

**Environmental Impact Statement for the
Cavendish Beef Farm (Registration 2002)**



February 2022

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- 1) Evaluation of Land parcels (Existing and Proposed)
- 2) Odour *
- 3) Avifauna Control and Management
- 4) Tourism and Potential Effects on Tourism Operators.

*

- i) Overview of IEC's Study, and;
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Executive Summary

Introduction

Viking Fur Farm Inc. (Viking) has operated a mink farm in Cavendish, south of Hearts Delight-Islington, north of Whiteway, since 2004. During this period Viking has maintained stable employment of 45 regular employees and 40 seasonal employees. The President, Peter Noer and Vice President, Eric Dalsager, originally from Denmark, developed the business based on the export of pelts to markets throughout the world, with a focus on China and South Korea. Viking manufactures its feed requirements at the farm with waste products from food and marine processing industry, sourced in the Province. The farm processes all chicken waste from Country Ribbon Inc. thereby making use of a waste which otherwise would be delivered to a landfill.

Viking is proposing to diversify into cattle farming (beef) which would contribute to the production of locally grown food in the Province. Beef production would be complimentary to the existing farm and enhance the sustainability of Viking by providing a productive use of hay produced on the farm. Indeed, this business plan represents a unique model where the agricultural production is completely based on local materials. The mink feed is manufactured from feed stuffs sourced in the province; manure provides the nutrients to grow the pasture/hay and the hay would be fed to the cattle.

In the case of the mink, 100 percent of the product is marketed internationally. The production of beef would keep money in the Provincial economy, accomplished with the use of local materials. The diversification into beef is consistent with the Province's aim of increasing local food production, including beef production as encouraged through the Provincial Beef Cattle Enhancement Program.

In the past decade Viking acquired Agricultural Crown Land leases (leases) on both sides of Route 80. Viking has cleared and developed the leases in compliance with the terms of the leases. This expanded land base was required for the spreading of liquid mink manure for environmental, agronomic and permitting requirements.

Viking's proposal is to establish a 100 cow/calf beef herd (producing approximately 75 calves per year) including an application for 120 acres of Crown land on the ocean side of Route 80 (Trinity Bay Highway) for cattle pasture and 137 acres on the interior side of the highway for hay (forage) production. It is anticipated not all of this land would be suitable for farm development based on the suitability of the land/soils for farming and buffers to protect water quality, leaving significant areas in a natural state. It would take

six years to develop the expanded land base and about three years to establish a 100 cow/calf operation.

The preparation of the Environmental Impact Statement (EIS) for the Cavendish Beef Farm has resulted in extensive scrutiny of Viking Fur Farm. The consulting firm Independent Environmental Consultants reviewed all aspects of the existing mink farm and identified several actions to reduce odour impacts on the community; two of these actions have been initiated by the farm. Viking has amended its proposal through the expansion of buffers to protect water quality and in one case removed a parcel of land which would have required a stream crossing. Another parcel was reduced to provide a buffer between proposed farm development and a tourist operation and other stakeholders.

Viking is appreciative of the commitment of 19 residents who maintained diaries of weather and odour occurrences for a month in the summer of 2020. In addition, tourist operators were extremely generous of their time in explaining the importance and their place within the tourism industry along Route 80. The operators readily expressed their experiences of operating a business in vicinity of Viking Fur Farm. The comments received during these discussions, combined with the public meetings and information sessions held in May 2021, have been carefully considered and had an impact on the preparation and the conclusions, including mitigations of the EIS.

Viking registered the proposal pursuant to the *Environmental Protection Act* in February 2019. In April 2019, the Minister responsible informed Viking an Environmental Impact Statement (EIS) was required to determine if the proposal may have significant environmental and social-economic impacts. The EIS Guidelines, for the preparation of the project, were finalized in November 2019.

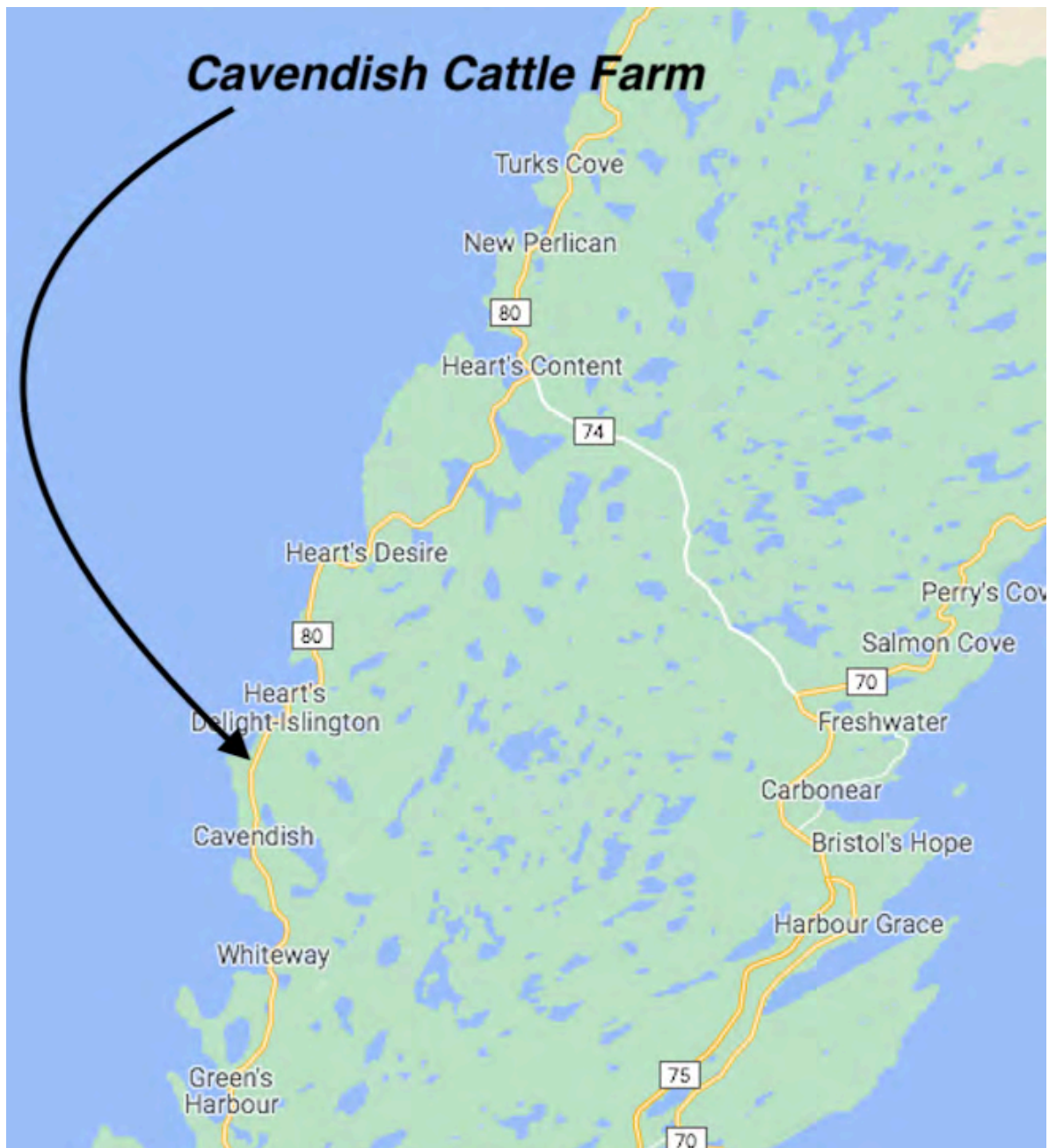
Public Consultation

The Environmental Assessment process, for the preparation the Cavendish Beef Farm EIS included the following:

- a. Public registration of the initial proposal (description of the project proposal)
- b. Public review of the Guidelines for the preparation of the EIS
- c. Public Meeting and Information Session
- d. Direct consultation with the Tourism industry
- e. Community based engagement as part of the Odour Component Study.

Location of the proposed Cavendish Cattle Farm

Figure i.



Aerial View of the Existing Viking Fur Farm

Figure ii



Existing Viking Fur Farm. Applications for additional land (solid blue)

Detailed Study Area

Figure iii



Existing Agricultural Leases (letters) and applications for leases (numbers)
Detailed Study Area

Viking Fur Inc., Cavendish, NL
Index

Department of Fisheries and Land Resources
Agriculture and Lands Branch
April 15, 2020

NFS Reference: IN14
NOI: 388, LRM, 20K, 2M
Transverse/Median

W
N
E
S

Legend

- Farm Road
- Paved Road
- Unpaved Road
- Lease Boundary = 278.1 m x 113.5 m
- Application Boundary = 260.4 m x 117.5 m

Landuse

- Banfield = 14.18ac (6.7ha)
- Chesed Land = 106.50ac (43.1ha)
- Rock Acre = 2.68ac (1.1ha)
- Tree Island = 2.20ac (0.8ha)
- Window = 278ac (1.1ha)

Area Conversion: 1 Ha = 2.47 Ac

Designed for Illustrative Purposes Only
Approved by J. Scarth, MNR, 2021.

HERE: Cavendish
Stirlingburg, Newfoundland

1:12,500

0 75 150 300 450 600
Meters

Private land purchase

a) Registration

The proposed Cattle Farm was registered, as a project under the *Environmental Protection Act* on February 2019. This notification informed the public of Viking's plans to diversify into cattle and an expanded farmland base.

b) Environmental Impact Statement Guidelines (EIS Guidelines)

Based on the input of the public and Government departments, the Minister determined an EIS would be required. Subsequently, the Minister issued Guidelines for the completion of the EIS, which included the opportunity for the Public to review and comment on the Guidelines before the Guidelines were finalized.

The EIS Guidelines required Viking to conduct public hearings in the vicinity of the proposed project and for the proponent to directly consult "with tourism operators to identify effects and concerns regarding potential future effects."

c) Public Meeting and Information Sessions

The two public meetings, May 19, 2021, held in Cavendish, included an overview of the project and mitigations on behalf of Viking and secondly, a presentation by Independent Environmental Consultants (IEC) on their Odour Risk Assessment and Mitigation Planning Report Cavendish Beef Farm. (The Risk Report) The public expressed their opinions related to the existing farm and the proposed expansion. Residents, notably in the Brook Cove area, located northeast of the farm within the Town of Hearts Delight-Islington, stated concerns of farm odours which at times are very strong. It was explained there were implications on real estate values and the overall enjoyment of their properties.

IEC's presentation at the Public Meetings included an overview of what causes odour, odour types and how its impact on people depends on factors such as distance from the farm, wind direction and weather, with hot humid days increasing the likelihood of strong odours as compared to cooler, dry days. Specifically, IEC explained the strongest odours would be experienced north of the farm, Brook Cove area, during prevailing (warm) summer winds. The presenter stated the cattle would not produce significant odour as the animals would be pastured over a broad area as compared to a confined site with an accumulation of manure. Residents expressed concern of the proposal to expand pastureland on the ocean side of the highway as it would result in more manure spreading up wind of the Brook Cove area and closer to residents on the north side of Cavendish. It was also stated family members closest to the most southerly expansion experience farm odours.

A resident expressed concern the proposed forage land development and subsequent manure spreading, would result in contamination of Brook Cove Brook, between Outside Island Cove Pond and the ocean. It was further stated the steepness of the slope and fractured nature of the rock would increase the likelihood of manure runoff to the brook.

Opinions were stated the proposal would result in extensive ecological damage to the area. It was also explained the expansion of the farm had resulted in a loss of traditional access for resource use, including berry picking.

An individual informed the meeting he appreciated/accepted the rationale to the diversification of beef to take advantage of hay grown on the farm; that this would-be logical farm practice where manure is used as a fertilizer to grow hay. However, he stated there must be a suitable alternative site (remote) in the interior of the Trinity/Conception Bay Peninsula where this development would not impact people.

There was a concern that the farm has divided the community. The farm has provided much needed employment; however, residents, particularly in the Brook Cove Area have been negatively impacted by farm odours.

It was expressed there has been insufficient communication between the farm and residents, especially if there is a fly or odour issue. There were suggestions that social media or websites could be used to inform the public of issues and the farm's response. Viking recognized the need to improve communication, however the website was closed because it attracted threatening comments to the farm and their families. If the EIS was approved, the farm would be required to prepare an Environmental Effects Monitoring Plan and Follow-Up Program and an Environmental Protection Plan which would require a clear plan and follow up to ensure effective community interactions. Viking is also reviewing IEC's recommendation to prepare an Odour Management and Control Plan Framework which would be implemented across the entire farming operation with involvement of the community, including the assessment of controls designed and implemented to reduce odour.

