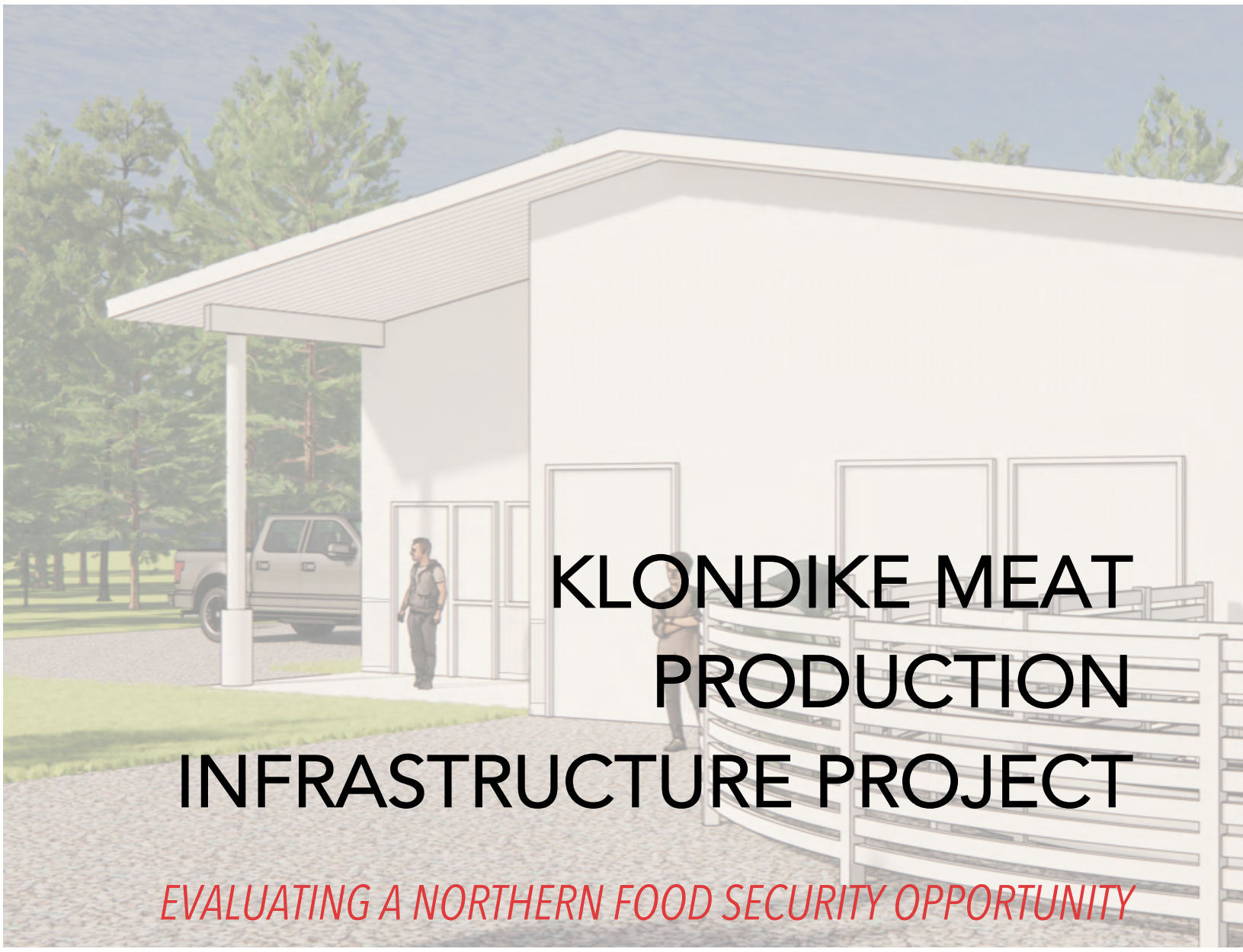
KLONDIKE Farmers Forum



KLONDIKE MEAT PRODUCTION INFRASTRUCTURE PROJECT

EVALUATING A NORTHERN FOOD SECURITY OPPORTUNITY

PREPARED BY: FRASER PEARCE

Final – May 2021

1. Executive Summary

The limited availability of inspected livestock slaughter facilities in the Yukon's Klondike Region may be restricting production growth and farm viability in the area. We examined the feasibility of a terrestrial meat processing facility located near Dawson City to increase availability of inspected meat slaughter services.

Currently, there are approximately 9 producers in the region who raise livestock including pigs, cattle, chicken, turkey, sheep, goat, duck and rabbit. For the purposes of this study, we focused on the most-raised livestock (cow, pig) and most-raised poultry (chicken, turkey).

After consultation with the producers in the region, and with experts in meat processing, we created a concept design for a small-scale abattoir with Class D estimated construction cost of $1,873,846. Cost for equipment is estimated at $403,722. A land parcel that would be leased for minimal cost has been identified by the Government of Yukon's Agriculture Branch near the Dawson City Airport.

The facility would be for slaughter of animals only, there being sufficient processing capacity in Dawson City to handle the volume of dressed meat that would come out of the facility. The design does allow for future expansion should additional cut/wrap capacity be needed to meet demand.

The small scale of production in the region makes it difficult to achieve economies of scale in the operations as the facility would only be open about 60 days in the Year 1, growing to approximately 148 days by Year 5. Research suggests current slaughter fees are about as high as the market would tolerate before producers return to farm-based slaughter and processing. In fact, it's possible fees may already be too high to encourage the 100% uptake necessary to achieve the projections in the financial forecasts. Therefore, revenue potential is limited.

This limited revenue combined with high operating costs of the facility results in projected operating deficits each year ranging from approximately ($95,445) to approximately ($176,563) without government funding. Indeed, the viability of the business will be based largely on the ability of government to provide ongoing support to the project.

A number of government funding programs are available to offset the capital costs of the project. However, ongoing operational funding may be challenging as most programs offer only wage support to targeted groups such as Youth and Indigenous workers. Additionally, government may be hesitant to provide operational support given there are private operators in the territory (if not in the local market).

There are significant benefits to the region and the territory should governments decide to support the facility including:

1. Improved supply chain security: food being produced and processed in the territory travels much less distance to the consumer as compared to meat shipped from southern Canada and so is less susceptible to supply chain disruptions;
2. Job creation: for this small market that is currently experiencing a significant downturn due to COVID-19, the project will generate a small number of jobs and help stabilize farming income;
3. Market growth: increased access by farmers to inspected meat slaughter allows more sales of local product to local grocers and restaurants.

Notwithstanding these benefits, the high cost of construction coupled with the unlikely ability to make the operation profitable lead us to conclude that a permanent meat processing facility in the region is not viable. Exploring additional mobile processing options may be the better avenue to take.

2. Methodology

.1 Functional Analysis

Quantitative data for undertaking the functional analysis was primarily collected through direct survey of producers. Unsuccessful attempts were made to interview Klondike-region grocery retailers so market demand data are extrapolated using publicly available government data.

.2 Concept Design

Qualitative data on design requirements was received through interviews of key producers and meat processing experts. That data was provided to our architect partner to create the concept design. Drafts were reviewed by our team, and select producers, with changes made through 3 revisions.

.3 Project Cost Estimates

Capital cost estimates for equipment required for operating are based on actual quotes received by suppliers recommended by Yukon producers. Construction cost estimates are provided by the architect and are to Class C standard.

.4 Business Planning

The Risk Assessment was performed using qualitative data collected through interviews of key producers in both the Klondike region and other areas in the Territory as well as publicly available government data.

Financial projects are based on labour market data and operating cost estimates provided by comparable operations.

3. Functional Analysis

Functional Analysis data was collected through: interviews with and surveys of key producers in the Klondike Region; publicly available consumer data; and, discussions with subject-matter experts. Data collection occurred from Fall 2020 to Spring 2021.

The data collected showed that the facility should focus on Red Meat (in particular: Pig and Cow) and Poultry (in particular: Chicken and Turkey) to match the livestock being raised by local producers.

.1 Demand Projection

Summary:

Current production results in market share of about 5% of potential beef sales, 63% of potential pork sales and 14% of potential poultry sales. This suggests opportunity to gain market share through displacement of imported meat product if retail and wholesale sales channels can be effectively engaged. Expansion to other, smaller northern markets, where regulatory conditions permit, could significantly increase demand for product from the region.

Discussion:

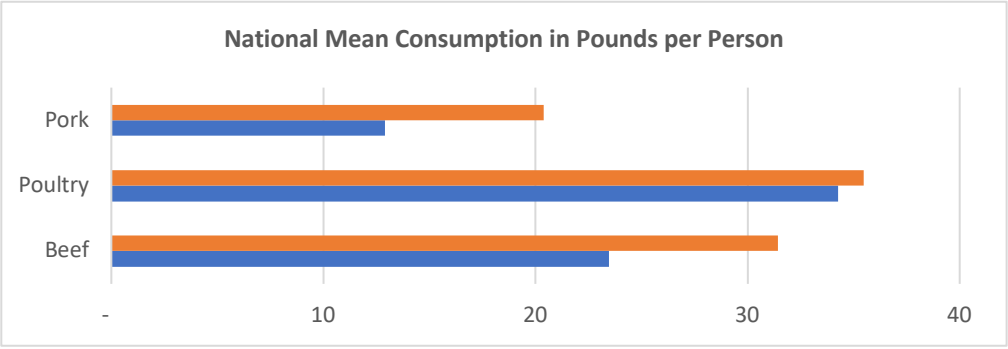
To determine market demand for the facility, the calculation will focus on the four most-husbanded livestock types in the region: Pig, Cow, Chicken and Turkey. Small numbers of Goat, Sheep, Duck and Rabbit are also raised and slaughtered but, currently, market demand appears to be limited to specialty, farm-gate only customers.

In the discussion below, any reference to Poultry can assume to include only Chicken and Turkey.

<u>Consumption of Relevant Animal Products in the Region:</u>

Attempts to collect market-specific sales information from local retailers were not successful, but using data available through Health Canada's Food Consumption Tables[1], we can extrapolate the assumed consumption of beef, pork and poultry products (fresh and processed) in Dawson City to determine demand for beef, pork and poultry products in the market.

The chart below shows national mean beef, pork and poultry consumption in pounds per person in 2004 (■) and 2015 (■).



[1] Health Canada (2015). Food Consumption Table derived from Statistics Canada, Canadian Community Health Survey, Cycle 2.2, Nutrition (2004), Share file. Ottawa.

As the chart shows, beef and pork consumption has dropped sharply (-34% and -58%, respectively) in the period. Poultry has also declined, though less significantly (-3%).

