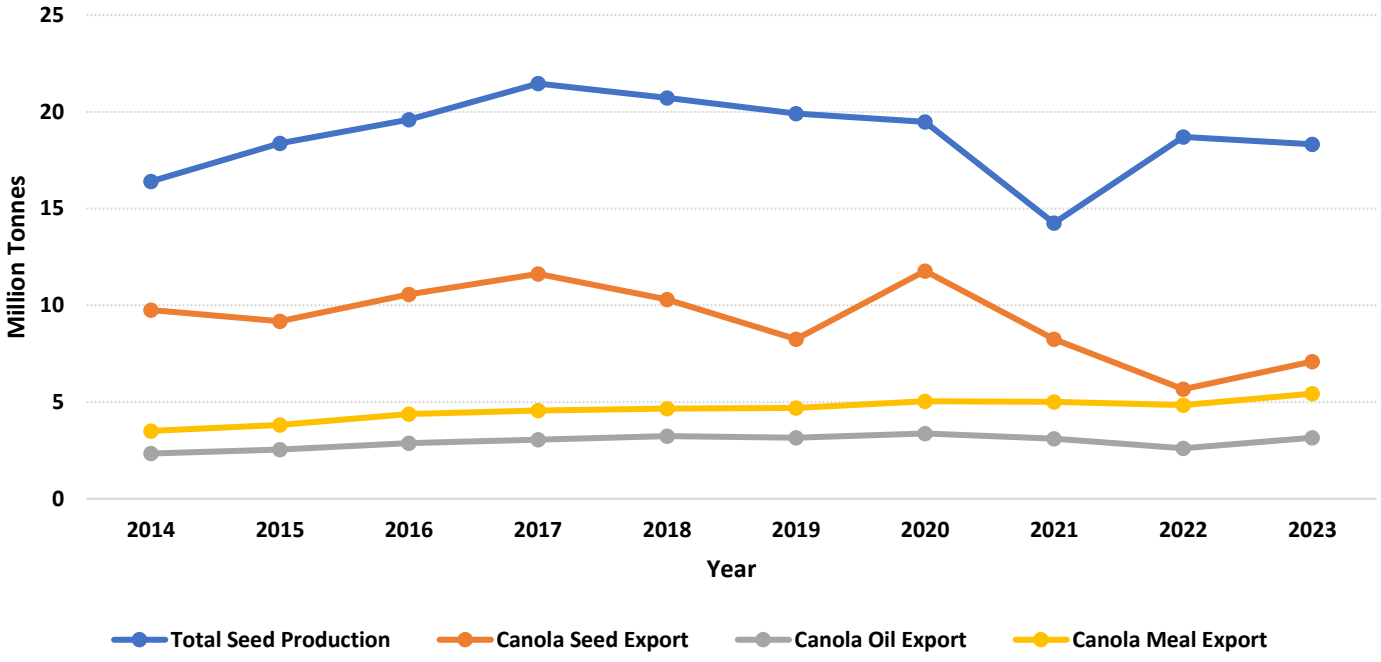
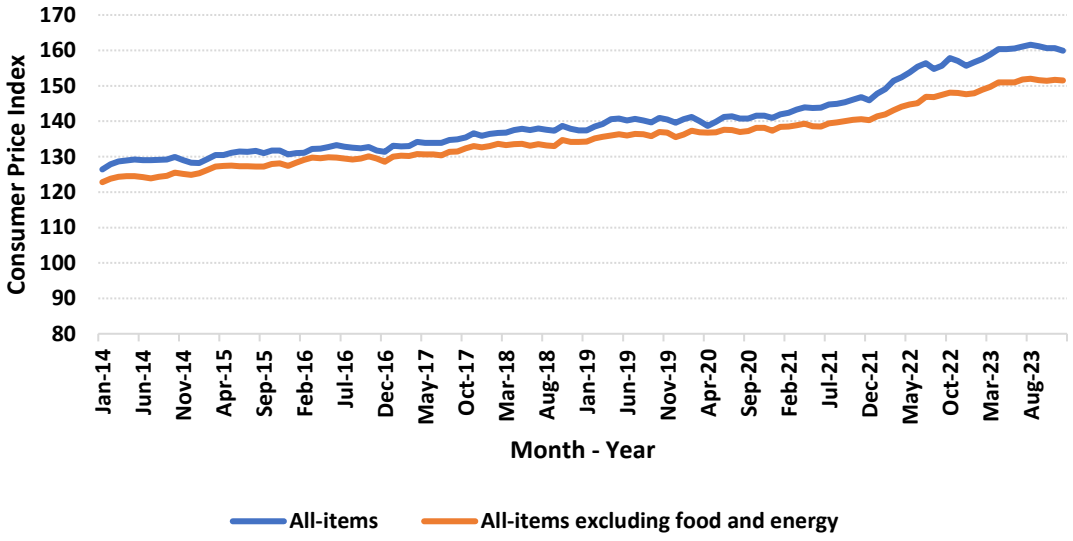