In regards to the potential for flies, historically there were concerns about high populations of the lesser house fly. Viking explained the cattle would not be confined in a barn or stockyard and furthermore, the animals would be encouraged to move around the pasture by placing baled forage at different locations throughout the pasture for the health of the animals and to avoid over use of the pasture while avoiding the accumulation of manure. Discussions with officials in the Province and other provinces stated flies had not been identified as a problem associated with beef farms. A reference was also made to a research project conducted by a Memorial University graduate student which concluded the spreading of liquid manure on forage/pasture lands on the Viking farm would not be conducive to the propagation of the lesser house fly.

It was questioned if it was suitable for the cows to feed on forage grown on land upon which manure had been spread; with a specific reference to antibiotics. At the meeting, Director Joanne Sweeney, Environmental Assessment Division, suggested the question about antibiotics and forage feeding could be addressed by the Canadian Food Inspection Agency. (CFIA)

Since the meeting, CFIA stated: *“There are no restrictions in place for spreading manure from animals that have been treated with antibiotics. There are small amounts that possibly excreted, and this would be diluted out even further when spread and exposed to rain. In addition, the compounds present would not be considered stable when exposed to the elements for any amount of time.*

There was a discussion about covering the existing mink manure storage tanks to reduce odours from the tank. It was pointed out by a resident it would be necessary to determine how to avoid a build-up of gas, notably methane, which could be a hazard. The farm stated it would cover the tanks, however it had not been determined if the cover would be an organic cover, such as hay, or a synthetic material. The effectiveness of covers in reducing odours ranges from 40% to 95%. Synthetic covers reduce odours by up to 95 percent.

d) Direct Consultations with the Tourism Industry

Consultations were conducted with owners of tourism operations located within ten kilometres of the project area. These businesses included cottages, chalets, cabins, trailer (travel) parks, a restaurant, marina and a golf course. The consultations included discussions as to what attracted tourists to the region and along route 80 from Dildo to Hearts Content. Over the past ten years there has been a demand for more up-scale accommodations, while trailer park visits remained consistent. Scenery, walking trails, museums, historical sites, boat tours, a brewery and a search for wide open spaces were identified as key attractions to the area.

In regards to odours, eight of the tourism facilities are located south of the proposed project area and three to the north. Two of the businesses north of the farm (accommodations) explained odours have been strong, particularly in late summer of 2020. A couple of businesses south of the farm stated odours are occasionally detected, with the closest operator explaining the most likely chance for odours was from manure spreading during a north wind. Similar to the conclusions of the IEC Report, including the completion of diaries of odour and meteorological events in 2020, the greatest concern of odours is for those living and working downwind (prevailing summer winds are south westerly) of Viking, between Brook Cove area and the farm. One of the tourism operators suggested Viking should not spread manure in the summer as it is the busiest time of year for the industry. Furthermore, the combination of prevailing winds and warm temperatures added to the potential for strong farm odours to impact the tourism experience, which is based on outdoor pursuits.

It was generally concluded, since about 2015, there have seldom been large populations of flies within the ten-kilometre study area. One exception was in the Brook Cove area where one business stated the flies have been consistently high in numbers, while another business said there have been improvements, however there were flies in late summer of 2020. It is not certain as to the type of fly or as to why there were many, however the weather conditions had been warm and humid in late summer. In 2021 it is understood flies were not a problem as compared to 2020.

e) Qualitative Odour Risk Assessment and Mitigation Planning Report

In IEC's Risk Report, 19 residents located north and south of the farm completed a daily odour diary, that detailed any odour encountered, characteristics of the odour and meteorological information applicable to the event. e.g., temperature, wind strength and wind direction) The input from residents helped IEC to understand the relationship of odours and wind and how the residents perceive them.

The IEC Report determined approximately 60 % of the time winds are south westerly in the summer months. In regards to the diaries, residents reported that over 80% of the odour events occurred down wind of the Viking Fur Farm, between the farm and the Brook Cove Brook area. Consequently, the concerns expressed by residents at the public meeting were consistent with the results of the diaries maintained by residents in the summer of 2020 and of direct consultations with the tourist industry.

Alternatives

The aim of the owners of Viking is to diversify and integrate the operation of the fur farm with the establishment of a beef cattle operation. The sustainable operation of the fur farm is based on the production of a high-quality mink feed from waste offal sourced from the marine products processing industry, Country Ribbon Chicken processing facility, other products from the agriculture industry, marine products and small amounts of materials from the food service industry. The environmental sustainability/self-sufficiency of the farm would be further enhanced through the establishment of a beef herd which would be fed forage grown on the farm at Cavendish. The forage would be fertilized by mink manure avoiding the use of synthetic fertilizers acquired from outside the Province. In essence a circular economy, in which mink and beef are produced with local materials. The mink production generates money from outside the country; while beef production would keep money in the Province.

Viking requires additional land to spread the manure produced on the existing mink farm to meet agronomical and environmental requirements and more specifically stated in the Farm's Nutrient Management Plan. An appropriate amount of manure must be applied to the fields to maximize nutrient efficiency for crop production while at the same time ensuring undesirable environmental effects such as polluting soil, surface waters or groundwater are avoided by not applying too much manure to the land.

In addition to environmental and agronomic considerations, farm production including manure management must be economical and comply with the definition of acceptable farm practice as per the Province's *Farm Practices Protection Act*. Viking's proposal is to expand and consolidate its land base close to the existing farm would facilitate efficient operations of the farm including the development of the land base, transportation and spreading of manure, the harvesting and transportation off hay. Furthermore, the maintenance of a herd of beef close to the existing farm would allow close supervision of herd health and the overall management of the cattle, including maintenance and security.

It has been suggested a remote area of undeveloped Crown Land would be a more appropriate location for the expansion of the farm's land base and the subsequent spreading of manure. Despite a relatively small population and extensive land base, the availability of land for agriculture is limited because of the lack of soils suitable for agriculture and by other demands for land along with land use zoning/designations which would restrict farm expansion, e.g., water supply designations. Furthermore, remote sites would require expensive access roads and would increase travel times from Cavendish which would make the sites challenging/costly to develop and inefficient to manage. The trucking of manure, within an hour's drive of the farm, would require the purchase of a tanker and a truck to pull the tanker, with purchase costs in excess of \$200,000. It is estimated the transfer of manure would require approximately 70 trips per year. The costs of diesel fuel, labour for drivers, extra staff at remote sites and increase in greenhouse gases would all have negative implications for establishing remote or satellite farms. A flatbed trailer, suitable for highway driveway, would also be required for the shipment of silage bales. If an existing farm was available for purchase, the purchase price would also add to the cost of acquisition, however a benefit would be a shorter timeframe to activate the farm.

An analysis of available soils mapping and land use zoning/designations as they appear in the Provincial Land Use Atlas and soils mapping for the Avalon Peninsula, was conducted of possible alternatives of undeveloped Crown land within an hour's drive of the existing farm. Considerations was also given to the acquisition of existing farmland. Areas with capability for agriculture, in terms of soils and size, have either been developed and allocated for agriculture or could not be allocated for the proposed use because of land use designations, most notably water supply designations, such as in the Dildo, Victoria, Harbour Grace and Track Road/Butlerville road areas. The most suitable soils are towards the Trans-Canada Highway and have either been allocated for agriculture or are within water supply designations.

Viking has reduced the size of four parcels of land which it had proposed to acquire as Agricultural Crown Land leases. These amendments would provide a wider buffer between farm development and existing residential/tourism facilities along with enhanced buffers along water courses and wetlands (peatlands) Furthermore, physical adaptations to manure storage and administrative changes to manure spreading, would also reduce odours of the existing and proposed farm expansion, as will be further discussed in a section on mitigation.

The farm's manure spreader was designed to spread the manure close to the ground. Historically, spreaders used in NL spray manure from the top of the tankers, thereby exposing manure to winds which could spread the odours over greater distances. The best technology would be spreaders which inject manure into the ground. However, soils in this province are too shallow and stony for this design. Despite the challenge of using manure injection, Viking has investigated injection systems in Scandinavia which have been designed for rockier soils. However, preliminary assessment indicate they would not be suitable for land at Cavendish.

It is concluded the preferred alternative is the best alternative from an agronomic, economic and environmental perspective. The consolidation at one location would facilitate the efficient operation of the farm and reduce environment and economic costs associated with running a farm at different locations. It would also allow the farm to monitor the health of the cattle and the security of the animals. It is further concluded the implementation of Best Management Practices including timing of manure spreading, the elimination of summer spreading on the oceanside of the highway, the covering of the manure storages and the development of land further inland from the communities, along with lower spreading rates as a result of an expanded land base, would reduce the likelihood of the resident's experiencing high levels of strong farm odours.

Component Studies

The EIS Guidelines required Viking to prepare four Component Studies to obtain baseline information to facilitate the evaluation of environmental effects and/or to develop mitigation measures and follow-up monitoring programs.

1) Evaluation of Land Parcels (Existing and Proposed)

The Evaluation of Land Parcels Component Study includes a description and mapping of land and resources of the proposed farmland expansion and surrounding area. The EIS Guidelines required information regarding: wetlands, forestry domestic cutting areas, land suitability for forage (including pasture) waterflow direction, location of municipal and residential waterlines and proximity to residential, commercial and tourist related operations and assets. Viking also added information/mapping related to zoning and land use designations.

The Brook Cove Brook watershed includes the main stem of the river and a tributary which drains from two organic wetlands (peatland; bog) known as Highland Marsh and Sooleys Marsh. The proposed forage development would exclude these bogs. Furthermore, these organic wetlands and the water courses would be protected with 'no farm development' buffers ranging from 50 to 90 metres.

The area of the proposed farm expansion includes two domestic cutting areas referred to as Valley Ponds. The area south of Outside Island Cove Pond, overlaps one area of the proposed expansion. Of the approximate 556 acres in the domestic cutting area, the farm has proposed to develop 67 acres, approximately 14 % of the entire area. There is one small domestic cutting area, less than ten acres, within the proposed expansion area on the oceanside of Route 80. Viking would ensure land approved for farm expansion would not block access to areas designated for domestic cutting.

An assessment of soil mapping of the area, based on drainage, stoniness, soil depth, texture and topography, combined with the success the farm has had in developing similar rated (soil suitability) landforms, provides a high degree of confidence that Viking can establish pasture on the oceanside of Route 80 and forage lands on the interior

of the highway. In some cases, the EIS has amended the applications to delete parcels or to widen buffers along watercourses and between other uses of lands.

In the detailed Study Area, there are not any municipal waterlines. The closest residences to the development have on-site septic and wells. Proposed farmland expansion would occur at distances which exceed the separation distances between manure spreading and wells as required pursuant to the *Health and Sanitation Regulations*.

The proximity of the farm/proposed expansion to residential, commercial and tourism - related operations assets has been mapped on google map imagery within a radius of ten kilometres of the farm. In addition, tables of distances, direction and type of business are included in tables. The closest residential areas and tourism establishments are shown on page xxx.

The control of land use development, including the protection of land, is for the most part based on zoning. Typical of rural parts of the Province, zoning is based on municipal plans and land use designations as illustrated in the Provincial Land Use Atlas (Atlas). Zoning in the detailed Study area includes: development control along the roads, agricultural, environmental protection along Brook Cove Brook, forestry and water supplies. The EIS includes mapping of the land use designations and implications for future development in the area of the existing farm/project area. In essence, the proposed project would be a permitted use pursuant to the current zoning and land use designations.

2) Avifauna Control and Management

Viking conducted a survey to identify the presence of migratory birds and avian birds of risk within the project's footprint and surrounding area. Over the three days of surveys, which were based on the Canadian Wildlife Service Newfoundland and Labrador Boreal Bird Monitoring Protocol, birds' counts were conducted on habitats reflective of the variety of habits in the study area. The surveys identified 38 bird species; no avian species of risk were identified.

The Study included best management practices in respect to a bird management plan. In particular the farm will implement procedures to avoid snag trees and will encourage residents to cut trees outside of the nesting season.

The EIS Guidelines state the project may attract migratory birds such as gulls. The proposed expansion of forage and pastureland and the subsequent spreading of manure would not be a significant attraction to gulls as the manure, is 97% water. Discussions with those familiar with liquid manure spreading confirmed it is not an attractant to gulls. Regardless of this conclusion, Viking acknowledges the manufacture of mink feed on the farm attracts gulls, as was reflected in the bird survey.