Extrapolating this information to present day, and utilizing Yukon Bureau of Statistics population reporting[2] and Tourism Yukon statistics for visitors for Dawson City[3], we can reasonable calculate that present day consumption of beef, pork and poultry may look like this:

Meat Type	Annualized Change 2004 - 2015 (%)	Annualized Change 2004 - 2015 (lbs)	Base Year Estimated Per Person Consumption (lbs)	Base Year Estimated Resident Market Consumption (lbs)	Base Year Estimated Visitor Market Consumption (lbs)	Base Year Estimated Total Market Consumption (lbs)
Beef	-3%	-0.72	19.85	45,587	7,747	53,334
Pork	-5%	-0.68	9.53	21,884	3,719	25,603
Poultry	-0.3%	-0.11	33.73	77,474	13,166	90,640

Some considerations when interpreting the results of this extrapolation are:

Consideration	Discussion
Data Source	The consumption data used is compiled from a national mean excluding the 3 territories. It is based on southern population's food consumption patterns, which may be less meat-intensive than a typical northern diet when wild game is considered.
Data Collection	The consumption data is compiled using a 24-hour consumption recall technique so does not necessarily provide the same accuracy as recording food consumption over a longer period.
Visitor Trends	Estimated visitor consumption is based on annualized visitor numbers and, so, do not reflect the typical seasonality of Dawson's visitor traffic.
Residency Trends	Estimated Resident Market Consumption is based on year-round residency and, so does not take into account seasonal resident in- and out-migration.
Visitor Data Period	Visitor numbers used are based on pre-pandemic travel trends. It may take a number of years before visitation returns to pre-pandemic levels in the region. As such, Base Year estimated visitor and total market consumption as shown is likely higher than actual consumption but are reasonable for long-term business planning purposes.
Seasonal Employment	The impact of seasonal employment is not factored into the analysis due to lack of reliable data. Anecdotal data suggests that - pre-pandemic - up to 1,000 seasonal employees lived in Dawson between May and September. Approximately 30% could be mine-sector workers working placer mines in the area. The remainder are service- and tourism-sector employees.

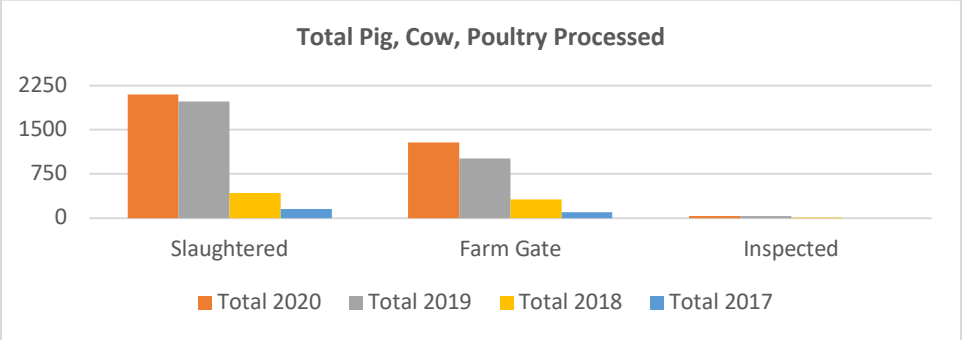
[2] Yukon Bureau of Statistics, Population Report First Quarter 2020, July 2020

[3] Yukon Bureau of Statistics, Visitor Exit Survey 2017/2018

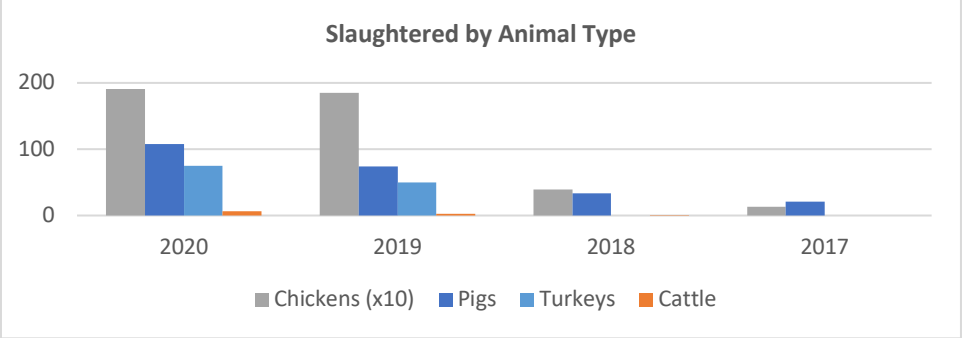
Consideration	Discussion
Mining Expansion	There is at least one large scale hard-rock mine in the region set to begin operation in the next few years. This could bring a significant number of shift workers to the area, boosting demand. This was not factored into the extrapolation.
Country Foods	While we were unable to find numbers specific to the Yukon, neighbouring Northwest Territories[4] suggests between 20% and 40% of households in smaller, highway accessible communities obtain their meat through wild game harvesting. It would be reasonable to assume Dawson City sees a similar level of households consuming wild game, thereby reducing market consumption of beef and poultry products.

Slaughtering Trends in the Klondike Region:

To understand slaughtering trends in the Klondike Region plus Mayo, we surveyed 9 of the largest producers and were provided data from the Agriculture Branch of the Government of Yukon. Since 2017, there has been a significant increase in slaughtered animals with a corresponding increase in Farm Gate Sales from each of the farms surveyed (as shown in the chart below). Inspected slaughter has also grown, but far less significantly due to there only being – on average – 2 or 3 inspected slaughter days in the region annually since 2017. A couple of producers have trialed transporting livestock to Whitehorse to access inspected slaughter more frequently, but found it was cost prohibitive.



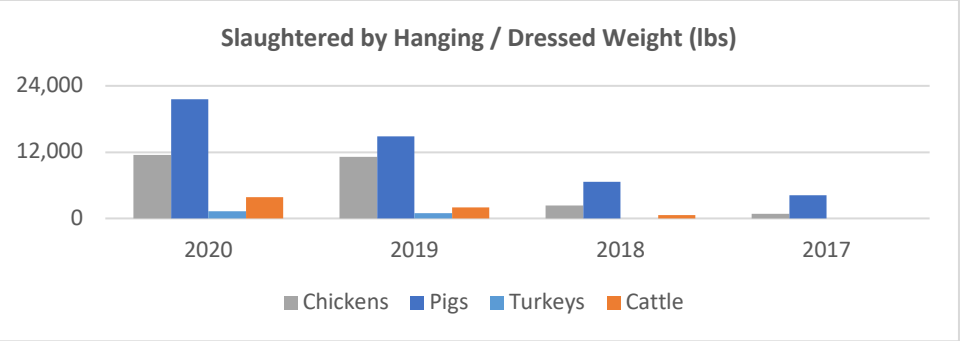
Chicken was the main driver behind the growth in slaughtered animals in the last 4 years, but pigs and turkeys also saw meaningful increases (as shown). Note that to keep scale comparable, the chart shows 1/10th chicken slaughter count.



[4] NWT Bureau of Statistics, Traditional Activities

Using average weights per animal type as shown in the table, we can calculate estimated total pounds of meat slaughtered in the region since 2017, as shown in the chart.

Animal	Average Dressed Weight in lbs (Type)
Pig	100 (side)
Cow	325 (side)
Chicken	6 (whole carcass excluding giblets)
Turkey	18 (whole carcass excluding giblets)



Estimated Regional Market Share:

Current market share can be estimated taking the extrapolated consumption data and the slaughtered dressed weight of each animal type as below:

Meat	2020 Market Consumption (lbs)	2020 Dressed Weight (lbs)	2020 Cut and Packed Weight[1] (lbs)	Estimated Total Market Share
Beef	53,334	3,900	2,925	5%
Pork	25,603	21,600	16,200	63%
Poultry	90,640	12,810	12,810	14%

[1] For Beef and Pork, Cut and Package Weight is assumed to be 75% of Dressed Weight.

Certainly these estimates suggest there is opportunity for increased market penetration if greater slaughtering capacity was available in the market, in particular with beef and poultry products. Growth of market share will depend on the ability to address four considerations:

Consideration	Discussion
Stability of Demand	The forecasts provided here assume demand will stay stable between animal types, where it's possible that current market demand is skewed due to availability of a particular animal. For example, there is significantly more pork processed in the region than beef, due to supply. As beef supply increases, demand may shift to that meat thereby shifting share accordingly.

Consideration	Discussion
Seasonality of Supply	Demand estimates are based on year-round, consistent access to product in the market. The vast majority of local product is currently only available in the market seasonally – typically late summer and early fall. So where 2020 market share may appear limited (as with beef and poultry) on an annual basis, it may in fact be that market penetration is much higher in the period that the product is available.
Sales Channels	A corollary of the seasonality of supply is that the sales channels used – especially farm gate sales – are adapted to current availability of the product. Growing market share will require adding new sales channels that are less seasonally dependent, such as retail (grocery) and wholesale purchasers.
Inspected vs. Non-inspected Meat	The vast majority of regional production is currently non-inspected meat, just shifting to inspected meat product will not change market penetration. Production will have to increase in order to make product available in new sales channels.
Displacement of Imported Product	National trends showing a decrease in meat consumption suggest there is no room for expansion of the overall market size. Growing market share will require displacement of imported product from retail and wholesale channels.

Market Opportunities Outside the Region:

As local production grows, and market share increases to maximum achievable in the region, producers could look outside the immediate region for sales opportunities. The table below summarizes possible markets for Klondike producers. Where product will cross territorial boundaries, regulatory conditions must change or the facility would have to meet Canadian Food Inspection Agency (CFIA) standards before sales would be possible. Given the concentration of farms in Whitehorse and the southern areas of the Territory, it is not recommended that Klondike region producers try to enter these markets as transport costs would be prohibitive to offering competitive pricing.

Region	Population	Est. Meat Consumption (lbs, all types)
NWT Beaufort Delta[5] (excluding fly-in only communities)	5,321	335,765
Yukon[6] (North, Silver Trail, Campbell)	1,903	120,083

.2 Capacity Estimates

Summary:

There is capacity amongst local producers to grow herd and/or flock size to increase availability of locally produced meat product for the market. Except for pork, projected growth will not be sufficient to meaningfully displace imported meat in the market. The proposed meat processing facility provides significantly more slaughter capacity than will be required in the region for the foreseeable future, but

[5] Government of Northwest Territories, NWT Bureau of Statistics, Quarterly Population Estimates
[6] Yukon Bureau of Statistics, Population Report First Quarter 2020, July 2020

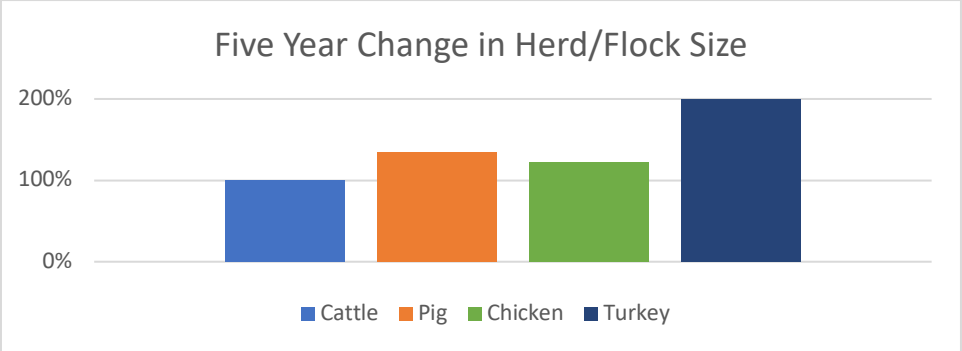
cannot be scaled down further without complicating the inspection process and risking non-compliance with regulatory requirements.