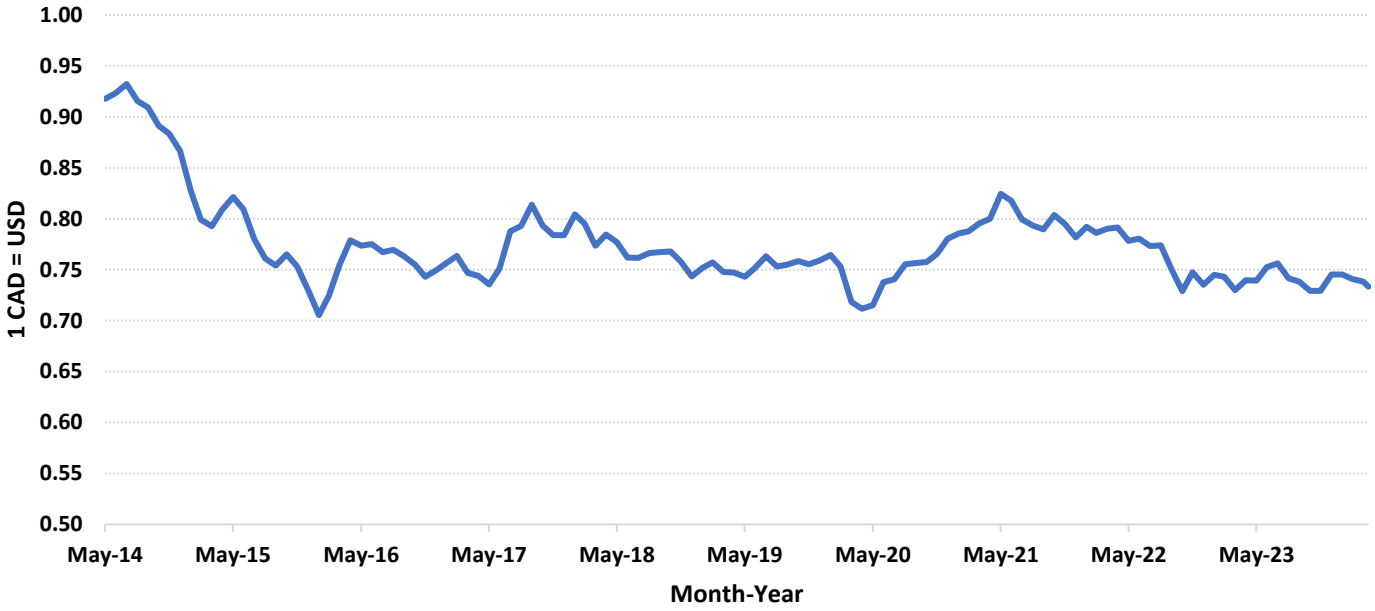