The EIS investigated techniques and equipment which may deter the attraction of gulls to the farm infrastructure. It was determined that no single technique or tool will deter birds

from accessing food sources and habitats which suit their requirements. Successful dispersion involves a combination of tools and the timing of use. Furthermore, no single device will be effective against all species. Consequently, Viking identified several best management practices in regards to feed handling and equipment/techniques to dissuade the gulls from the farm buildings. e.g., mechanical deterrents such as spikes and strips of mylar and administrative approaches such as a thicker cap on compost piles along with the removal of any spilled feeds. The farm will also conduct periodic audits of the farm buildings to identify nesting and/or access points.

3) Tourism and Potential Effects on the Tourist Operators

The Province of Newfoundland and Labrador has recognized the potential of the tourism industry to strengthen the Province's economy, often in the rural areas of the Province where opportunities are needed to stem the flow of out migration. Although the pandemic had a negative impact on tourism, like many industries, the growth of tourism, in part based on award winning advertising focused on scenery, culture and heritage, resulted in over 500,000 visitors by 2018 and over a \$1 billion to the Provincial economy. The Province has marketed the Trinity Bay Conception Bay area as the Baccalieu Trail Region which extends around the peninsula. The Trinity Bay area of the Baccalieu Trail Region includes many attractions, including museums, walking trails, scenery, boat tours, a golf course, galleries, conference centre, festivals and accommodations. Yearly revenue for accommodations ranged from \$2.5 to \$3.3 million per year with the busiest period being the summer months followed by June and September.

As required, direct consultations were conducted with the tourism businesses within ten kilometres of the project area. These included six businesses with a total of approximately 100 beds, two trailer parks with capacity for about 270 trailers. In addition, the Hearts Delight-Islington Marina, Browns Restaurant and the Golf Course were included in the consultations. The following is a brief overview of the results of the consultations.

- The operators identified attractions similar to the previously mentioned attractions with a focus on the outdoors and in the case of European visitors, the wide-open spaces. There was also an interest in local culinary interests.
- Over the past ten years there has been increased demand for upscale accommodations while trailer park occupancy has remained about the same.
- Farm related odours were identified as being very strong in the summer of 2020 for the two accommodation businesses located within about two kilometres north of the farm. Businesses located south of the farm explained odours were not a frequent problem, however one business explained odours are strong if manure is spread during northerly winds. It was explained odours were often strong when driving by the farm.
- In recent years (since ~ 2014/15) there has seldom been house flies south of the farm. One of two businesses north of the farm stated there were fewer flies in the past few years, however flies were a problem in late summer of 2020. The other businesses stated flies have been a problem for the past ten years.

- Several of the respondents explained they had, in other locations, experience with cattle farms. With one exception, it was explained odours associated with cattle farms are different than odours from the farming of mink. Overall, it was interpreted that people familiar with beef farms concluded odours were not objectionable in regards to cattle (pasture) farming.
- Overall, there was an acknowledgement that Viking has provided much needed employment. It was stated Viking must acquire the best/expertise to ensure appropriate management/mitigation practices in a consistent manner; “that they must do it in the right way; from the beginning to avoid future costs to the community.”

4) Odour

Existing Farm

Independent Environmental Consultants (IEC) was retained by Viking to complete an assessment of odour risks from Viking’s existing and proposed cattle farm to residents and communities in proximity to the farm. The potential odour effects were assessed using a risk approach based on an analysis of odour generating activities at the farm, current mitigation measures, historical odour complaints, a survey completed by residents, local meteorological and topographical features of the area.

An analysis of odour risks on residents was made by ranking the magnitude of odour source potential, the effectiveness of the distance between the source and the residents/property owners with respect to odour dispersal and the sensitivity of the community to odours.

IEC determined a high odour potential to the existing mink farm and manure spreading activities based on the characteristics of the mink manure, farm operations and manure spreading. The company also determined the pathway effectiveness between the existing farm/manure spreading and the community was ineffective in respect to prevailing winds (downwind) local topography and the proximity to receptors. IEC concluded the risk of odours from the existing mink farm, were moderately adverse for property owners within 1,400 metres of the farm.

Proposed Cattle Farm

IEC explained the proposed cattle farming operation would have a low odour source potential because of the low density of the animals which would be pastured throughout the year. It was stated the release of odours from the cattle farming operation would be negligible to all stakeholders. However, IEC explained receptors within 1,400 metres may experience a “higher receptor sensitivity” as manure spreading on expanded pasture would occur closer to their properties.”

Cumulative Impact

IEC concluded the cumulative odour potential remains moderately adverse given the extent of the current and proposed operations, including manure spreading activities, the overall characteristics of the mink manure and the current control mechanisms that are employed to control odours. It is further stated the addition of beef cattle would not increase the cumulative odour risk from the farm, however spreading mink manure on expanded pasture north of the farm could impact residents/property owners within 1,400 metres of the activities. Overall, IEC concluded the cumulative effect from the release of odours would remain moderately adverse to the most sensitive receptors which warrants consideration for additional controls to reduce odours from the existing mink farm, including manure spreading on expanded pasture.

IEC recommended a series of administrative controls e.g., communication enhancement, manure spreading in respect to weather forecasts; not spreading liquid mink manure on the oceanside of the highway (directly upwind of prevailing summer winds towards Brook Cove area and physical controls e.g., covering manure tanks and the assessment of other technologies to control odours in the barns.

IEC concluded a framework for an Odour Management and Control Plan (OMCP) should be implemented across the entire farming operation. The OMCP is intended to form part of Viking's operational management system and address how odours would be managed and controlled to minimize community impacts. As well as covering normal operations, it would anticipate and plan for abnormal events and foreseeable accidents. The Plan would include consultation and engagement of the community to determine the effectiveness of controls to reduce odour. For example, the decision not to spread manure in the summer of 2021, upwind from stakeholders located north of the farm, resulted in some encouraging comments of fewer odours as compared to 2020. The effectiveness of this action can be determined with the engagement of the community.

Predicted Biophysical and Socio-Economic effects

The proposed farm expansion would result in an addition of approximately 55 acres of pasture land on Crown leased land and 20 acres on private land and 110 acres of forage land on Crown Lease land through the conversion of forested, land mostly cut over, to farmland. The percentage of each lease which would be developed for farming would vary, however not all of the acreage on the leases would be developed due to buffers along water courses and topographical or soil limitations, hence less than the amount applied for. In addition, the farm has deleted acreages from the original application. Within the detailed Study area, it is estimated that 175 acres (maximum; less with buffers and land used for windrows or unsuited) would be developed representing less than 12 percent of the detailed (footprint) study area. If the larger Study area of ten kilometres around the project area was considered, the percentages would be significantly smaller (~ one percent) The proposal does include the development of peatland wetlands. (bogs)

It is likely there will be a loss of bird nesting sites, however birds will establish new nesting sites in the following year. The Avifauna bird surveys did not identify endangered species; hence it is unlikely endangered/rare species will be impacted by the development. Furthermore, Viking would encourage domestic cutting in the fall and winter, outside of the nesting season. Other than attraction of waterfowl to small ponds, less than 250 square feet, it is not anticipated the project will attract wildlife, notably birds to the farm.

It is likely wildlife, notably moose would avoid the various parcels of land during the development of the land. There is similar environment in the immediate area of the proposed expansion, which would attract wildlife, including moose. The vast majority of the rare plant species throughout the Province are inhabitants of open habitats, such as river channels, salt marshes, wetlands, aquatic habitats, alpine areas and coastal barrens, which are not proposed for development by Viking. Furthermore, the extensive cutover and human disturbance would further reduce the likelihood of rare plants in the area.

Buffers, wider than normally required in the Province would minimize the likelihood of deleterious impacts on water quality and quantity as a result of clearing land for farming, including manure spreading. The farm would not use pesticides in the proposed farm operations. The combination buffers along water courses, protection of organic wetlands/peatlands and that most leases will not be completely developed, would combine to protect the biodiversity of the area.

Although the proposed expansion would be a small part of the detailed study area, residents voiced concerns the expansion of farmland would result in clear cutting and extensive ecological damage. Concerns were also expressed as to the loss of resources, notably berry picking and forestry. It is recognized the expansion would change the landscape; however, Viking is committed to protecting much of the area in its natural state, particularly in respect to the protection of riparian areas and wetlands (bogs). Viking would, as before, work with residents to access firewood. The development will improve access to other forested areas which would help residents maintain access to firewood. Although, residents may have lost access to berry picking off of Fox Farm road, hopefully other roads in the area would access land for seasonal picking. The establishment of the forage land, also a natural resource, will allow two harvests of hay per year. The expansion by Viking's land base is comparable to developments elsewhere in the Province in efforts to increase the production of locally grown food.

Based on IEC's Risk Report and the other means of public input, notably the public hearing and the tourism consultations, it is concluded residents and businesses located north of the farm are the most likely to continue to experience farm odours, because of proximity and prevailing winds from the existing farm.

In regards to the farm proposal, IEC explained the pasturing of cattle would have a negligible impact on residents. IEC stated the spreading of mink manure on expanded pasture, parcel 2 would result in manure spreading closer to properties in the Brook Cove Area. A member of the public also stated proposed pasture development on parcel 1

would result in the spreading of mink manure closer to Cavendish and in particular to residents at the northly end of Cavendish.

The IEC Report, which referred to the observations of Viking's consultation with the tourism industry and the Public Meeting sessions, included a series of supplemental odour management options for the existing mink farm and manure spreading activities, which include administrative controls and eventually an Odour Management and Control Plan (OMCP) be developed for the entire farm operation. These items will be discussed in sections related to mitigative measures and monitoring.

Mitigative Measures

Protection of water quality

The protection of freshwater would be accomplished through a combination of watershed protection and agronomic best management practices. In regards to water protection, the following techniques would establish buffers between farm fields and wetlands, including watercourses:

Watershed Protection

1. Organic wetlands would not be developed (or allocated) for farm use.
2. A minimum of 50 metre buffer would be maintained between farm development and wetlands along with watercourses
3. A 90-metre buffer would be maintained between lots 6 and 7 and Brook Cove Brook downstream from Outside Island Cove Pond.
4. Lot 4a would be removed from the proposal. This will add a buffer to a watercourse/wetland. As a result, the proposed project would not include any stream crossings; no need for a bridge or culvert.

Agronomic Best Management Practices

1. Manure application rates would be based on the fertility status of the soil and nutrient content of the manure. Manure application would be based on plant requirements; increased land base would ensure land is not over fertilized.
2. To minimize the opportunity for soil erosion and subsequent runoff, farm land development and manure spreading would be avoided during wet soil conditions to reduce channelization/soil compaction.
3. Following land development, a grass crop would be established as soon as possible, to reduce the opportunity for soil erosion.
4. Once seeded, the pasture and forage lands would not be cultivated hence a permanent grass cover would continue to minimize the opportunity for the movement of sediment.
5. The farm will not use pesticides.

Conservation of Avifauna

The protection of avifauna, notably migratory birds, would be accomplished through the protection of bird habitat, notably snag trees, and to focus domestic tree cutting outside the spring/summer nesting session. Gulls have been attracted to the farm for several years. The farm will implement exclusion techniques in the compost shed, perching areas on the sheds near the feed distribution areas. The farm will also conduct an evaluation of all building to identify access points where gulls could enter the buildings.

Flies

Whereas the proposal is to pasture the animals throughout the year, manure will not accumulate in any one area, thereby minimizing the establishment fly habitat. The farm will conduct field assessments every two weeks to ensure there is no buildup of manure or other sources of organic matter which could be a house for flies. Two years of research by a graduate student at Memorial University concluded: “Liquid mink will be safe for field application nether will be an issue in breeding or attracting *F. canicularis* or any other group of flies.” Observations on existing beef farms and pastures in the Province and discussion in other jurisdictions revealed that flies are not a problem on beef farms which rely on 12 months of pasture.

Odours

In summary, the public consultations, tourism component study and the IEC Report concluded, based on the activities of the *existing* mink farm, the distance to residential and tourism facilities, prevailing wind directions during warm, especially humid conditions, the sensitivity of residents, outdoor activities in the summer, that the greatest risk of strong odours impacting residents and businesses is for those located northeast of the farm in the Brook Cove area, as illustrated on map on page xxx. Currently, spreading of mink manure is conducted two to three times a year; typically, over a period of a few days, depending on weather and soil moisture conditions.

IEC has stated the proposed cattle herd would not result in additional farm odours. The expansion of pasture on the oceanside of the highway would result in the spreading of mink manure closer to residents and tourism businesses, north and south of the current pasture.

The following is an outline of administrative and physical mitigation actions/techniques, aimed at the reduction of odours at the existing farm.

- a) Manure storage. The liquid mink manure storage tanks produce odours, particularly during warm summer weather. Covers can reduce odour by up to 95% with the greatest reduction afforded by synthetic, impermeable covers. In 2021 Viking applied a permeable cover of straw, which may have contributed to the lack of complaints of farm odour in the summer of 2021. Viking purchased impermeable covers for the two storages which will be installed in Spring, once the tanks are emptied of the winter accumulation of manure.