Discussion:

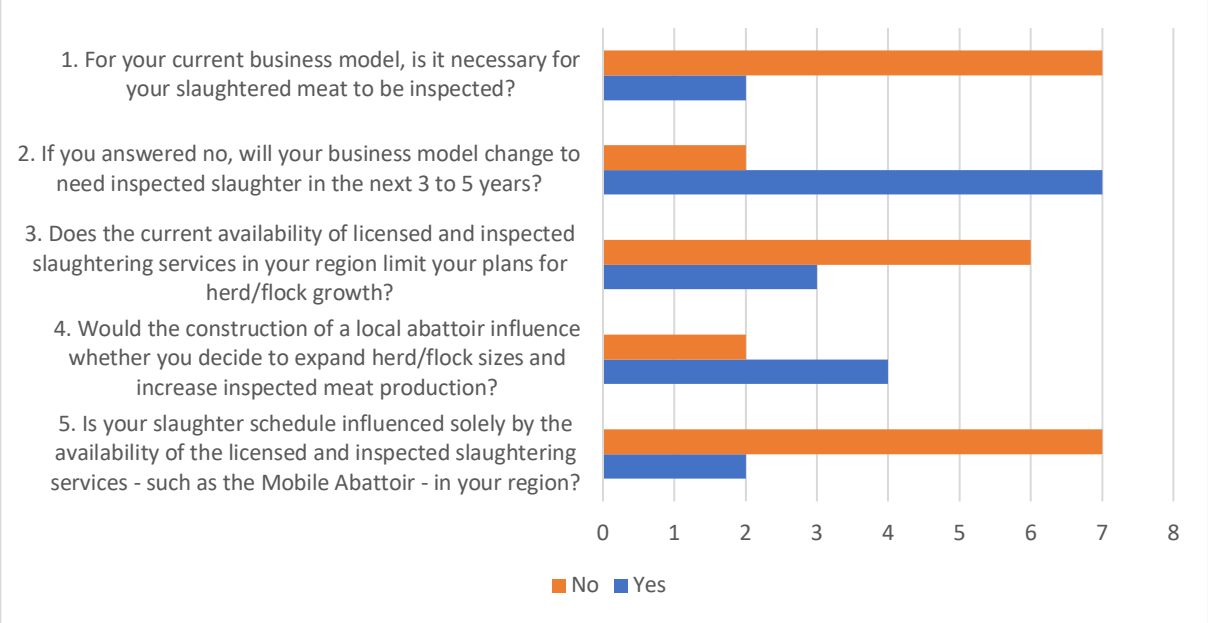
Producer Capacity:

The key factor to increasing market share of consumed meats in the region will be that producers must increase herd and flock size so to provide more product with less seasonality to the market. Our interview, and a survey administered by the Klondike Development Organization[7] in spring 2020 (question 4 in the summary chart), sought to understand desire to expand production amongst the region's producers.

In the survey conducted by the Klondike Farmers Forum (KFF) in Spring 2020, producers projected growth in herd and flock size for all four animal types discussed.



A number of questions in our interview sought to understand if slaughtering practices would change with the introduction of a meat processing facility in the region.



[7] Klondike Development Organization, Klondike Farmers Survey Full Summary, March 2020

The questions above, and the data from the KFF Survey, allow us to draw the following conclusions:

1. Producers have adapted their business model to the available slaughtering services but at least half would move to inspected slaughter services, if it were available regularly.
2. Most producers have flexibility in their slaughter schedule and could adapt if inspected slaughter services were more regularly available.
3. Most producers would grow their herds or flocks if inspected slaughter were available more regularly.

Applying the projected growth to 2020 slaughter counts, we can project changes in production and their impacts on market share in 5 years:

Meat	Change in Slaughtered Animals	Change in Dressed Weight (lbs)	Change in Cut and Packed Weight[!] (lbs)	Change in Market Consumption[^] (lbs)	Change in Estimated Total Market Share
Beef	+10	+6,500	+4,875	+1,535	+11%
Pork	+135	+27,000	+20,250	-4,057	+141%
Poultry	+1,200	+10,800	+10,800	+5,738	+10%

[!] For Beef and Pork, Cut and Package Weight is assumed to be 75% of Dressed Weight.

[^] Market consumption is calculated using population projections from Yukon Bureau of Statistics[8] and 2020 visitor numbers.

The forecasted decline in beef consumption in the period is offset by population growth and slaughter volume resulting in a meaningful increase in market share. Poultry share climbs similarly to beef as projected growth in slaughtered animals combined with population growth outpaces the slow decline in consumption.

Despite forecasted decline in pork consumption, the forecasted population growth combined with forecasted increase in pork production means market share would exceed 100% in the forecast period. Excess meat will have to be sold to markets outside the region (i.e. North or Central Yukon or NWT). As discussed earlier, it is also possible that local pork production has already reached maximum potential market share due to the seasonality of the product. The introduction of an inspected slaughter facility will help reduce the seasonality of product if producers adjust herd and flock management. However, if that doesn't happen or if additional markets can't be developed, the projected herd growth may not materialize as farmers realize no revenue growth for the additional animals raised and, therefore, scale back herd growth plans.

Facility Capacity:

Many factors determined the outcome of the facilities design, and a detailed discussion of the decision-making process that led to the design follows in the Concept Design section. To determine facility capacity we analyzed quantitative and qualitative data provided through interviews of producers, a local butcher, an existing poultry processing operation in the territory and the operators of the Government of Yukon Mobile Abattoir. The outcome of this analysis is shown below.

[8] Yukon Bureau of Statistics, Population Projects 2020 – 2040, September 2020

Animal Type	Average Processing Time (Minutes)	Animals Per Shift	Potential Annual Operating Capacity	Projected Operating Days Year 1[i]	Projected Operating Days Year 5[i]
Chicken	8	45	11,340	43	105
Turkey	20	18	4,536	4	13
Beef	90	4	1,008	2	3
Pork	40	9	2,268	12	28

[i]Rounded to the nearest day

Key assumptions:

- Facility will operate with 3 staff per side. So if both sides are running concurrently, this is 6 staff on site.
- Processing time for beef and pork is kill to dress and does not include cooling.
- Processing time for chicken and turkey is kill to dress and post-cool packing, but does not include cooling time
- Annual operating capacity assumes 252 work days in the year.
- Projected operating days based on 100% of animals in the region being slaughtered at the facility.
- Except for plucking and scalding/dehairing, it is assumed that processing of all animal types is entirely manual (with mechanical assistance for moving carcasses).
- Processing time estimates for beef and pork are based on the Mobile Abattoir while chicken and turkey are scaled accordingly from the existing poultry processor.
- Scaling down below these volumes to increase operating days and decrease overall facility capacity becomes impractical from a staffing and pricing perspective as most equipment scoped for this project is the smallest available while maintaining commercial grade.
- Consolidating to a combined line may complicate the inspection process as changeover between meat types will require equipment change, cleaning and decontamination time adding to labour costs.

.3 Site Selection

Summary:

Prior to the commencement of this project, the Yukon Agriculture Association and the Klondike Farmers Forum engaged the Government of Yukon's Agriculture Branch to identify available land parcels. A site near the Dawson City Airport was identified as suitable for the usage requirements of a meat processing facility.

Access to the site for producers in West Dawson will be limited during freeze up and thaw, and for producers on the north side of the Klondike River during spring, summer or fall.

Discussion:

Site Requirements:

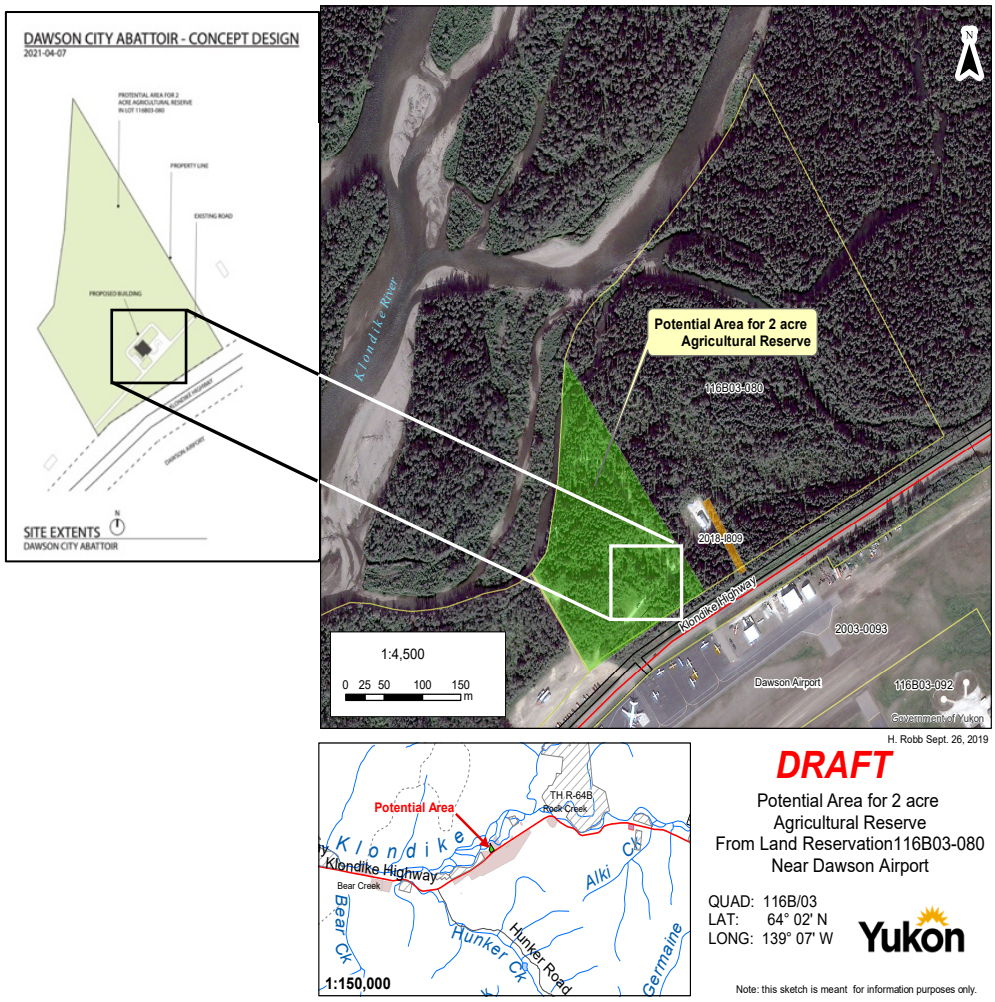
Considerations for site location were broadly classified into the following, non-exhaustive categories. A detailed site assessment was not completed under the scope of this project, so the assessment provided below is done solely on viewing the aerial plan provided by the Agriculture Branch and familiarity with the land immediately surrounding the Dawson City Airport.