Figure C-3. Saskatchewan Consumer Price Index 2014 - 2023[124]



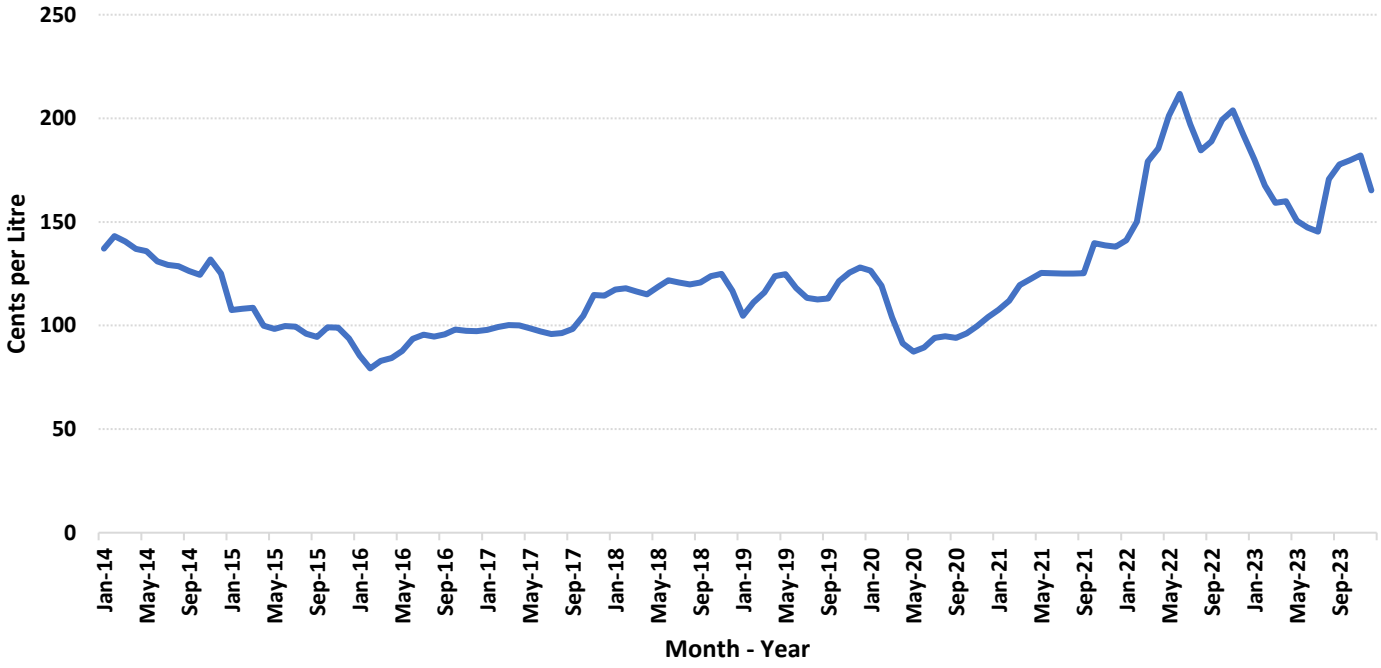
[122] Canadian canola production statistics. https://www.canolacouncil.org/markets-stats/production/. Accessed Apr 10, 2024.
[123] Canadian canola exports - historic. https://www.canolacouncil.org/markets-stats/exports. Accessed Apr 10, 2024.
[124] Statistics Canada. Table 18-10-0004-01 Consumer Price Index, monthly, not seasonally adjusted

Figure C-4. Exchange Rate CAD vs USD 2014 - 2024[125]



[125] OFX Historical Exchange Rates. https://www.ofx.com/en-us/forex-news/historical-exchange-rates/. Accessed Apr 15, 2024.

Figure C-5. Regina, SK Diesel Price 2014 - 2024[126]



[126] Statistics Canada. Table 18-10-0001-01 Monthly average retail prices for gasoline and fuel oil, by geography

APPENDIX D: LEGAL DISCLAIMER

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