- b) Anaerobic digester: This would be a very expensive, longer term alternative, however because it has benefits from a greenhouse gas perspective, there may be Federal Provincial funding to lessen the investment.
- c) Carcass Composting. Currently, the farm maintains a 0.6 metre cap over the compost, which is re-established each time the compost is turned; most turning takes place in the winter months. Once the compost process slows down, indicated by a reduction in temperature, there is a maturation phase which Viking will extend. Viking will maintain records as to when the compost is turned, the thickness of the cap, the length of the maturing stage and observations as to odour levels.
- d) Diet. Although a longer-term possibility, the farm will investigate to determine if there are dietary changes could reduce odours.
- e) Liquid/solid Manure Separator and outdoor manure storage. Relatively speaking, these two areas include a small amount of manure, however they are a source of odours. This material will be added to the compost piles and capped with a carbon source, probably hay and bedding, to reduce odours.
- f) Viking will plant a tree screen along route 80 to help control the movement of odours. Viking has reduced parcel number 2 which will provide a wider buffer between future manure spreading and other uses of land in the Brook Cover Area. (Tree planting was initiated in 2021).
- g) Manure Spreading: The proposed project would provide more land for Viking to spread existing supplies of mink manure; as a result, spreading rates would be reduced which would lessen odour levels. In 2021, at the recommendation of a tourism business and IEC, manure was not spread on the oceanside of the highway. This avoided spreading in the warmest time of the year, when prevailing winds blow in the direction of two tourist operations (accommodations) and residences, located in the southern part of Hearts Delight-Islington, more specifically in the area between the farm and Brook Cove Brook. Discussions with the two tourist operators located north of the farm in late Fall of 2021 explained odours were much less as compared to 2020. Weather may have contributed to these observations, however not spreading manure in the summer is most certainly a significant factor. As stated, community engagement is required to assess the effectiveness of this manure management activity.

Viking will continue to monitor weather, social events in the community, long weekends any another other sensitive times of the year to plan manure spreading when the likelihood of impact to neighbours is least likely. The farm will consider the acquisition of farm specific weather forecasting models to predict future weather conditions to help plan manure spreading.

- h) Viking will, through the completion of its Nutrient Management Plan, ensure it matches crop nutrient requirements by conducting soil sampling every three years to monitor soil fertility status of soils.
- i) Viking will prepare an Odour Management and Control Plan for the entire farm operation with the objective of preventing or minimizing community impact. This plan would include a monitoring of actions and odour monitoring on and off of the farm. For example, community monitoring would help top assess the impact on the decision not to spread liquid manure in the summer, upwind of the Brook Cove area, including the tourism businesses.

Biodiversity/landscape

The change of landscape from boreal forest to a mixed pattern of forest and farm fields represents a significant change. People value landscape differently. Landscape can have a social and community value. For some it is a place of wildlife habitat and as a cultural record of where people have played, worked and relaxed, whether it be hunting fishing, berry picking or walking. It is understandable that people react differently to the change in landscape. For some the ‘new landscape’ of farm fields and cattle with an ocean background would offer a more varied landscape. Agriculture landscapes are not as common as in other Provinces, however farm expansion on Roaches Line and adjacent to the Trans-Canada Highway near Ocean are two examples of agricultural landscapes in the region.

The biodiversity of the area would change, however the non-development of the bogland, maintenance of buffers along the wetlands and watercourses combined with the retention of areas unsuitable for farm expansion will maintain a patchwork of farm and natural habitat. The cumulative farm development would remain at less than 20 percent the detailed study area and considerably less than the larger regional study area which stretches out for a distance of ten kilometres from the farm.

Summary of the Fundamental Conclusions:

Viking Fur Inc. would like to diversify its farming operation in Cavendish by developing a cattle herd whereby the animals would be pastured throughout the year; augmented with grass/forage outside of the summer pasture season. The integration of the existing mink farm and the proposed cattle farm/land expansion would allow Viking to meet Government requirements for sufficient land to spread existing production of mink manure. The expanded land base and the subsequent increase in forage (hay) production would provide sufficient amounts of hay to sustain a beef herd in an economically feasible manner.

The expanded land base would allow the farm to apply manure at rates which would sustain and encourage plant growth while avoiding the accumulation of excessive amounts on nutrients in the soil, thereby reducing the opportunity for surface or groundwater runoff and contamination of the soil.

The preparation of the EIS has resulted in considerable scrutiny of the existing mink farm and in particular the impact of strong farm odours on the community; especially for those with property located northeast of the farm in the southern part of Hearts Delight-Islington. (Brook Cove Brook Area to the farm) Residents and the two business operators in the area, explained odours have impacted the enjoyment of their properties and in the case of the tourism operators, their businesses, most notably in the summer of 2020.

Independent Environmental Consultants (IEC) was contracted by Viking to prepare a risk assessment of farm odours of the existing mink farm and the proposed project. IEC recommended additional odour controls to reduce odours from the *existing* mink farm, such as no summer spreading of manure on the ocean side of route 80, (as did an operator of a tourism business in the area) the covering of manure storage tanks (could reduce odours from the tanks by up to 95%), along with several other actions some of which Viking will implement in the short term, while others will be considered, in the short to long term. IEC explained the addition of cattle, pastured over an extensive land base, would have a negligible increase in odours. Spreading mink manure on an expanded pasture, could result in odour impacts on stakeholders in the area. The decision to cease summer manure spreading will be an effective means to mitigate odours from the spreading of mink manure on the new pasture.

IEC also recommended the development and implementation of an Odour Management and Control Plan to address how odours from the mink farm, including spreading mink manure, will continue the farms efforts to further reduce odours following the completion of the EIS.

The EIS has proposed buffers along all watercourses and wetlands which are wider than typical requirements of regulatory agencies. Specifically, buffers of 50 metres have been placed between organic wetlands (peat bogs) in Sooleys Marsh and Highland Marsh and parcels 3 and 4 proposed for forage use. In addition, the buffer along Brook Cove Brook has been expanded to 90 metres which is consistent with the municipal plan of Hearts Delight-Islington for that portion of the brook within the Town's municipal boundaries. As a result of Viking's decision to delete a portion of Parcel 4, the project does not include any stream crossings. Combined with the buffers, protection of wetlands/peat bogs, (no farm use of the wetlands) no pesticide use, perennial forage (no annual cultivation thereby maintaining a cover crop, preparation/implementation of an Environmental Protection Plan, Emergency Contingency Plan and Environmental Effects Monitoring Plan, Viking is confident the fresh water resources within the project area will be protected.

These buffers along with the absolute preservation of organic wetlands, combined with the retention of unsuitable lands and windrows will maintain a biodiverse landscape. Development of the farm land will add to the existing wooded/agricultural landscape in vicinity of the farm. Although pastoral landscapes are not generally seen from the province's highways, Viking's proposal would be similar to views along Roaches Line and Ocean Pond on the Trans-Canada Highway, east of Whitbourne. The preparation of

the EIS has resulted in the deletion of approximately 45 acres from the registration of the original proposal. Furthermore, the buffers along parcels 3 and 4, infer an additional 15 acres which will not be developed for farm use.

Viking would continue to work with residents to ensure access to wood for domestic purposes is maintained. Viking has developed many working relationships with residents and businesses who would benefit from the diversification, including heavy equipment operations and butcher shops.

Viking has worked hard to develop its business which has resulted in many jobs for over 17 years. The establishment of a beef herd is consistent and supportive of the Province's aim of improving food security and more specifically increasing beef production through the Beef Enhancement Program. Impacts on transportation as a result of Covid and storms, along with the effects of climate change have resulted in challenges to food security and substantial inflation of food products. Viking has accepted the challenge of Government to respond to greater self-sufficiency in food production.

IEC, in its recommendations to reduce odours, has explained the need for more effective communications amongst the farm, residents and the community. Viking's decision to invest in additional odour management techniques of the *existing* mink farm represents a significant benefit of the proposed diversification into beef production and a demonstration of its desire and commitment to being a good neighbour; one that can be improved with a commitment to action and enhanced communications. Indeed, Viking's decision not to spread mink manure on the oceanside of Route 80, up wind from Hearts Delight-Islington in the summer of 2021 appears, at least in part, to have reduced odours, especially in comparison to 2020. The effectiveness of this control and the purchase of the storage covers will not only reduce odours, but we believe, will facilitate effective engagement of the community to assess the impact of actions and identify on-going adjustments towards reducing odour impacts on the community.

The EIS was required in response to Viking's application to acquire additional land to establish pasture and forage land to support the development of a beef herd, while concurrently improving the management of mink manure in an agronomically and environmentally acceptable manner as required by Government. As a result, the mink farm operations have been scrutinized and mitigative actions, notably in respect to odour and water have been identified and, in a few cases, already implemented. The farm has made a number of commitments for continued improvement of farm practices to minimize social and physical environmental impacts. Commitments for community engagement to assess effectiveness of these mitigative actions represent next steps.

Amendments to Parcels Under Application

Figure iv.



Viking Fur Inc., Cavendish, NL
Index of Titles & Structures



N.T.S Reference: NH4
M40, 2000, UTM, ZONE 20N
Department of Fisheries and Land Resources
Agriculture and Forestry
Agricultural Land
April 13, 2020
Terrace Mountain

**Adjusted lots:
buffers and
deletions**
Approximate locations
Buffers edited by H. Scarth
December 2021.

Area Conversion: 1 Ha = 2.47 Ac
Designed for Illustrative Purposes Only



1:12,500



Land Use within 2.5 kilometres of Viking Fur Farm

Figure v.



TABLE OF CONCORDANCE

Environmental Impact Statement Guidelines		Environmental Impact Statement		
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	Comment
1.0	Introduction	1.0		
1.1	Name of Undertaking	1.1		
1.2	The Proponent	1.2		
1.3.1	Purpose of the Environmental Impact Statement	1.3.1		
2.1 6.4	The Study Area The Study Area shall contain a description of the geographical setting of the undertaking, including the use of maps of at least 1:30,000 scale. The Study Area shall focus on those aspects of the undertaking to understand the environmental effects of the undertaking, including but not limited to environmental sensitive areas, recreational areas, tourism-related operations and land use in the area.	2.1	Odour Avifauna Evaluation of Land Parcels (existing and Potential) Tourism and Potential Effects on Tourism Operators	Tourism study is within ten kilometres of Viking Farm. The detailed study includes the footprint of the existing farm, proposed expansion and adjoining lands. (about six square kilometres) The odour study focuses on an area within five kilometres of the farm.
2.2	Need purpose and Rationale for the Undertaking including: <ul style="list-style-type: none"> • Environmental and socio-economic impacts and benefits of the project • Alternatives • Capital cost 	2.2 6.2 3.0/3.1 2.2		Section focusses on purpose, benefits and costs/revenue of the proposal. Alternatives and socio-economic impacts are addressed elsewhere in the EIS.
2.3	The Proponent shall describe the scope of the undertaking, including the: General Lay out, construction, operation and maintenance, decommissioning and rehabilitation, regulatory Framework and Government Oversight.	2.3		

Environmental Impact Statement Guidelines		Environmental Impact Statement		Comment
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	
2.3.1	EIS shall provide a site plan, location of the former landfill and buffer, location of groundwater wells, location of water bodies, including wetlands, stream crossings and culvert type or bridge requirements. The section shall also include the distances of land use activities within ten kilometres of the undertaking	2.3.1 2.3.2 4.2.3. b	Evaluation of Land Parcels	Site plan Former landfill Groundwater wells Water bodies Wetlands Stream crossings Distances to other uses of land
2.3.2	The EIS shall describe the details of construction methods and schedule, including farm land development, construction period, culvert/bridge installation, any wetland alterations, erosion and sediment control and any stabilization /rehabilitation during construction and the construction of buildings and the projected workforce.	2.3.2 4.2.3. b	4.2.4 Evaluation of Land Parcels.	Construction period Schedule Wetland Alterations Buffers Former landfill Culvert/bridge Erosion control Buildings/shelter Hazardous Materials Construction Equipment Personnel Requirements
2.3.3	The EIS shall describe aspects of the operation and maintenance of the undertaking, including pasture operations and manure management, impact of the former landfill on farm operations, forage land operations, including drainage details and avifauna management, use of access roads by the public and personnel requirements for the operation of the undertaking.	2.3.3	Avifauna Control/Management (Avifauna) Evaluation of Land Parcels.	Pasture Operations Former Landfill site Forage Operations Farmland clearing/development Manure spreading Access Roads (public's access) Personnel Requirements
2.3.4	The EIS shall present a preliminary outline and conceptual decommissioning plan to address site rehabilitation and removal of infrastructure, equipment and access to the site in the event of farm closure.	2.3.4		Decommissioning/Rehabilitation
2.3.5	The EIS is required to provide a comprehensive list of permits and regulatory approvals for the undertaking. In addition, the EIS must identify resource/land use plans and provincial and/or national objectives, codes and/or guidelines which have been used in the preparation of the EIS.	2.3.5		Regulatory Framework and Government Oversight List of Acts and Regulations Government policies (Industry expansion, Environmental Guidelines, Codes of Practice etc.)