Category	Consideration	Assessment
Access	Is the site close enough to producers for easy transport of animals?	The site is relatively central. However, there will be limits to access for producers on the opposite sides of the Yukon and Klondike Rivers during certain periods of the year when river conditions do no permit travel.
	Is the site close enough for easy transport of carcasses to processors?	Yes, under proper transport conditions (cooled) carcasses will easily be transported. It is approximately 15 minutes into Dawson City.
	Is the site close enough for workers to easily commute?	It is not easily accessible without a personal vehicle.
Buildability	Is the site suitable for this kind of operation?	It is separate from residential areas or other types of zoning areas that may be of concern.
	Is the site in a condition that doesn't require significant site preparation before building?	It appears to be a flat with an existing access road. No geotechnical analysis was completed.
	Is the site level enough for building?	It appears to be a relatively flat parcel.
	Can snow melt be mitigated?	There is no indication that on-site snow melt will be an issue. High water from the Klondike River may be a consideration.
Animal Handling	Is the site level enough for animals to easily be unloaded?	It appears to be a relatively flat parcel.
	Is the site level enough for animals to be easily moved into the facility?	It appears to be a relatively flat parcel.
	Is there space to properly corral and protect animals from the weather prior to slaughter?	It appears to have space for properly protected corral space.

Category	Consideration	Assessment
Services	Can power be provided to the site?	Yukon Energy has confirmed they can provide one- or three-phase power to the parcel.
	Is there sufficient water onsite or can it be safely delivered?	Water will be trucked from City of Dawson supply for storage in a cistern.
	Is there sufficient sewer onsite or can septic be safely installed?	Septic will be pumped and dumped to the City of Dawson treatment facility.
Neighbourly	Is the site located where facility noise and smell will not unreasonably disturb neighbours?	It appears to be sufficiently separate from residential areas or other zoning where facility activities would be a disturbance.
	Is the site located where disposal of waste will not unreasonably disturb neighbours?	Investigation will be needed to understand the best way to dispose of facility waste. Further discussion on this appears in the Business Risk Assessment.
	Is the site located where traffic in and out will not unreasonably disturb neighbours?	It appears that facility traffic will not impact neighbours.

Site Location:

The Agriculture Branch is recommending this site, a parcel that is being removed from land held by Yukon Wildland Fire as shown in the aerial plan below. The site appears to meet most of the requirements discussed above.



4. Concept Design

Summary:

The proposed design balances functionality, cost and the region's processing needs to create a facility that can be expanded as required. It is a slaughter-only, mixed meat processing facility that can process both white and red meats simultaneously, allowing for some efficiency of operations. Slaughter demand is not projected to be high enough for the facility to be open year-round, so the design allows a relatively easy to close down / winterization of the facility.

The facility is not designed to a CFIA standard as it was deemed an unnecessary expense. It would be possible to add the necessary space to meet these standards in future phases.

Discussion:

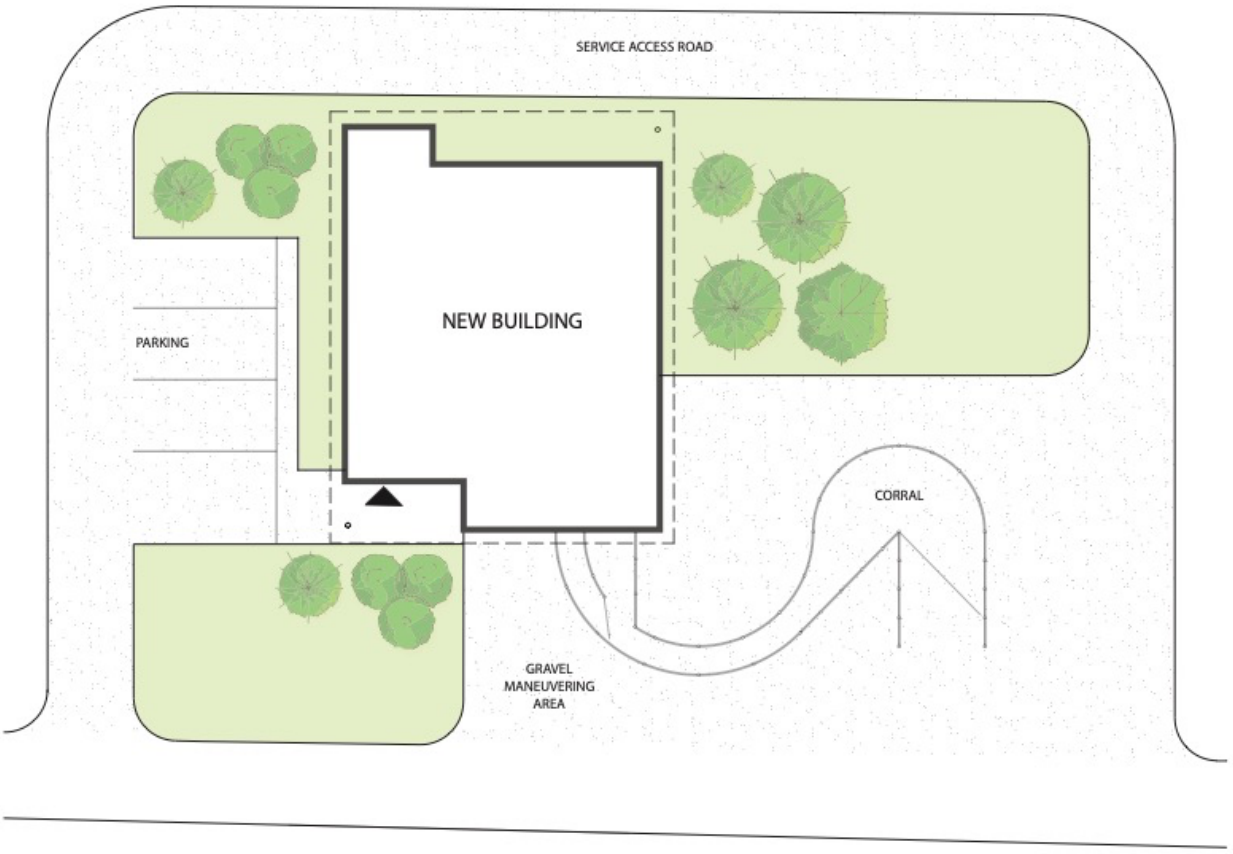
The table below summarizes factors that were considered when developing the concept design.

Consideration	Findings	Outcome
Cut and Wrap Facility	Interviews with the local butcher indicated that there was sufficient cut and wrap capacity in the region, but that it was often taxed in the fall during the highest volume period for slaughtering. By introducing more slaughter capacity in other periods of the year, it will spread the demand on the butcher facilities allowing them to process meat within their existing facilities.	A cut and wrap facility is not included in this design, but the floor plan is designed in such a way that a cut and wrap facility can be added in future.
White Meat Processing	Combined poultry types make up the majority of animals raised in the region. Most producers interviewed indicated they would grow their poultry flocks if a facility were available for slaughter and processing.	A white meat processing line is included in the facility.
Red Meat Processing	Pigs slaughters are one of the fastest growing type of meat being processed in the region (by percent growth and by weight). They are also, currently, make up the vast majority of meat being inspected at slaughter. Cattle have not regularly been slaughtered as inspected meat in the region due to the timing of inspected slaughter services being in the fall, when it is needed in late winter / early spring. More frequent availability of slaughter services will allow the local dairy farm to have their cattle slaughtered at an inspected facility during winter.	A red meat processing line is included in the facility.

Consideration	Findings	Outcome
Cold and Frozen Storage	Interviews with producers and the butcher suggested cooled storage of dressed carcasses while waiting for the butcher to process them was limited. Producers expressed interest in the availability of shared cooler / freezer space to supplement on-farm cold storage space.	The facility has cooler and freezer storage that could be available for local producers to store their dressed red meat carcasses prior to processing or for storage of bagged poultry carcasses prior to delivery to the customer.
Operational Days	The number of animals currently being raised in the region do not require a full-time processing facility.	The facility was designed to be relatively easy to shut down – including winterization – with such features as cistern and pump-out septic to reduce issues that may develop as a result of low use of wells and septic fields.
Canada Food Inspection Agency Compliance	Under Division 7 of the Safe Food for Canadians Regulations[9], CFIA has a number of regulatory requirements that meat processing facilities must follow in order to be certified CFIA facilities, thereby allowing meat processed in the facility to be sold interprovincially/territorially. Currently, Yukon's regulatory requirements for meat processing are not CFIA compliant[10]. Some of the CFIA requirements – in particular the separate office, shower, washroom and change area – would add significant cost to the facility without a corresponding increase in benefit due to a lack of CFIA inspectors in the territory. Additionally, the forecasted volume of meat being processed in the facility may not be high enough to support an export market to neighbouring jurisdictions, negating the need for CFIA inspection.	The design is not CFIA compliant, largely due to the lack of dedicated inspector office space. These components could be added in later phases.

[9] Government of Canada, Safe Food for Canadians Regulations (SOR/2018-108)
[10] Government of Yukon, Agricultural Products Act, Meat Inspection and Abattoir Regulations

.1 Site Plan



SITE PLAN
DAWSON CITY ABATTOIR

.2 Elevations

VIEW OF ANIMAL ENTRANCES
DAWSON CITY ABATTOIR

VIEW OF MAIN ENTRANCE
DAWSON CITY ABATTOIR

VIEW OF SERVICE ENTRANCE
DAWSON CITY ABATTOIR

.3 Floor Plan

FLOOR PLAN
DAWSON CITY ABATTOIR

.4 Drainage Plan

DRAINAGE PLAN
DAWSON CITY ABATTOIR

.5 Lighting Plan

A detailed lighting plan is not included in the concept drawing package, however, costing includes the necessary allowance to meet lighting requirements for a slaughtering facility.

5. Project Cost Estimates

.1 Construction

Summary:

The Class D estimate construction cost for this facility (excluding equipment needed for operation) is $1,873,846.