Environmental Impact Statement Guidelines		Environmental Impact Statement	
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study
3.0/3.1	<p>The EIS shall identify and consider the environmental effects of alternate methods and or sites for carrying out the proposed project.</p> <p>The EIS Guidelines require the proponent to consider the advantages and disadvantages of land alternatives. The EIS shall demonstrate how the preferred alternative contributes to sustainable development; how the precautionary approach has been applied in project planning and provide an operational history of the existing farm.</p> <p>The environmental, economic and technical (and agronomic) costs and benefits of the alternatives as compared to the preferred alternative shall be included. Market conditions a, regulatory changes and other factors which included the selection of the preferred alternative and justification of the preferred alternative to the undertaking based on the consideration of the environmental, economic and technical costs and benefits, including the proposed impacts on residents, tourism operators and other industries.</p> <p>Shall include an analysis of the environmental effects and technical and economic feasibility of alternatives that led to the selected project alternative. The EIS shall describe at a minimum alternative cattle pasture and forage areas. The report must include justification of the preferred alternatives in terms of environmental, economic and technical costs and benefits.</p>	3.0/3.1	
			<p>Discusses: The proposal Alternate locations (developed and undeveloped) Equipment alternatives Disadvantages/advantages of the alternatives from the perspective of: Environment, Agronomic, Technical, Economic and/market considerations. Alternate equipment, notably liquid injection of manure. Other agricultural commodities are considered.</p>

Environmental Impact Statement Guidelines		Environmental Impact Statement	
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study
3.2	<p>The EIS shall analyse and compare design alternatives for their undertaking in relation to their social and environmental costs and benefits, including those alternatives which cost more to build and/or to operate but which cause less harmful environmental impacts.</p> <p>The proponent shall provide an explanation of the alternative technologies; effectiveness and reliability of equipment, techniques, policies and procedures in relation to climate change projections and their relation to best practices in the Province. The justification of the preferred alternatives of the undertaking shall be done in consideration of the environmental, economic and technical costs and benefits including potential impacts on residents, tourism operators and other industries.</p>	3.2	Odour
		3.1	
4.1	<p>The proponent shall identify key issues related to the project. The purpose is to focus the completion of the EIS. The issues will be identified through field work and from public consultations. The Guidelines state the selection of key issues will include, but not limited to:</p>	4.1	Odour Component Study
		4.2.1 d	
			<p>Key issues: Odour impacts on tourism and community;</p>

	<ul style="list-style-type: none"> • Effects on the quality of life of people who live or visit the area, particularly those who participate in tourism and recreational activities. • The effects on water bodies, fish and wildlife habitat in the project footprint and surrounding areas. • The effects on the tourism industry, including a description of the tourism industry. 	<p>4.2.4. b 6.2.1 6.2.4</p> <p>4.2.2 Aquatic Environment 4.2.3. b Figures 12 and 13</p> <p>4.2.4.d 4.2.5 Tourism Resources 6.2.4 Impacts on Land 6.2.1.2 Resources/Tourism 4.2.3 c 4.2.4 e 6.2.5 10</p>	<p>Tourism and Potential Effects on Tourism Operators Avifauna Land Resources</p>	<p>Impact on wetlands (peatlands) and water courses. Landscape/biodiversity</p> <p>Summary of the Odour Component Study (attached to the Component Study) Summarizes impact of the existing farm, including manure spreading, on the existing farm. Also discussed the impact of the cattle and expanded pasture land.</p>
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Environmental Impact Statement Guidelines				
Section #	Summary of EIS Guidelines Requirements	Section #	Environmental Impact Statement Component Study	Comment
4.2	Existing Environment: The EIS shall describe the existing environment which will constitute the reference state of the environment and will include the biophysical and socio-economic environment which may be affected by the undertaking with an emphasis on "value ecosystem components" (VECs) The VECs can be loosely described as what people value/enjoy in the area of the proposal.	4.2	Odour	As per details in the following section
4.2.1	Atmospheric environment shall provide a description of climate and meteorology, indications of climate change, existing sources of greenhouse gases, existing odour occurrences and existing fly ecology, including occurrences and duration.	4.2.1 4.2.4b 6.5	Odour Component Study	Weather patterns: Wind and precipitation normals, Prevailing wind direction, Storms Local conditions Climate Change Observations and Trends, (increased wind speeds) Existing Sources of Greenhouse gases Odour Occurrences and durations, Odours from farm operations. local greenhouse gas production.
6.5				

4.2.2	Aquatic Environment: The EIS shall describe the relevant hydrological features including the location of water courses and wetlands, water movement and biological diversity including freshwater aquatic species considered under endangered species legislations and species of special interest or conservation concern by the Committee on the Status of Endangered Wildlife in Canada and/or Species Status Advisory Council	4.2.1 e 2.3.1 d 4.2.3 b.	Files Figure 12 Wetlands map illustrates location of water courses, wetlands and direction of waterflow. Figure 13 large scale of Highlands and Sooleys Marshes. Listing of freshwater species on the Island of Newfoundland.
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Environmental Impact Statement Guidelines		Environmental Impact Statement		
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	Comment
4.2.3	Terrestrial Environment: The proponent shall describe the relevant terrestrial environment adjacent to and within the Study area, including: soil type and if the soil type supports the proposed use; location of wetlands; terrestrial fauna, including mammals, avifauna and waterfowl and species designated and listed under endangered species legislation. Or listed as endangered, threatened or special concerns/vulnerable by the Committee on the Status of Endangered Wildlife in Canada and/or the Species Status Advisory Committee And human-wildlife interaction	4.2.3	Evaluation of Land Parcels (Existing and Proposed) Avifauna	Suitability of the land for forage and pasture Wetlands and type Terrestrial fauna, including mammals, avifauna and waterfowl. Human-wildlife interactions.
4.2.4	Land and Resource Use: The proponent shall describe relevant land and resource use within the study area including: <ul style="list-style-type: none"> • Current land use in the area and the relationship of the project with any existing or future use of land • Description of the nearest potentially sensitive receptors • Unique sites, protected areas, environmentally sensitive areas • Tourism operators, tourism assets and local recreational areas activities Landscapes, including effects of the project on views capes.	4.2.4	Evaluation of Land Parcels (Existing and Proposed)	Domestic cutting permits. Description of potentially sensitive receptors. Land Use in the area, including tables. Unique sites/ environmentally sensitive areas/protected areas. Landscapes. Zoning /Land Use designations. Areas requiring buffers.
4.2.5	Tourism Resources: The proponent shall describe the relevant tourism resources including operators and tourism assets in the area.	4.2.5	Tourism Component Study	Importance of the industry Location of tourism operators and assets
4.2.6	The proponent shall describe relevant cultural heritage resources in the study areas including: historic and archaeological, paleontological, architectural resources; and burial, cultural, spiritual and heritage sites.	4.2.6		Heritage Paleontological resources Architectural resources Burial, spiritual etc.

Environmental Impact Statement Guidelines		Environmental Impact Statement		
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	Comment
4.2.7	Communities: The proponent shall describe relevant community elements in the study area including: demographics and industries, health services and social programs, family life, recreations, education and training facilities; housing, accommodations and property values.	4.2.7		Communities /population demographics Health services and social programs Education Housing/accommodations
4.2.8	Economy, Employment and Business: The proponent shall describe the relevant economy, employment and business elements in the study areas including: economy, employment, availability of skilled and unskilled labour in the region and employment equity and diversity including under -represented groups.	4.2.8		Economy Employment Availability of skilled; unskilled Employment Equity and Diversity
4.3	Component Studies: Component Studies are required to address baseline data requirements to support the evaluation of environmental effects and/or to develop mitigation and monitoring programs. The EIS Guidelines require the completion of four component studies: 4.3.1 to 4.3.4	4.3		The Component Studies are included as Stand-alone documents, referenced as volumes in the Table of Contents. 1) Evaluation of Land Parcels (Existing and Proposed) 2) Odour 3) Avifauna Control and Management 4) Tourism Potential Effects on Tourism Operators
4.3.1	Component Study: Evaluation of Land Parcels (Existing and Proposed) The proponent shall conduct a study of the suitable land area within a study area of sufficient size that allows modifications as construction commences. The information provided in this study shall include but not limited to: a) Wetlands and type b) Forestry domestic cutting areas c) Suitable land for forage (and pasture) production d) Water courses, including direction e) Locations of water mains and residential lines f) Proximity to residential, commercial and tourism related assets	4.3.1	Evaluation of Land parcels (Existing and proposed)	Includes: Wetlands, Domestic cutting areas, Land suitable for forage and pasture: Location of water courses and streamflow direction, Zoning/land use designations, Amendments to lands under application
Environmental Impact Statement Guidelines				
Section #		Environmental Impact Statement		
Summary of EIS Guidelines Requirements		Section #	Component Study	Comment
4.3.2	Odour: The proponent shall conduct a study which will consider the odour baseline from the existing facility, and the projected odour of the facility described in the registration document.	4.3.2	Odour Overview of the IEC Report	The odour component study is based on: Independent Environmental Consultants (IEC) Qualitative Odour Risk Assessment and Mitigation Planning Report Cavendish Beef Farm. The Risk Assessment determines odour risks from the existing milk farm and the proposed cattle farm, including land expansion for pasture and forage. The Report makes several recommendations
		7.1		
		8.0		

					to reduce odours. (summary is 'attached' to the component study).
4.3.3	Avifauna Control and Management. This component study requires the proponent to conduct a baseline survey to identify and characterize the presence of migratory birds and avian species at risk within the foot print and surrounding areas. The proponent is also required to develop and implement a migratory bird management plan to reduce the risk of impacts on migratory birds. The management plan should include information on how the proponent will minimize the attractions of certain species of wildlife and migratory birds such as gulls.	4.3.3 7.1 8.0	Avifauna Control and Management		The Study included three days of bird surveys. The surveys did not identify any rare or endangered birds. The Study identifies measures to protect birds during farmland development and includes an approach to conduct an audit of the farm to assess opportunities to control gull access to the farm
4.3.4	Tourism and Potential Effects on Tourism Operators: The proponent shall identify and map all tourism related-related operators within 10 kilometres of the proposed project area and shall include but not limited to: all tourism related establishments and assets, such as walking trails, marina etc. and direct consultation with tourism operators to identify current effects and concerns regarding potential future effects.	4.2.4	Tourism and Potential Effects on Tourism Operators:		This Study includes the results of direct consultations with the tourism operators within ten kilometres of Viking Farm. The Study identifies tourism assets and operations in the Region.
5.0	Data Gaps. Where data gaps and/or information gaps remain, the proponent shall describe efforts to resolve efforts to resolve the gaps, including	5.0			Soil chemistry needs to be monitored where cattle manure and mink manure are applied to the same fields. Manure spreaders with soil injection capabilities have been determined to be ineffective in NL soils. New technologies must be monitored to determine if they would suit NL conditions; and in particular soils at cavendish. Alternatives for community engagement to be determined.
6.0	Environmental Effects:	6.0			Includes a discussion of environmental effects on several social/physical environmental components. (Construction and operations where applicable.)

Environmental Impact Statement Guidelines		Environmental Impact Statement			
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	Comment	
6.1	Predicted future Condition of the Environment if the undertaking does <i>not</i> proceed.	6.1 4.3.2			
6.2	Predicted Environmental Impacts of the Undertaking. EIS shall include an analysis of the predicted effects of each phase of the proposed development. The predicted effects, shall be defined in respect to what people value and enjoy. Eg. nature, magnitude of the impact, socioeconomic context, the sustainability of the use of natural resources, the extent of biological diversity effected by the project, the application of the	6.2.1 6.2.1.1 6.2.1.2 6.2.2.1	Odour	Atmosphere Environment Construction Operations Aquatic Environment Construction	

	<p>precautionary principle and impacts to business and market development value of the tourism sector.</p> <p>The EIS shall describe the socio-economic and biophysical effects of the project on the surrounding environment, including but not limited to: business development opportunities and the potential effects wildlife, plants, land base, water courses and impact on human resources, such as odour and fly effects on the quality of life, market values and visitor experience on visitors to the area.</p>	6.2.2.2 6.2.3 6.2.3.1 6.2.3.2 6.2.4 6.2.4.1 6.2.4.2 6.2.5 6.2.6 6.2.7	Avifauna	<p>Operations Terrestrial Construction Operations Land and Resources Impacts Fishes Odours Biodiversity Heritage Resources Communities</p>
-6.3	<p>Accidents and Malfunctions: The EIS is required to describe the potential accidents and malfunctions related to the project and the potential environment effects The EIS is required to describe worst case scenarios including the magnitude/characteristics of any deposits/materials which could be released to the environment. e.g, fuel spills, bridge/culvert failure, release of substances such as manure, fertilizer waste products, etc. The EIS requires the proponent to assess the likelihood of occurrences and the severity of consequences</p>	6.3		<p>Oil/Gas Spill Manure Spill Food Products Escaped Cattle</p>
Environmental Impact Statement				
Environmental Impact Statement Guidelines				
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	Comment
6.4	<p>Cumulative Environmental Effects: The proponent is required to identify and assess the project's cumulative environmental effects. The proponent shall consider effects where there is an overlap with other projects and activities within the area and shall consider the impacts on other land uses and developments which may be facilitated by new infrastructure constructed for the project, such as roads. The EIS is required to justify the activities where a cumulative assessment is required, along with mitigative measures to determine the significance of residual and cumulative impacts.</p>	6.4	Odour	<p>Cumulative Impact of the proposed cattle farm and the existing milk farm. Cumulative Impact on forest resources. Impact on cabin development.</p>
6.5	<p>Effects of the Environment on the Project: The EIS shall take into account the impacts of severe weather and the potential influence of climate change scenarios on the project. e.g, increased severity of and frequency of storms.</p>	6.5		<p>Increased winds, more severe and frequency of storms impact agricultural activities. Viking has been effected which has resulted in costly repairs and structural improvements.</p>

7.0	<p>Environmental Protection: Mitigation</p> <p>The EIS shall identify and discuss proposed measures that will be implemented to mitigate adverse effects and enhance beneficial effects of the project. The rationale for and effectiveness of the proposed mitigations and enhancements measures should be discussed and evaluated. The proponent shall identify who is responsible for implementing the mitigative measures, including the obligations of contractors. The mitigations shall include, but not limited to the following: odours, flies, prevention of impacts on tourism operations, minimize the likelihood of erosion, conservation of wetlands, protection of wildlife, protection of water quality and measures to minimize project-related greenhouse gases.</p>	7.0 8.0		<p>Mitigation initiatives are summed up in a matrix in Section 7, Mitigation 8, Residual Effects and determination of significance.</p>
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Environmental Impact Statement Guidelines		Environmental Impact Statement		
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	Comment
7.2	<p>Environmental Emergency Contingency Plan:</p> <p>The Environmental Emergency Contingency Plan shall provide information on the location of on-site emergency response equipment and procedures to respond to emergencies such as: accidental spills and malfunctions of equipment which could have an impact on the environment.</p>	7.2		<p>Emergency Response Plan (Overview) Environmental Contingency Plan</p>
7.3	<p>Personnel Emergency Response Plan:</p> <p>The emergency response plan shall describe measures to effectively respond to mishaps involving mishaps through the implementation of the undertaking. E.g., First aid expertise and kit; communication plan, within the farm and to health care providers.</p>	7.3		<p>Initial response plan is included; farm has existing first aid capabilities.</p>
7.4	<p>Environmental Effects Monitoring Plans (EEMP) and Follow-up Program:</p> <p>The EIS shall describe the environmental and socio-economic monitoring and follow-up programs to be incorporated into all phases of the project. The purpose is to verify the accuracy of the predictions made in the assessment of the effects as well as the effectiveness of the mitigation measures. The Monitoring program shall include measures:</p> <ul style="list-style-type: none"> • Objectives and schedule for the collection of the monitoring of data required to meet the objectives • Sampling design, including frequency and geographical area. • Reporting mechanisms and communications plan • Procedures to assess the effectiveness of the monitoring and follow up programs • Monitoring programs shall include but not limited to tourism economic impacts 	7.4		<p>Environmental Effects Monitoring Plans (EEMP) and follow up program (The proponent shall prepare and submit the EEMP subsequent to the completion of the EIS, but before the initiation of project construction.)</p>

Environmental Impact Statement Guidelines		Environmental Impact Statement		
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	Comment
	The proponent shall prepare and submit the EEMP following the completion of the EIS but before the initiation of project construction.			
8.0	Residual Effects and Determination of Significance. Residual effects, which cannot be avoided or fully mitigated will provide a discussion and evaluation of residual effects. The EIS shall provide a concise statement as to the rationale as to the significance of residual environmental effects. The EIS will include a matrix of the environmental effects, proposed mitigations and residual adverse impacts.	8.0		Matrix of residual effects/mitigations is included in section 8.
9.0	Assessment Summary and Conclusions: The EIS shall summarize the overall findings of the environmental assessment, with emphasis on the key environmental issues identified.	9.0		Summary is provided with a focus on the key issues.
10.0	Public participation: The EIS shall describe the Public participation and consultation as specified in Appendix B of EIS Guidelines. The results of the Public Participation and consultation will also be provided.	10.0	Odour Land Tourism	Meeting notes of the Public Meetings/Information Session
11.0	Environmental Protection Plan (EPP) The proponent shall prepare an EPP for construction and operation of the Cavendish Beef Farm after the completion of the EIS; project prior commencing construction. The EIS shall address the major construction, operation and maintenance and operational	11.0		An overview of the EPP is provided in the EIS. EPP would be required if the EIS is released.
Environmental Impact Statement Guidelines		Environmental Impact Statement		
Section #	Summary of EIS Guidelines Requirements	Section #	Component Study	Comment
11.0	Activities, permit requirements, mitigation measures and contingency plans as follows: <ul style="list-style-type: none"> • Proponents environmental policies • Environmental compliance monitoring • Environmental protection measures • Mitigation measures • Permit application and approval planning • Contingency planning for accidental and unplanned events • Statutory requirements, and • Revision procedures and contact lists. 	11.0		

12.0	References The proponent shall prepare a complete and detailed bibliography of all studies used to prepare the EIS.	12.0		Included
13.0	Personnel The names and qualifications of key professionals/scientists responsible for preparing the EIS and supporting documentation shall be included	13.0		Included
14.0	Commitments made in the EIS. The EIS shall provide a list of all commitments made regarding environmental mitigation, monitoring and follow-up. Each commitment must be cross referenced to the section of the EIS where the commitment has been made.	14.0		Included
15	Copies of the Report; 12 electronic copies; 12 paper copies.	15		Additional copies "at public viewing centre" as determined by the Department of Environment and Climate Change.

1.0 INTRODUCTION

Viking Fur Farm Inc. (Viking) has operated a mink farm in Cavendish, south of Hearts Delight-Islington, north of Whiteway, since 2004. Figure 1. The farm is proposing to diversify into cattle farming which would contribute to the production of locally grown food in the Province. The growing of beef would be complimentary to the existing farm and enhance the sustainability of Viking by providing an efficient use of hay produced on the farm.

Viking registered the proposed undertaking pursuant to the Province's *Environmental Protection Act* in February 2019 (1). In April 2019, the Minister of the Department of Environment and Climate Change (DECC) informed Viking an Environmental Impact Statement (EIS) was required to determine if the proposal may have significant environmental and social-economic impacts. More specifically, the Minister stated the proponent was required to address:

- Evaluation of land parcels (arable land, domestic cut blocks and setback distances)
- Odour and fly management
- Avifauna control and management,
- Effects on water bodies, and
- Effects on the general public and tourism.

The Guidelines for the preparation of the EIS were issued in November 2019. The purpose of the Guidelines is to identify to Viking, the nature, scope and minimum information and analysis required in the preparation of the EIS. The Guidelines require Viking to prepare four component studies to address baseline data requirements to support the evaluation of environmental effects and/or to develop mitigation measures and monitoring programs. The four component studies include (1):

- Evaluation of Land parcels (Existing and Proposed)
- Odour
- Avifauna Control and Management
- Tourism and Potential Effects on Tourism Operators.

The preparation of the EIS included public consultation through two meetings held in Whiteway. In addition, interviews with tourism operators and the maintenance of odour diaries completed by the public (odour component study) were an important consultative aspect in the preparation of the EIS. It is recognized, that communication is an integral component of the continued operation of the mink farm and of the cattle farm, should it be approved.

1.1 Name of the Undertaking
Cavendish Beef Farm (Registration 2002)

1.2 The Proponent

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The key personnel who contributed to the preparation of the EIS include:

Independent Environmental Consultants (IEC) Odour Component Study
Peter Noer, and Renee Gilbert, Viking Fur Inc. with the assistance of: Hazen Scarth, St. John's NL
Annamarie Buchheit, Avifauna bird survey, Avifauna Control and Management Component Study

1.3.1 Purpose of the Environmental Impact Statement (EIS)

The purpose of the EIS, as stated in the EIS Guidelines is to identify the important beneficial and adverse environmental effects associated with the undertaking, identify measures to mitigate against any adverse effects, determine the significance of residual environmental effects and design a program of public consultation to identify and address public concerns of the undertaking.

Project Principles

Viking has incorporated the following principles in the design, development and operation of the proposed diversification into the raising of beef along with additional land for pasture and forage. (hay)

Sustainability

Viking is committed to three pillars of sustainability: economic, social and environment. Viking has identified key priority areas for sustainable agriculture within the community, all of which apply in the planning, development and operation of the proposed farm diversification. The priorities include, minimizing the effects on the environment/community, enhanced public engagement, production of high-quality agricultural products and managing a healthy, safe working environment.

Precautionary Approach

Viking has proposed mitigative measures that go beyond regulatory requirements, guidelines and best management agricultural practices. These measures, which include the existing mink farm, are designed to minimize effects on the environment, physical and social, with particular focus on the control of farm odours and protection of water quality. For example, during the preparation of the EIS, Viking proceeded with the purchase and installation of tent like covers for the existing liquid manure storage tanks and discontinued the summer spreading of liquid mink manure on the oceanside of Route 80, the Trinity Bay Highway. In regards to water quality, buffers were widened along water courses and wetlands. Viking would develop and implement an Environmental Protection Plan (EFP) to ensure the protection of the environment during farmland development and operation of farm activities.

Community Engagement

Viking recognizes community engagement as integral component of the development and future operation of the farm in a sustainable manner. The EIS included public meeting/information sessions, direct consultation with tourism operators and community engagement whereby residents completed diaries of odour events and meteorological conditions in connection to a risk assessment conducted within the Odour Component Study. It is recognized, future community engagement is imperative to monitor the effectiveness of efforts to mitigate impacts on the physical and social environment, most notably farm odours.

2.0 THE PROPOSED UNDERTAKING

2.1 The Study Area

The proposed cattle farm, including applications for Agricultural Crown Land leases for pasture and forage use, is located in Cavendish, Trinity Bay, immediately south of the municipality of Hearts Delight-Islington and north of Whiteway. Figure 1. The Environmental Assessment Committee for the Cavendish Beef Farm (Registration 2002) (Committee) specified the proponent map all tourism business's and assets "within ten kilometres of the proposed project area." The ten-kilometre study area extends from Whiteway to Hearts Desire, a total distance of 20 kilometres. Figure 2 consists of two maps, north of Viking farm and south of the farm. These maps include references to

tourism facilities and assets along with other potentially sensitive uses of land, such as seniors' homes. The maps include concentric circles every two kilometres to facilitate an estimate of the distance to uses of land, which will be discussed in greater detail in the EIS. At this point, the maps are intended to provide the reader with an overview of the farm location in respect to the ten- kilometre Study Area.

Within the ten-kilometre Study Area, a more detailed, larger scale study area was identified to assess and understand the potential impacts of the development in the more immediate area of the farm. This detailed Study Area includes the footprint of the existing farm, proposed development and adjacent lands. This more detailed area describes and assesses the topography, soil capability/evaluation of land parcels, proximity to wetlands, water courses, a former waste disposal site, avifauna studies, location of water course buffers and details of the development of farmland under application. This more focused area includes an assessment of the proposed farm on the immediate physical environment and socio/economic perspectives. This area is identified in Figure 4.

In regards to odour, the study of odour from the existing mink farm and the proposed expansion focussed on an area of about five kilometres from the farm. The Report, based on the Odour Component Study explains farm odours were determined to be negligible beyond three and half kilometres of the farm.

Therefore, the Study Area and the scale of maps in the EIS vary in size and detail to facilitate the review and understanding of the potential environmental effects and mitigation of effects of the proposal and the existing mink farm. The appropriateness of the scale of the study areas is further described in the EIS, in respect to the discussion/explanation of the proposal, including existing mink farm, which the EIS Assessment Committee and the public have directed Viking to assess.