Details:

DAWSON ABATTOIR						
CLASS D COST ESTIMATE						
Kobayashi + Zedda Architects Ltd.						
07-04-2021						
Total Gross Floor Area:	2198	f^2				
Element	Quantity	Unit	Rate	Amount	Rate/f^2	Percent
GENERAL REQUIREMENTS						
Permits	1	allowance	$2,000	$2,000		
Bonding & Insurance	1	allowance	$2,000	$2,000		
Mobilization & Demobilization	1	allowance	$5,000	$5,000		
Waste Management & Cleaning	1	allowance	$2,500	$2,500		
Travel/Hotels, LOA	1	allowance	$12,000	$12,000		
Supervision & Management	1	allowance	$25,000	$25,000		
Subtotal				*$48,500*	*$22*	*4%*
SITE WORK						
Site Preparation	1	allowance	$15,000	$15,000		
Gravel Parking and Roadways	9110	sq.f	$8	$75,613		
Wood Corral and Fencing	200	linear feet	$200	$40,000		
Subtotal				*$130,613*	*$59*	*10%*

DAWSON ABATTOIR						
CLASS D COST ESTIMATE						
Kobayashi + Zedda Architects Ltd.						
07-04-2021						
Total Gross Floor Area:	2198	f^2				
Element	Quantity	Unit	Rate	Amount	Rate/f^2	Percent
SUBSTRUCTURE						
Allowance for Concrete Pad and Strip Footing	2198	sq.f	$23	$50,554		
Excavation (13 feet deep)	28574	cubic ft	$2	$65,720		
Backfill (13 feet)	28574	cubic ft	$2	$65,720		
Subtotal				*$181,994*	*$83*	*13%*
STRUCTURE						
Roof Construction (1/2" OSB sheathing on pre-engineered wood trusses c/w R60 batt insulation, 6mil vapour barrier, 2x4 wood strapping, 5/8" GWB)	2893	sq.f	$37	$107,041		
Exterior Columns	30	ft	$18	$540		
Misc. Structural for Hoist	1	allowance	$2,000	$2,000		
Subtotal				*$109,581*	*$50*	*8%*

DAWSON ABATTOIR						
CLASS D COST ESTIMATE						
Kobayashi + Zedda Architects Ltd.						
07-04-2021						
Total Gross Floor Area:	2198	f^2				
Element	Quantity	Unit	Rate	Amount	Rate/f^2	Percent
EXTERIOR ENCLOSURE						
Roof Covering (Clip metal roof)	2893	sq.f	$32	$92,576		
Exterior Walls (Corrugated metal, strapping, 2" semi-rigid rock wool insulation, olifin air barrier, 1/2" plywood sheathing, 2x6 wood stud, 6" batt insulation, 6mil vapour barrier, 1x4 wood strapping, 2x3 wood stud, 3" batt insulation, 5/8" GWB)	2670	sq.f	$37	$98,790		
Vinyl Triple-Glazed Windows	84	sq.f	$104	$8,736		
Metal Doors	6	no.	$3,500	$21,000		
Coiling Doors	3	no.	$8,500	$25,500		
Subtotal				*$246,602*	*$112*	*18%*
INTERIOR FINISHES						
Metal Doors & Hardware (3')	12	units	$2,500	$30,000		
Sliding Doors and Hardware (5')	1	no.	$3,500	$3,500		
Sliding Fridge / Freezer Doors (5')	5	no.	$8,500	$42,500		
Wall Construction (2x4, batt, gwb)	3510	sq.f	$16	$56,160		
Flooring (concrete sealer)	2198	sq.f	$4	$8,133		
Washable Wall Protection	4200	sq.f	$7	$29,400		

DAWSON ABATTOIR						
CLASS D COST ESTIMATE						
Kobayashi + Zedda Architects Ltd.						
07-04-2021						
Total Gross Floor Area:	2198	f^2				
Element	Quantity	Unit	Rate	Amount	Rate/f^2	Percent
INTERIOR FINISHES CONT'D						
Freezer Panel						
Kitchen Millwork	5	lin.f	$530	$2,650		
Office Furniture	1	allowance	$7,500	$7,500		
Storage Room Shelving	1	allowance	$1,000	$1,000		
Misc. Specialties (coat hooks, whiteboards, etc.)	1	allowance	$2,500	$2,500		
Washroom Accessories	1	allowance	$1,000	$1,000		
Sealants	1	allowance	$1,000	$1,000		
Latex Paint (walls / ceilings)	3608	sq.f	$2	$7,685		
Hoists and Rails	1	allowance	$30,000	$30,000		
Subtotal				*$223,028*	*$101*	*16%*
MECHANICAL						
O+M Manual, Record Drawings	1	allowance	$1,500	$1,500		
Insulation (plumbing, heating, venting)	1	allowance	$12,500	$12,500		
Seismic Engineering	1	allowance	$2,000	$2,000		
TAB Report	1	allowance	$3,500	$3,500		
Fire Extinguishers	1	allowance	$1,750	$1,750		
Plumbing - Equipment and Material	1	allowance	$15,000	$15,000		

DAWSON ABATTOIR						
CLASS D COST ESTIMATE						
Kobayashi + Zedda Architects Ltd.						
07-04-2021						
Total Gross Floor Area:	2198	f^2				
Element	Quantity	Unit	Rate	Amount	Rate/f^2	Percent
MECHANICAL CONT'D						
Plumbing - Equipment and Material	1	allowance	$22,500	$22,500		
Plumbing - Labour	1	allowance	$17,500	$17,500		
Heating - Equipment and Material	1	allowance	$12,500	$12,500		
Heating - Labour	1	allowance	$7,500	$7,500		
Cooling - Equipment and Material	1	allowance	$12,500	$12,500		
Cooling - Labour	1	allowance	$6,500	$6,500		
Ventilation - Equipment and Material	1	allowance	$19,000	$19,000		
Ventilation - Labour	1	allowance	$10,000	$10,000		
Controls	1	allowance	$7,500	$7,500		
Commissioning	1	allowance	$4,250	$4,250		
Refrigeration System (includes freezer panels, refrigeration units, piping)	1	allowance	$145,000	$145,000		
Subtotal				*$301,000*	*$137*	*22%*
ELECTRICAL						
YEC Utility Service	1	allowance	$50,000	$50,000		
Electrical Distribution	1	allowance	$5,000	$5,000		

DAWSON ABATTOIR						
CLASS D COST ESTIMATE						
Kobayashi + Zedda Architects Ltd.						
07-04-2021						
Total Gross Floor Area:	2198	f^2				
Element	Quantity	Unit	Rate	Amount	Rate/f^2	Percent
Building Power System	1	allowance	$20,000	$20,000		
Building Communication System	1	allowance	$2,000	$2,000		
Building Lighting and Control Systems	1	allowance	$15,000	$15,000		
Emergency Lighting & Exit Signage	1	allowance	$2,500	$2,500		
Intrusion Detection System and Security System Camera Rough-in	1	allowance	$10,000	$10,000		
Processing Area specific power connection and lighting systems	1	allowance	$15,000	$15,000		
Subtotal				*$119,500*	*$54*	*9%*
SUB-TOTAL CONSTRUCTION COST				**$1,360,818**	**$619**	
OVERHEAD & CONTINGENCIES						
Overhead and Profit		15%		$204,123		
Design & Construction Contingency		20%		$272,164		
NET CONSTRUCTION COST				**$1,837,104**		
Escalation		2%		$36,742		
TOTAL CONSTRUCTION COST				$1,873,846		

.2 Equipment

Summary:

The Class D estimate for equipment necessary to operate the facility is $403,722.

Discussion:

Equipment pricing is based on quotes from suppliers. A 15% shipping allowance is added.

RED MEAT PROCESSING			
Item	**Unit Cost**	**Units**	**Total**
Kill box (cattle)	$84,814	1	$84,814
Squeeze box (pig)	$26,014	1	$26,014
Electric stunner and/or captive bolt gun	$2,495	1	$2,495
Hoists	$3,414	3	$10,242
Gambrels (hog and beef)	$44	20	$872
Rail system	$19,117	1	$19,117
Hooks	$85	20	$1,693
Inspection Carts	$5,000	1	$5,000
Skinning Cradle	$5,000	1	$5,000
Scalder / Dehairer with ejector on wheels[i]	$19,286	1	$19,286
Waste trolley x 2 (for offal / hide)	$600	2	$1,200
Splitting Saw	$6,666	1	$6,666
Knife sets	$350	2	$700
Knife scalder	$350	1	$350
Knife sharpener/grinder	$300	1	$300
Stainless Carts / Trucks	$400	3	$1,200
Shelving (Freezer and Cooler)	$3,613	1	$3,613
PPE (ST Boots, Arm Guards)	$750	3	$2,250
Red Meat Subtotal			*$190,813*

WHITE MEAT PROCESSING			
Item	**Unit Cost**	**Units**	**Total**
Completely Automated Poultry Processing System[iii]	$136,000	1	$136,000
Kill conveyor including shackles			
Stun knife and controller			
Kill Box / Bleeding trough			
Rinse Tub			
Scalder			
Plucker			
Cooling Tub			
Eviscerating Conveyor and Trough			
Insulated cooling totes	$1,500	4	$6,000
Ice Maker	$5,500	1	$5,500
Pallet truck	$1,000	1	$1,000
Shelving (Freezer)	$2,000	1	$2,000
PPE (Smocks, Aprons, Gloves, Caps, Face Shield, ST Boots, Arm Guards)	$750	3	$2,250
White Meat Subtotal			*$152,750*
Furnishings (Staff Area, Offices, Appliances)[iv]			$7,500
Shipping Allowance (15%)			$52,659
TOTAL EQUIPMENT[ii]			$403,722

Notes on equipment pricing:

i. A quote for a scalder was received, but did not include shipping. The unit has been purchased by other facilities in the territory and so the pricing shown is the quote from the manufacturer plus estimated shipping based on prior orders.
ii. In some cases, equipment is imported from outside North America and may be subject to import duties. Those duties are not included in the total shown.
iii. Pricing provided here is for an automated system that processes approximately 500 birds per hour. This is a larger system than required for the project, but the only complete system for which pricing was received. The system's processing rate was not utilized to calculate facility production.
iv. Office furniture is costed in the Building Cost Estimate. This amount is for additional allowance.

6. Business Planning

.1 Risk Assessment

Summary:

As with any proposed business, there are significant risks associated with building and operating this facility. The two most significant risks are staff retention and funding. Training and retraining before commencing operations will have a significant impact on the cost of operations. The opening of a meat processing facility in an adjacent region may jeopardize access to funding for capital and operating costs.