2.2 Need, Purpose and Rationale for the Undertaking

Viking Fur Inc. (Viking) has been in operation since 2004 and has maintained stable employment for its 45 regular employees and 40 seasonal employees. The Company has proposed to diversify its agricultural business to raise beef cattle with a focus on Belted Galloway Cattle, for market in Newfoundland and Labrador. Business is a key driver of the local economy and the diversification into beef will further contribute to the local

Figure. 1

Location Map

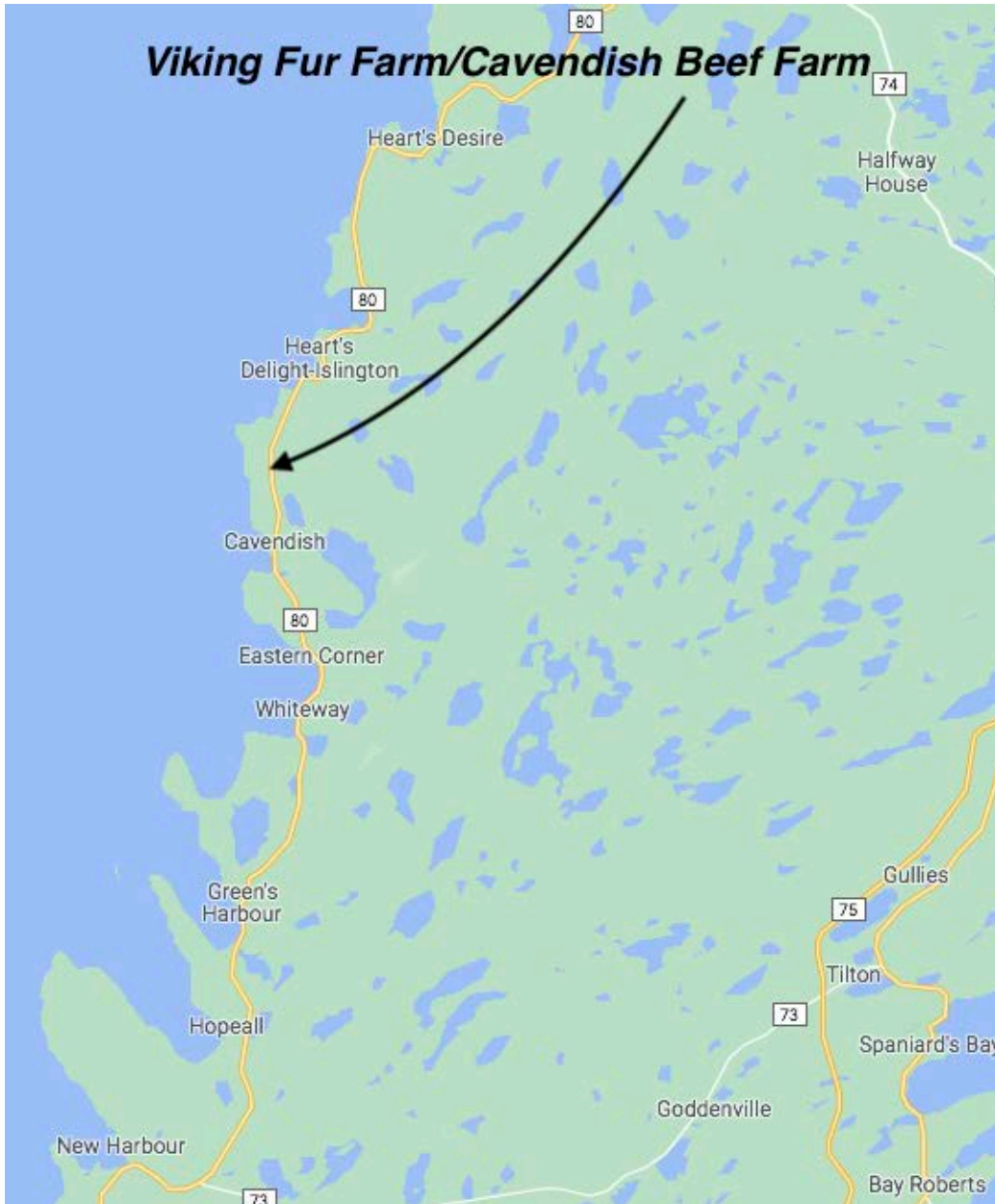


Figure 2 (north) Circles represent two-kilometre increments from the farm.

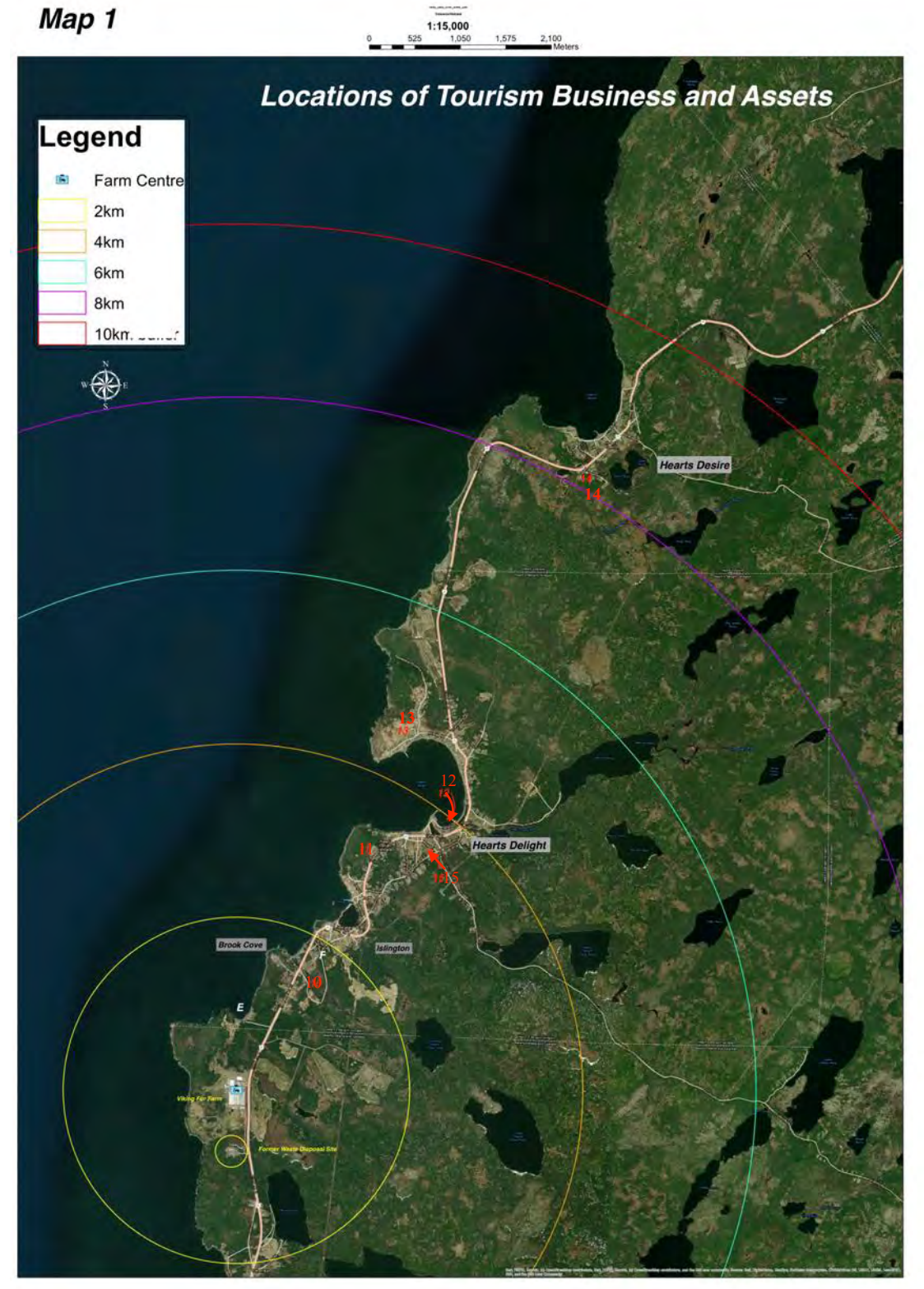
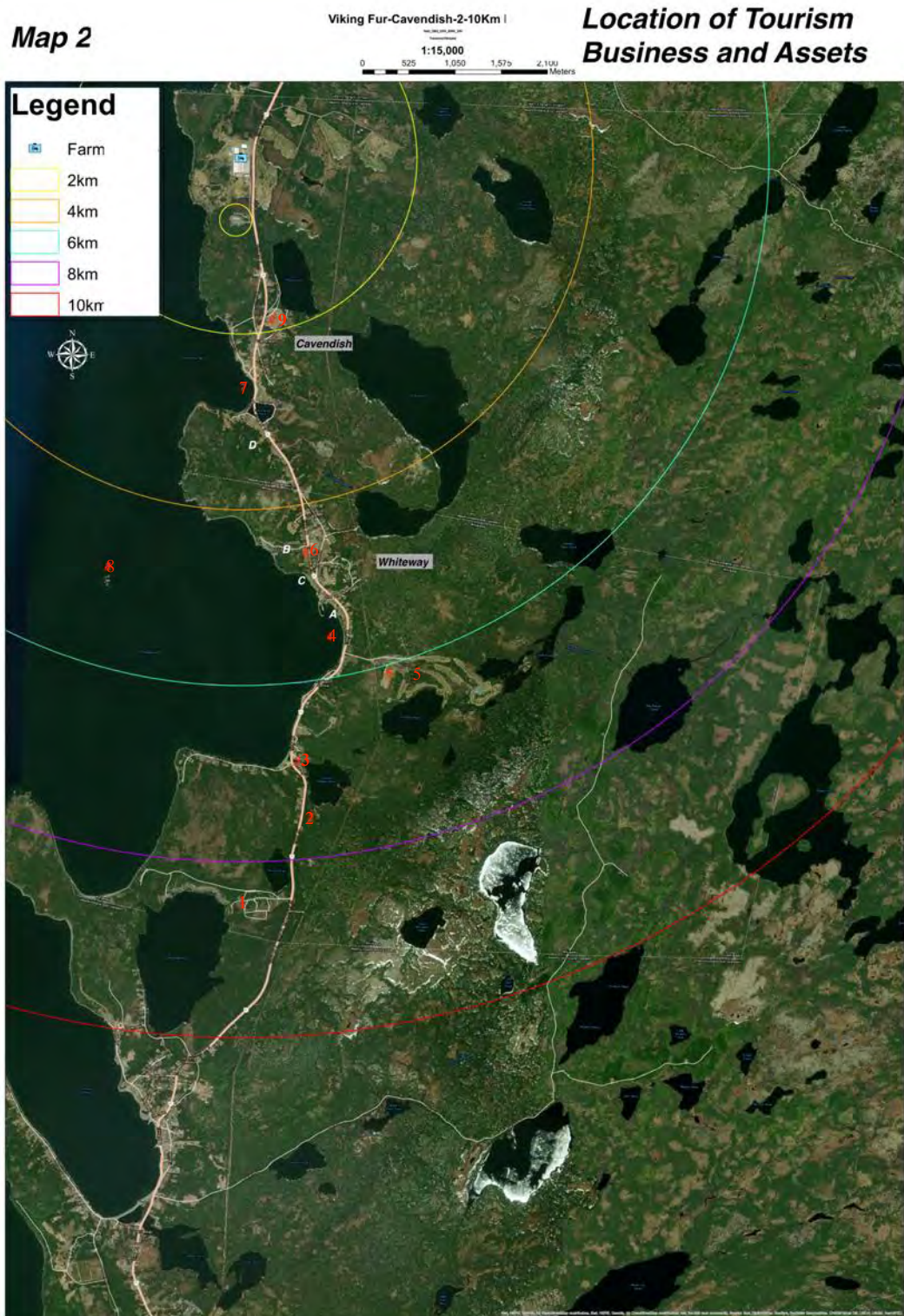


Figure 2 (south)



Letters (white) refer to tourism accommodations. Numbers (red) refer to tourism assets. See Tables 7, 8 and 9 for a list of Tourism assets and businesses along with other land uses within the kilometres of the exiting farm.

economy. Viking has a payroll in the range of \$1.5 to \$1.7 million and annually spends about \$700,000 for the purchase of goods and services in the region.