Discussion:

Every new business faces a significant number of risks that may prevent it from becoming successful. In that, this facility is not unique. To help identify and mitigate those risks, the following evaluation matrix will be used:

Risk Assessment Matrix			Impact		
			Acceptable (1)	Tolerable (2)	Unacceptable (3)
			Little or No Effect	*Effects are Felt but not Critical*	*Serious Impact to Business Outcome*
Likelihood	Improbable (1)	*Risk Unlikely to Occur*	Low Risk (1)	Low Risk (2)	Medium Risk (3)
	Possible (2)	*Risk Will Likely Occur*	Low Risk (2)	Medium Risk (4)	High Risk (6)
	Probable (3)	*Risk Will Occur*	Medium Risk (3)	High Risk (6)	High Risk (9)

The list of risks any new business faces is extensive. The risk assessment carried out here is intended to focus on those risks which are specific to this facility. It is not exhaustive.

Risk	Description	Likelihood	Impact	Risk Level
Staff Shortages and Turnover	The facility is forecasted only to be operational a few weeks a year. Retaining trained staff for such a short operating period will be difficult. The cost of training and retraining staff will be significant.	Probable	Unacceptable	High (12)
Regional Meat Processing Overcapacity	A meat processing facility is planned near Mayo, YT by the Nacho N'yak Dun (NND) First Nation at the former Partridge Creek Farm site. This will add a second terrestrial facility to the territory, returning processing capacity to the north/central region. The Mayo facility may shift market demand away from the facility proposed in this report.	Probable	Tolerable	High (9)
Operating Funding Availability	As discussed later in this report, the business case for this project relies on ongoing operational funding from third-party sources. Currently, meat processing is subsidized by the Government of Yukon at least through the Mobile Abattoir project. Other operators have received funding support through federal programs, but these appear to be mostly targeted, one-off funding opportunities. Availability of ongoing operational funding will determine whether the facility can succeed.	Probable	Unacceptable	High (9)
Septic Disposal	The facility will have a pump-out septic system. Multiple attempts were made to determine if municipal wastewater services would be provided to the facility, given the biohazard waste contained in the wastewater from the facility, but no responses were received. If the City of Dawson won't service the wastewater from the facility, it would significantly impact operations.	Possible	Unacceptable	High (6)
Capital Funding Availability	As discussed later in this report, the business case for this project relies heavily on third-party funding for capital costs. While there are a significant number of government and NGO funding programs available to support the capital costs of this facility, with new abattoirs – such as the NND facility mentioned above - coming online, funders may chose to focus on one project in order to increase probability of success.	Improbable	Unacceptable	Medium (3)
Waste Disposal	Current practice for waste disposal (offal, hides, other unused parts) is to bag and take to the Dawson City's Quigley Landfill. Change regulations may require different practice including either composting or incineration of waste.	Possible	Tolerable	Medium (4)

Risk	Description	Likelihood	Impact	Risk Level
Animal and Carcass Transport	With all producers currently doing on-farm slaughter (either on their own or via the Mobile Abattoir), transporting animals to a slaughter facility will introduce barriers to access. For animal welfare reasons, some producers may not want to transport their livestock off their farm. Additionally, most producers would not own, or have access to, appropriate live animal transport. Post-slaughter, producers who are selling Farm Gate often do not transport carcasses to the processor on their customers' behalf, choosing instead to make that their customers' responsibility. Producers who are able to have inspected slaughter when the Mobile Abattoir is present, rely on the mobile unit to transport their cooled carcasses to the processor in order to maintain the chain of ownership. A terrestrial facility would place the onus on the producers and the processors to transport carcasses safely to the processing location.	Probable	Tolerable	High (6)
Limitations in Production	While herd and flock sizes have generally been growing in the region over the last 4 years, it is the result of a small number of farms – one of which would not commit to using the new facility due to transport distance and may, as discussed above, access a processing facility closer to their farm. A year-round, reliable supply of meats will be necessary to penetrate the retail market in the region and, thus, the necessary number of animals to operate this facility with any regularity. The small number of producers raising livestock at the scale to achieve this creates a risk that production may not support the operation of this facility.	Possible	Tolerable	Medium (4)
Inspection Capacity	A spike in demand for locally-sourced, inspected meat in 2020 strained meat inspection resources in the territory, creating a bottleneck in some markets. Preliminary conversations with Government of Yukon's Agriculture Branch, where meat inspectors are based, suggest they will be able to respond to the increased demand created by this facility – especially since it is not forecasted to be a year-round facility. However, facility operating days will likely overlap with peak periods at other facilities in the territory so there is the risk an inspector may not be available.	Possible	Tolerable	Medium (4)

Risk	Description	Likelihood	Impact	Risk Level
Dropping Market Demand	The COVID-19 pandemic has had the opposite effect on local market demand as demand created through visitors or transient residents. Local demand has grown as residents look to support local farmers, and offset the reduced availability of imported meat due to supply chain interruptions. As discussed earlier in this report, it is reasonable to assume this demand will continue to grow at a moderate pace simply because of population growth. However, that growth in demand may not offset the drop created by the collapse of tourism in the region. Although the forecasts earlier in this report were positive on opportunities for long-term growth, they used pre-pandemic visitor numbers. Ongoing travel restrictions will negatively impact visitation this year, with numbers not forecasted to recover for a number of years after the pandemic subsides[11].	Possible	Acceptable	Low (2)
Changes in Regulatory Environment	With the release of its 2020 Yukon Agriculture Policy[12], the Government of Yukon appeared to signal a significant commitment to growing agriculture in the territory. To that end, it is anticipated that regulations will continue to support projects like this facility and may, in fact, help it grow (for example, if enforcement of Farm Gate sales regulations is tightened). However, the acts and regulations governing animal processing in the territory are antiquated. This presents a risk in that it is not possible to predict what impact regulatory changes may have. For example, the facility is designed to current regulatory requirements for inspection of meat to be sold in the territory. If the government opts to adopt the CFIA standard, the facility design would have to be amended accordingly.	Possible	Acceptable	Low (2)

[11] Destination Canada, Revisiting Tourism: Canada's Visitor Economy One Year into the Global Pandemic, March 2021
[12] Government of Yukon, Agriculture Branch, Cultivating Our Future: 2020 Yukon Agriculture Policy, July 2020

.2 Ownership and Management Structure

Summary:

It is recommended that the facility be owned by a co-operative of interested producers. The cooperative, being governed by the Cooperative Associations Act, will have a board of at least 3 members (depending on total membership) who will hire an operational manager to oversee day-to-day operations. The manager will be trained to work on the processing floor, and will hire staff to support them in running the facility.

Discussion:

Ownership Model:

During interviews with farmers in the region, all agreed that the facility should be run by a manager overseen by an organization in which the producers were represented. One farmer, with significant experience in meat processing, expressed interest in being part of the operations team for the facility.

Partnership with Tr'ondëk Hwëch'in First Nation:

Efforts were made to discuss strategic partnership opportunities with the Tr'ondëk Hwëch'in Government, without success (their farm manager was interviewed but attempts to connect with TH Government staff were not successful). Staff transitioning into new roles may have played a part in not being able to make that connection. Given the TH Farm is one of the larger producers in the region, it would be worth making further efforts to understand interest in a partnership under one of the models discussed here.

Capacity in the Market:

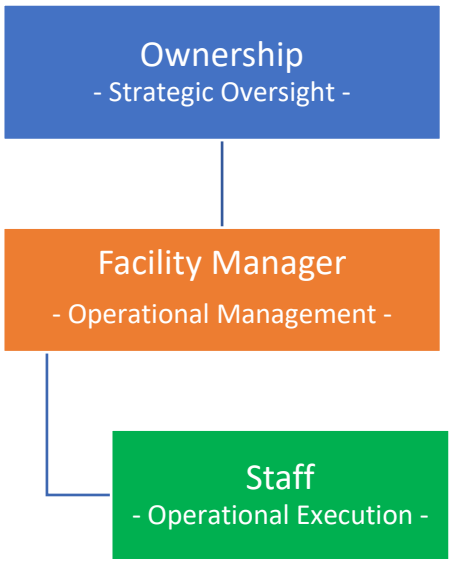
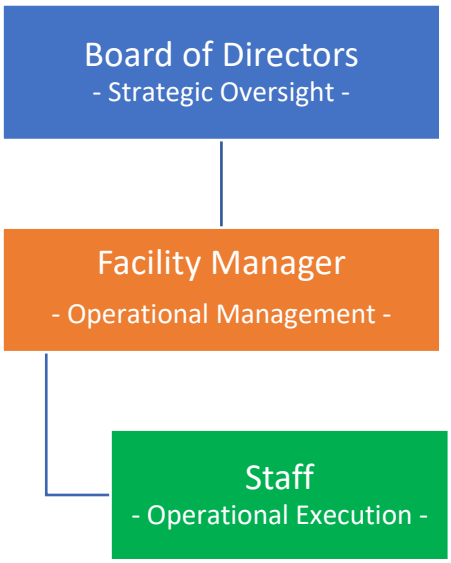
The owners of Sister Island Farm have extensive experience in large abattoirs. During the interview process, they expressed interest in applying their experience to the project. This could be in a training capacity or in being involved in the running of the facility. Further exploration is merited.

Options and recommendations are discussed in the table on the following page.

Option	Advantages	Disadvantages	Rank
Non-profit Society	1. Familiar model due to presence of existing non-profit societies (i.e. YAA) 2. Simple to set up, with possibility of utilizing existing non-profit or transitioning KFF to a non-profit (from advisory committee of YAA). 3. One class of members means no stratification of facility users and no shareholders.	1. Tax Act restrictions may disqualify the operation from qualifying as a Non-Profit given the income-generating nature of the business. 2. Non-profit structure may limit business growth due limitations on Directors terms, meaning corporate knowledge will be lost. 3. May see high turnover of Board due to volunteer positions without a business incentive to stay involved.	3

Option	Advantages	Disadvantages	Rank
Privately Held Company	1. No public fiscal reporting required (except as may be required by receipt of government funding support). 2. Distribution of shares does not have to be equal. 3. May be more attractive for partnership with First Nation Development Corporation.	1. May limit access to government funding support for capital and operational expenses. 2. Relatively more complex filings for tax and other financial reporting requirements.	2
Cooperative Association	1. Allows shareholders so will see buy-in for making the business a success. 2. Will demonstrate interest from local producers and processors due to minimum 5 member requirement. 3. Will make structure distinct from other farming industry-related societies and associations in the territory. 4. Provides for dual membership structure with shareholders receiving disbursements and guiding operations, and non-shareholding members receiving pricing discounts, for example. 5. Equal ownership amongst shareholders, so no one producer can monopolize. 6. Access to Farm Financing Programs.	1. More complex filings for tax and regulatory requirements than a non-profit. 2. Unlikely to have disbursements to shareholders / members as facility will only operate – at best – at break even.	1

Organizational Structure:

Privately Held	Non-Profit Society or Cooperative Association
	

.3 User Fees/Pricing

Summary:

User fees are based on market research conducted by contacting existing meat processing facilities in the territory and BC. Fees have been increasing in recent years but interviews with producers suggest they may have reached a ceiling of what the market will bear before producers will switch to processing their own meat, where possible.

Discussion:

The fee structure proposed provides incentive for producers accessing the facility to become members of the Cooperative. Annual membership fees are set such that there is a savings for those producers who join over paying the non-member fee.

The proposed fee structure is as follows:

Animal / Item	Fees – Year 1		Fees – Year 5	
	Member	Non-Member	Member	Non-Member
Annual Membership	$260	n/a	$300	n/a
Cow Slaughter	$160	$320	$200	$400
Pig Slaughter	$80	$160	$100	$200
Chicken Slaughter	$9	$18	$11	$22
Turkey Slaughter	$11	$11	$13	$26

Membership may not necessarily include a share in the Cooperative. A separate shareholder fee may be established to assist in the raising of cash for operations.

.4 Pro-forma Income Statements

Summary:

Pro-forma Statements were constructed using background data from the Government of Yukon's Mobile Abattoir and information provided by some operators in the territory and in British Columbia. The market pressure on slaughter fees presents a significant barrier to profitability for the facility, and will have to be addressed through ongoing government or third-party supports.

Discussion:

Three scenarios are presented, each based on the premise outlined in the project RFP that significant government funding support would be available to the project.

Best Case	Medium Case	Worst Case
Government funds 100% of capital expense and operating shortfall	Government funds 60% of capital expense and operating shortfall.	Government funds 30% of capital expense and operating shortfall

In each of the scenarios, certain variables are held steady for comparison. There variables are discussed in the table below.

Variable	Amount
Days of Operation	Year 1: 78 Year 5: 148 Years between the first and fifth year of operation use a linear extrapolation.
Slaughter Revenue	Member Fee as discussed earlier in the report
Animals Slaughtered	Projected slaughter rate as discussed earlier in the report
Cost of Slaughter	Facility operating costs of $15 per square foot per month of operation extrapolated from non-wage cost of operation of the Mobile Abattoir. The model can be adjusted to reflect an $11 per square foot per month cost that is an estimate based on the cost of operating a commercial space in Whitehorse.
Wages	Manager: $30 /hr Staff: $25/hr Wages were based off Canada Job Bank data for the Yukon[13] showing median wage and high wage for construction workers (most comparable category) in these ranges.

[13] Government of Canada, Canada Job Bank, Wages in Yukon

Pro-Forma Statements - Best Case					
Income Statement	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue					
Government Operational Funding	$ 95,445	$ 117,762	$ 138,155	$ 157,505	$ 176,563
Member Dues	$ 2,860	$ 3,240	$ 3,640	$ 4,060	$ 3,750
Slaughter Fees					
Cow	$ 1,152	$ 1,428	$ 1,728	$ 2,052	$ 2,400
Pig	$ 10,973	$ 14,137	$ 17,593	$ 21,341	$ 25,380
Chicken	$ 21,234	$ 27,858	$ 35,153	$ 43,119	$ 51,756
Turkey	$ 1,113	$ 1,512	$ 1,947	$ 2,418	$ 2,925
Expense					
Cost of Slaughter (Building Operation)					
Cow	$ 8,073	$ 9,508	$ 10,938	$ 12,365	$ 13,789
Pig	$ 47,320	$ 57,926	$ 68,530	$ 79,133	$ 89,736
Chicken	$ 25,554	$ 31,638	$ 37,726	$ 43,816	$ 49,907
Turkey	$ 3,260	$ 4,232	$ 5,206	$ 6,182	$ 7,160
Wages	$ 44,069	$ 58,133	$ 71,316	$ 84,500	$ 97,683
PPE	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500
Gross Profit / (Loss)	$ -	$ -	$ -	$ -	$ -
Building Depreciation Expense	$ 74,954	$ 71,956	$ 72,076	$ 72,071	$ 72,071
Equipment Depreciation Expense	$ 79,844	$ 54,244	$ 43,395	$ 34,716	$ 27,773
Interest Expense	$ -	$ -	$ -	$ -	$ -
Net Profit / (Loss)	$ (154,798)	$ (126,199)	$ (115,471)	$ (106,787)	$ (99,844)

Pro-Forma Statements - Medium Case					
Income Statement	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue					
Government Operational Funding	$ 97,346	$ 108,110	$ 117,719	$ 126,703	$ 135,512
Member Dues	$ 2,860	$ 3,240	$ 3,640	$ 4,060	$ 3,750
Slaughter Fees					
Cow	$ 1,152	$ 1,428	$ 1,728	$ 2,052	$ 2,400
Pig	$ 10,973	$ 14,137	$ 17,593	$ 21,341	$ 25,380
Chicken	$ 21,234	$ 27,858	$ 35,153	$ 43,119	$ 51,756
Turkey	$ 1,113	$ 1,512	$ 1,947	$ 2,418	$ 2,925
Expense					
Cost of Slaughter (Building Operation)					
Cow	$ 8,073	$ 9,508	$ 10,938	$ 12,365	$ 13,789
Pig	$ 47,320	$ 57,926	$ 68,530	$ 79,133	$ 89,736
Chicken	$ 25,554	$ 31,638	$ 37,726	$ 43,816	$ 49,907
Turkey	$ 3,260	$ 4,232	$ 5,206	$ 6,182	$ 7,160
Wages	$ 44,069	$ 58,133	$ 71,316	$ 84,500	$ 97,683
PPE	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500
Gross Profit / (Loss)	$ 1,901	$ (9,652)	$ (20,435)	$ (30,802)	$ (41,051)
Building Depreciation Expense	$ 74,954	$ 71,956	$ 72,076	$ 72,071	$ 72,071
Equipment Depreciation Expense	$ 79,844	$ 54,244	$ 43,395	$ 34,716	$ 27,773
Interest Expense	$ 66,799	$ 62,421	$ 58,044	$ 53,667	$ 49,290
Net Profit / (Loss)	$ (219,696)	$ (198,273)	$ (193,950)	$ (191,256)	$ (190,185)

Pro-Forma Statements - Worst Case					
Income Statement	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue					
Government Operational Funding	$ 63,703	$ 68,100	$ 71,920	$ 75,427	$ 78,846
Member Dues	$ 2,860	$ 3,240	$ 3,640	$ 4,060	$ 3,750
Slaughter Fees					
Cow	$ 1,152	$ 1,428	$ 1,728	$ 2,052	$ 2,400
Pig	$ 10,973	$ 14,137	$ 17,593	$ 21,341	$ 25,380
Chicken	$ 21,234	$ 27,858	$ 35,153	$ 43,119	$ 51,756
Turkey	$ 1,113	$ 1,512	$ 1,947	$ 2,418	$ 2,925
Expense					
Cost of Slaughter (Building Operation)					
Cow	$ 8,073	$ 9,508	$ 10,938	$ 12,365	$ 13,789
Pig	$ 47,320	$ 57,926	$ 68,530	$ 79,133	$ 89,736
Chicken	$ 25,554	$ 31,638	$ 37,726	$ 43,816	$ 49,907
Turkey	$ 3,260	$ 4,232	$ 5,206	$ 6,182	$ 7,160
Wages	$ 44,069	$ 58,133	$ 71,316	$ 84,500	$ 97,683
PPE	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500
Gross Profit / (Loss)	$ (31,742)	$ (49,662)	$ (66,235)	$ (82,078)	$ (97,717)
Building Depreciation Expense	$ 74,954	$ 71,956	$ 72,076	$ 72,071	$ 72,071
Equipment Depreciation Expense	$ 79,844	$ 54,244	$ 43,395	$ 34,716	$ 27,773
Interest Expense	$ 116,898	$ 109,238	$ 101,577	$ 93,917	$ 86,257
Net Profit / (Loss)	$ (303,438)	$ (285,099)	$ (283,283)	$ (282,782)	$ (283,818)

Where government funding covers less than 100% of capital expense, it is assumed bank financing will make up the shortfall:

1. Capital Expense: Construction of the new facility would be financed through a builder's loan converted to a mortgage amortized over 25 years with estimated interest of 5.49%. Equipment would be purchased using a business loan amortized over 5 years with an estimated interest of 4.6%.

   Estimated interest calculated based on RBC's Published Mortgage Rates at Monday, April 26, 2021 and the parameters of the Canadian Agricultural Loans Act program. The CALA caps interest rates at prime plus 1% for variable rates or family residential rates plus 1% for fixed rate financing. It has a $3-million borrowing limit with ministerial approval.

   Under the scope of this report, it was not confirmed if this project would qualify for CALA.

2. Operating Shortfall: Options for covering cash shortfalls in operations could include a business line of credit or through sales of shares. Given the reliance on government funding to cover operating expenses, securing a business line of credit may be difficult so sale of shares may be the only option to generate needed funds to cover the interest expense forecasted in the medium- and worst-case scenarios.

.5 Cash Flow Projection

There is no scenario forecasted that puts operation into a cash positive position. The Best Case scenario puts the facility into a cash neutral position; that being where there is no excess cash at the end of a fiscal year, but no shortfall either.

Pro-Forma Statements - Best Case					
Cash Flow Projections	Year 1	Year 2	Year 3	Year 4	Year 5
Opening Cash	$ -	$ -	$ -	$ -	$ -
Net Income	$ (154,798)	$ (126,199)	$ (115,471)	$ (106,787)	$ (99,844)
Additions to Cash					
Depreciation	$ 154,798	$ 126,199	$ 115,471	$ 106,787	$ 99,844
Net Cash from Operations	$ -	$ -	$ -	$ -	$ -
Cash from Investing					
Purchase of Equipment	$ (399,222)	$ -	$ -	$ -	$ -
Construction of Buildling	$ (1,873,846)	$ -	$ -	$ -	$ -
Cash from Financing					
Proceeds from Shares	$ -	$ -	$ -	$ -	$ -
Proceeds from Government Capital Funding	$ 2,273,068	$ -	$ -	$ -	$ -
Proceed from Loans or other Financing Instrument	$ -	$ -	$ -	$ -	$ -
Repayments of Loans or other Financing Instruments	$ -	$ -	$ -	$ -	$ -
Cash Flow	$ -	$ -	$ -	$ -	$ -
Ending Cash	$ -	$ -	$ -	$ -	$ -

The Medium and Worst Case scenarios put the facility into significant cash negative situations, that could only be offset by a regular injection of cash from either sale of shares or an operating loan. As discussed in the previous section, due to the low likelihood of profitability of this facility both selling shares and securing financing may be challenging.

Pro-Forma Statements - Medium Case					
Cash Flow Projections	Year 1	Year 2	Year 3	Year 4	Year 5
Opening Cash	$ -	$ (92,637)	$ (198,627)	$ (315,401)	$ (442,541)
Net Income	$ (219,696)	$ (198,273)	$ (193,950)	$ (191,256)	$ (190,185)
Additions to Cash					
Depreciation	$ 154,798	$ 126,199	$ 115,471	$ 106,787	$ 99,844
Net Cash from Operations	$ (64,898)	$ (72,073)	$ (78,480)	$ (84,469)	$ (90,341)
Cash from Investing					
Purchase of Equipment	$ (399,222)	$ -	$ -	$ -	$ -
Construction of Buildling	$ (1,873,846)	$ -	$ -	$ -	$ -
Cash from Financing					
Proceeds from Shares	$ -	$ -	$ -	$ -	$ -
Proceeds from Government Capital Funding	$ 1,363,841	$ -	$ -	$ -	$ -
Proceed from Loans or other Financing Instrument	$ 911,027	$ -	$ -	$ -	$ -
Repayments of Loans or other Financing Instruments	$ (29,540)	$ (33,917)	$ (38,294)	$ (42,671)	$ (47,049)
Cash Flow	$ (92,637)	$ (105,990)	$ (116,774)	$ (127,140)	$ (137,390)
Ending Cash	$ (92,637)	$ (198,627)	$ (315,401)	$ (442,541)	$ (579,931)

Pro-Forma Statements - Worst Case					
Cash Flow Projections	Year 1	Year 2	Year 3	Year 4	Year 5
Opening Cash	$ -	$ (197,184)	$ (415,438)	$ (650,265)	$ (900,936)
Net Income	$ (303,438)	$ (285,099)	$ (283,283)	$ (282,782)	$ (283,818)
Additions to Cash					
Depreciation	$ 154,798	$ 126,199	$ 115,471	$ 106,787	$ 99,844
Net Cash from Operations	$ (148,640)	$ (158,900)	$ (167,812)	$ (175,996)	$ (183,974)
Cash from Investing					
Purchase of Equipment	$ (399,222)	$ -	$ -	$ -	$ -
Construction of Buildling	$ (1,873,846)	$ -	$ -	$ -	$ -
Cash from Financing					
Proceeds from Shares	$ -	$ -	$ -	$ -	$ -
Proceeds from Government Capital Funding	$ 681,921	$ -	$ -	$ -	$ -
Proceed from Loans or other Financing Instrument	$ 1,594,298	$ -	$ -	$ -	$ -
Repayments of Loans or other Financing Instruments	$ (51,694)	$ (59,354)	$ (67,015)	$ (74,675)	$ (82,335)
Cash Flow	$ (197,184)	$ (218,254)	$ (234,827)	$ (250,670)	$ (266,309)
Ending Cash	$ (197,184)	$ (415,438)	$ (650,265)	$ (900,936)	$ (1,167,245)

.6 Break-Even Analysis

Interviews with producers indicate that the current fee level for processing had reached market tolerance. High fees would drive producers to uninspected slaughter at their farm or another facility. Further, the volume of animals being produced in the region is limited with little opportunity for significant expansion to help bring the unit cost of processing down.

With that in mind, it becomes difficult to undertake a meaningful break-even analysis as neither a realistic fee increase nor production increase will be able to offset the negative contribution margin of the current pricing structure. However, performing the analysis does provide one interesting piece of information: the per animal subsidy that is required for the facility to break-even. That is shown in the contribution margin of the calculations for the fully funded scenario.

No breakeven analysis is shown for the other scenarios as, due to the negative contribution margin of all animal types, it is not possible to achieve breakeven status without government support.

Break Even Analysis	Year 1	Year 5
Slaughter Fees by Animal		
Cow	$ 150	$ 200
Pig	$ 75	$ 100
Chicken	$ 8	$ 11
Turkey	$ 10	$ 13
Variable Costs per Animal (by lbs)		
Cow	$ 12,559	$ 22,177
Pig	$ 72,167	$ 144,319
Chicken	$ 38,737	$ 80,264
Turkey	$ 4,813	$ 11,515
Variable Costs per Animal (Count)		
Cow	$ 2,093	$ 1,848
Pig	$ 668	$ 569
Chicken	$ 20	$ 17
Turkey	$ 64	$ 51
Contribution Margin by Animal (Count)		
Cow	$ (1,943)	$ (1,648)
Pig	$ (593)	$ (469)
Chicken	$ (12)	$ (6)
Turkey	$ (54)	$ (38)
Fixed Expense (Interest)	$ -	$ -
Fixed Expense by Animal (by lbs)		
Cow	$ -	$ -
Pig	$ -	$ -
Chicken	$ -	$ -
Turkey	$ -	$ -
Fixed Expense by Animal (Count)		
Cow	$ -	$ -
Pig	$ -	$ -
Chicken	$ -	$ -
Turkey	$ -	$ -
Contribution Margin Ratio		
Cow	-8%	-12%
Pig	-13%	-21%
Chicken	-65%	-182%
Turkey	-18%	-34%
Breakeven Fees		
Cow	$ -	$ -
Pig	$ -	$ -
Chicken	$ -	$ -
Turkey	$ -	$ -
Breakeven Count		
Cow	-	-
Pig	-	-
Chicken	-	-
Turkey	-	-

7. Funding and Financing Opportunities

.1 Capital

Summary:

Capital Funding will come from a combination of federal, territorial and – possibly – municipal sources. The funding sources that appear to align best with the project are: CanNOR's IDEANorth and Government of Yukon's Economic Development Fund. Both instances require matching funding from the project proponent.

Discussion:

Funding Program	Funding Type	Funder	Funding Maximum	Description
Canadian Agricultural Loans Act Program	Loan guarantee	Agriculture and Agri-Food Canada	$3,000,000	This loan guarantee program offers Agricultural Co-operatives loan guarantees for amounts up to $3-million. Loans are issued through federally regulated lenders with interest rates capped at Lender Prime + 1% for variable rate and Residential Rate + 1% for fixed rate.
IDEANorth	Grant	CanNOR	Up to 50% of project costs to $6,000,000	This grant program supports "community economic growth through investments in small-scale infrastructure to allow communities and businesses to extend services and by supporting the early stages of large-scale infrastructure projects".
Farm Credit Canada	Loan	Farm Credit Canada	Subject to Lender approval	Farm Credit Canada is a Government Agency that provides financing for the development of agriculture and agribusiness.

Funding Program	Funding Type	Funder	Funding Maximum	Description
CAP – Agriculture Value-Added Development Program	Grant	Government of Yukon – Agriculture Branch	75% of project cost for producer or processor organizations	This program "helps commercial producers and processors take advantage of market opportunities" through supporting the purchase or construction of infrastructure including equipment for abattoirs or meat-processing facilities. Must present a business plan that demonstrates commercial viability.
Economic Development Fund	Grant	Government of Yukon – Economic Development	75% of the total project costs; and 50% of the capital expenditures	The Economic Development Fund provides grants to eligible businesses that "provide long-term, sustainable economic benefits to Yukoners". This project would classify as a Tier 3 project. There are 2 intakes for applications each year for Tier 3 Project: January 15 and June 15.
Local Food Infrastructure Fund	Grant	Agriculture and Agri-Food Canada	$250,000 including administrative costs for equipment purchases	This fund "supports community-based, not-for-profit organizations to improve their food systems through investments in infrastructure that are directly related to addressing food insecurities and increasing the accessibility of healthy, nutritious, and ideally, local foods within their community".
Community Development Fund	Grant	Government of Yukon	90% of total project cost	The CDF "provides funding for projects, events and initiatives that provide long-term, sustainable economic and social benefits to Yukon communities". This project would be classified as Tier 3 with an application intake date of January 15 each year.

Funding Program	Funding Type	Funder	Funding Maximum	Description
Good Energy Program	Rebate	Government of Yukon – Energy Branch	25-40% rebate	This program provides rebates for installation of energy efficient measures in commercial buildings. The level of rebate will be determined by the energy efficiency measures installed and the business model adopted to run the facility.

.2 Operating

Summary:

Funding to support operational expense is mostly limited to wage support for targeted groups, such as Youth or Indigenous. Finding operational funding for other costs may be difficult and may significantly impact the viability of the ongoing operations of the facility.

Discussion:

Funding Program	Funding Type	Funder	Funding Maximum	Description
Student Training and Employment Program	Wage Subsidy	Government of Yukon	$7.20 per hour	The STEP program provides a $7.20 per hour wage subsidy to qualifying positions. Employers must agree to pay the STEP wage scale. This program is available for summer employment only.
Youth Employment and Skills Program	Wage Subsidy	Agriculture and Agri-Food Canada	Up to 50% of wages to maximum of $14,000	This program is targeted specifically to the agricultural sector to hire and train youth workers. Additional subsidies of up to 80% to a maximum of $14,000 are available for employers who hire Indigenous or Youth facing barriers to employment.

.3 Benefits of Funding

The COVID-19 pandemic has highlighted the fragility of the supply chain for northerners. As the pandemic significantly impacts, amongst other things, southern meat processing plants increasingly Yukon residents are looking to source their meat locally.

While the cost of operating this plant is significant, so too are the benefits of increasing food production capacity in the territory. A non-exhaustive list follows:

Benefit	Descriptions
Supply Chain Security	Meat processed in the region where it was raised shortens the supply chain and limits the impact of adverse events on the delivery of goods. This, in turn, helps increase reliability of supply to local grocers and restaurants looking to sell locally-raised product.
Employment	The facility will be located in a region hit hard by restrictions in place to combat the COVID-19 pandemic. Though minimal, there will be direct and in-direct employment as a result of this facility. Additionally, it will provide improved stability for farm income.
Market Penetration	Northern residents are increasingly looking for locally-grown food. This facility will increase the availability of inspected meat product in the market, helping to satisfy some of the demand and displacing imported meat product that provides less economic benefit to the region.

8. Conclusion and Recommendation

While the need for increased meat processing – in particular inspected slaughter – is present in the Klondike region, the hurdles presented in meeting that need through a terrestrial-based abattoir are significant. The cost of construction and operation may be too high to overcome, even if government funding is available to support the project. Additionally, the challenge of getting all local producers to utilize the facility - even under the current fee structure - likely will result in lower-than-forecasted processing volume, making it even more difficult to meet financial targets.

Lower cost alternatives are available, even if they don't meet the exact desires of producers in the region:

1. Acquiring suitable live animal and refrigerated transport, and making these available to the region's producers so to allow utilization of the new facility proposed for Mayo providing a closer slaughtering alternative as compared to utilizing Whitehorse-area abattoirs.
2. Investigating the addition of another mobile abattoir service focused on the Klondike Region that would only operate during periods where temperature allows (i.e. late spring, summer, early fall).
3. Investigating the purchase of a compact poultry processor (shipping container sized) that would operate only in spring and summer.

Putting some or all of these lower cost alternatives into the region will achieve a number of the desired outcomes of local producers, especially increased slaughter capacity (inspected or farm gate). This increase capacity could help foster the necessary level of production to consider a terrestrial-based abattoir facility in the future.