In 2017, the Provincial Government and the Newfoundland and Labrador Federation of Agriculture developed the Agriculture Sector Work Plan with the goal of growing the agriculture industry and stimulating new private sector employment (2). The objective of The Way Forward initiative was to increase food self-sufficiency to at least 20 per cent by 2022, from 10 per cent in 2017. As of the summer of 2021, the Province stated self-sufficiency in fruit and vegetables has increased from 10 percent to 17.3 per cent (3). In the fall of 2019, it was reported that local beef suppliers had sales of 100,000 kilograms of beef, which according to the Province, was less than one per cent of consumption.

The Province has made a commitment to increase beef production in the Province through the Provincial Beef Cattle Enhancement Program. This objective includes an increased production of meat, with plans to diversify the province's beef industry. The 2017 plan included investigation of options to establish licensed slaughter facilities for the processing of meat products for retail sales. In addition, the possibility of a mobile abattoir was identified as a method which would help farms produce meat for the provincial market (2). Since 2017 four slaughtering facilities have been established or are under construction and two others have been renovated in the Province (4).

Viking's desire to establish a cattle farm is consistent with the Province's objectives to improve food security, add jobs and create new opportunities. In 2021, drought in the prairies resulted in the reduction of beef herds due to the lack of forage. Quite possibly the drought is an example of Climate Change which has implications for food production throughout the world. Furthermore, pandemic impacts related to the movement of goods has also impacted the availability and cost of food. From September 2020 to September 2021 the cost of beef has risen 9.5% in Canada. From May to June there was an increase of costs of 8% at beef processing plants in Alberta. (5). The costs and availability of beef (and other foods) could be further impacted with transportation issues specific to the island. A regular supply of food products is a basic right to any jurisdiction. The Viking proposal represents a response by a Newfoundland and Labrador based company to the challenge of providing a local source of food to the people of the Province. The farm would also provide work for the existing and new slaughtering facilities.

Livestock farms, whether they be dairy, poultry or in this case, fur farms, require sufficient land base to spread manure in an environmentally acceptable manner. This normal, acceptable farm practice was stated in a decision of the Province's Farm Practices Review Board in respect to Viking, which concluded Viking needed additional land to manage mink manure in an agronomic and environmentally acceptable manner (6). In addition, Viking's nutrient management plan, based on the nutrient content of the mink manure, the volume of manure and fertility of the soil, states the need for an expanded land base to meet agronomic and environmental requirements. (about 150 acres) In essence Viking is applying more manure than required by the forage/pasture crop resulting in a buildup in nutrients, notably phosphorous (7).

Forage is used to feed the existing cattle and for bedding in the mink nest boxes. The forage, along with bedding, is also used as a carbon source ingredient in Viking's compost facility. The additional land base would meet the Province's requirements for sufficient acreage to handle the mink manure and increase forage production. Whereas Viking has the equipment and expertise to grow forage, it is concluded diversification into beef cattle would be an efficient and economical feasible expansion for Viking to pursue.

The capital cost of the proposed farm development is estimated at \$1,100,000. The development of pasture ~ \$375,000 and hay land at \$525,000 is the biggest cost to the diversification into beef. (\$900,000) For the most part herd expansion will be done by expanding the existing herd with the acquisition of new bulls to diversify the blood line of the herd. An estimate of \$20,000 is required for the purchase of bulls over a five-year period. The expansion of the pasture land base would require fencing and paddocks to manage the animals. It is estimated two kilometres of fencing, would cost approximately \$70,000 plus labour to erect (8). A ten percent contingency of \$100,000 for a total cost of \$1,100,000. As inferred by these expenses, the proposal does not include buildings. Windrows developed during farmland development would be used to provide shelter for the cattle.

Viking produces approximately 8-10 round bales of forage per acre at a value of \$70-\$90 per bale and a cost of production of about \$15 per bale for labour, fuel and silage wrap. Cost of pasture maintenance is related to improving pasture production through levelling, drainage and reseeded as required.

The value of beef, based on 500 pounds of marketable beef per animal, at \$3 to \$4 a pound, indicates a range of \$1,500 to \$2,000 per animal, minus butchering costs of 90 cents per pound. Additional variables, notably the size of the animals would also impact the value of annual sales. If fully developed to 100 cows, 75 calves a year at \$1,000 to \$1,500 would result in an income with a range of \$75,000 to \$110,000.

For every 20 animals (breeding stock) Viking estimates a half time position would be required for the farm at a cost in the range of \$40,000 to \$45,000, based on 2.5 positions, labour costs would be in the range of \$90,000 per year.

2.3 Project Description

2.3.1 General Layout

a) Site Plan

Viking Fur Farm (Viking) established its farm on Agricultural Crown Land leases which straddle the Trinity Bay Highway, Route 80. The farm buildings, including sheds for the housing and rearing of mink, feed processing, refrigeration, manure storage tanks, storage buildings and a composting shed are located on the ocean side of the Highway.

Aerial View of Viking Fur Farm

(Figure 3)



In the past decade the farm acquired additional Agricultural Crown Land leases on both sides of Route 80. The land on the ocean side of highway has been developed for pasture and some forage, while the land on the interior side of the highway is used to grow forage. Manure from the mink farm is spread on farmland on both sides of the highway.

Detailed Study Area

Figure 4.



The proposal is to pasture the cattle on the on the ocean side of Route 80 and expand forage land on the eastern/interior side of the highway. In regards to pasture, the overview map, figure 4, refers to lands under application as Parcels 1 and 2. These two parcels consist of 124 acres of land, of which approximately 55 acres could be developed for pasture use as per Provincial soils mapping. It is possible with enhanced effort that additional acreage could be developed for pasture. The farm has also purchased approximately 20 acres of private land.

On the inland side of Route 80, the Farm has applied for five Agricultural Crown Land Leases (lots 3,4,5, 6 and 7.) consisting of 166 acres of which approximately, 70% (116 acres) is suitable for forage development. Typically, about two-thirds of an Agricultural Crown Lease can be developed in the Province. The remaining third is unsuitable because of unsuitable soils, topography and buffers for the protection of the environment such as water courses and wetlands. The map also includes other farms, properties and key features including marshes and a brook which will discussed in the EIS.

Note: As a result of analysis conducted in the EIS, Viking decided to reduce the amount of land in their applications for Crown Land. The details will be discussed in the relevant sections in the EIS.

b) Former landfill

The former landfill was ‘operationally closed in 2011 and ‘environmentally closed’ in 2013. In 2017 it was converted to a Waste Recovery Facility, managed by the Eastern Regional Service Board. The site provides residents of the area a public drop-off for materials which cannot be disposed of at the curbside. These materials are subsequently removed for final disposal or recycling (9).

The clean-up of the former waste disposal site included but not limited to:

- Grading, moving, consolidation and compaction of the waste on the site
- The covering of the site to minimize the infiltration of liquids and soil erosion. The site required a cap of 0.6 metres of onsite and imported soil.
- Perimeter ditching
- Relocating of shingles, scrap metal as required.
- Site cleanup, including the collection of windblown debris.

The former waste disposal site would have been closed consistent with the Department of Environment and Climate Change’s applicable guidance documents as of 2013. The tender documents for the environmental closing of the former Cavendish Waste Disposal Site in preparation for the construction of the current waste recover facility, provide the details as to how the site was prepared for the use as a waste recovery facility (10).

c) Groundwater wells

There are no off farm ground/surface water wells within 75 metres of the proposed farmland expansion. Section 11 of the *Sanitation Regulations under the Public Health Act*, states: “a person shall not spread stable or other manure, fish or fish offal, or discharge waste on land situated less than 75 metres from the source of water used for drinking purposes when the draining of the land is towards the water supply (11).” Therefore, it is concluded there is sufficient separation distance between private water wells and existing farm land or land proposed for pasture or forage. Viking sources its water from three wells which are tested twice a year at the Newfoundland and Labrador Public Health Laboratory, Department of Health and Community Services in St. John’s.

d) Waterbodies and wetlands

The portion of the existing farm and proposed farm on the interior side of Route 80 are within the Brook Cove Brook Watershed (Figure.5). Brook Cove Brook flows from Outside Island Cove Pond to the ocean at Brook Cove (Hearts Delight-Islington) A tributary of the brook flows from Sooleys Marsh and Highland Marsh and then somewhat parallel to the former railway, flowing through a culvert at Fox Farm Road towards the main stem of Brook Cove Brook. The entire Brook Cove watershed, including the tributary to Highlands Marsh and Sooleys Marsh is about 16 square kilometres.

Field visits in the spring runoff of 2020 identified significant run off from snow melt along the former railway, extending through Sooleys Marsh. In addition, a small portion of the southeast part of Sooleys Marsh flows towards Round Pond and therefore is located outside of the Brook Cove Watershed.

Sooleys Marsh and Highland Marsh are peatlands (bogs) with a total of approximately 49 hectares (120 acres). Most of the bogs are dome bogs, with small areas of string bogs. Sooleys Marsh includes a small fen, which is a peatland with more slope and greater variety of vegetation.

On the oceanside of Route 80 there are five areas of mineral wetlands, totalling 16 hectares (40 acres). These features are saucer shaped with organic deposits of less than 40 cm. There are two organic peatlands consisting of 6.5 (16 acres) hectares of land.

Wetlands are further discussed in Section 4.2.3.b

e) Stream crossings

The existing Fox Farm Road crosses over a tributary of Brook Cove Brook. This road, including the culvert, is maintained by the Provincial Government. Although the Brook Cove tributary is not identified on the 1:50,000 topographical map, the flow, particularly during the spring melt is substantial. Farm development of lot 4a would require a stream

crossing of the Brook Cove tributary. During the preparation of the EIS, it was decided to delete lot 4a from the proposal and therefore removing the need for a stream crossing at this location while avoiding construction next to wetlands. Locations of the former rail line and Fox Farm Road are shown on Figures 4 and 6.

***Brook Cove Brook Watershed
Location Map***

Figure 5



1:50,000 Topographical map with tributaries flowing from Sooleys and Highlands Marshes.

The former rail line is used by Viking to access fields and for the general public to travel to the interior, primarily for wood cutting. The condition of the rail line/driving surface had declined and could be described as a rough dirt road and at times an intermittent stream, particularly in the spring. In 2021 the Province remediated 0.8 of a kilometre of the former rail line, south from Fox Farm Road. This renovation included a culvert to manage the water flow along the rail line. Therefore, there is not a need for a culvert to access lot 4b. As a result of deletion of lot 4a and the installation of a culvert in vicinity of proposed access to lot 4b, there would not be any stream crossings associated with the proposed development. (Figures 12 and 13 identify the location of the culvert installed in 2021).

- f) Distances of land use activities within 10 kilometres from the project.

Figure 2N and 2S, is an aerial image of the area from Whiteway to Hearts Desire, within ten kilometres of the Project Area. This aerial photo imagery, includes concentric circles every two kilometres from the farm which provides a snap shot illustration of the distances of various land uses from Viking Farm and the lands proposed for pasture and forage expansion. In addition, table 8 states the locations to a number of land uses, most notably tourism business and tourism assets, such as hiking trails, accommodations, restaurant and the marina in Hearts Delight-Islington. The closest areas of residential development are highlighted and includes the locations of two seniors' homes.

Section 4.2.4 Land and Resource Use discusses land use within 10 kilometres of the Project Area.

2.3.2 Construction

- a) Construction period

As a result of amendments which resulted in the reduction of the size of parcels which Viking has applied for, the amount proposed for land clearing has been reduced. It is proposed to clear and develop approximately 55 acres of leased land and 20 acres of freehold land for pasture on the oceanside of Route 80 and 110 acres for forage to the east of the highway. The plan is to clear and develop 30 acres of land per year and therefore it would take approximately six years to place all the acreage in agricultural production. The proposed leases would be accessible through existing Crown leases, or from public roads, including Fox Farm Road which extends inland from Route 80 for about one kilometre. The freehold land is located along the northern boundary where the existing farm buildings are located as identified as parcel z on figure 4.

- b) Schedule for land clearing of each parcel

It is proposed to proceed with land clearing and land development as follows:

Schedule of Farmland Development

Table 1

Parcel of land (lease)	Total acres	Suitable acres	Cutover/removal of vegetation	Stone removal and levelling	Cultivation/seed ing
Parcel 1 **	56	33	2022/25	2023/25	2023/25
Parcel 5	17	13	2022/2023	2023	2023/24
Parcel 3	12	6	2022	2023	2023
Parcel 7	68	54	2023/24	2024/26	2026/27
Parcel 2 **	44	18	2024/2025	2025/26	2022/27
Parcel 6	19	11	2027	2027	2026/27
Parcel 4 *	37	25	2026/2027	2026/27	2027
Parcel Z	~ 20	20	2022/2023	2022/2023	2022/2023

Farm roads would be constructed to facilitate land clearing and normal farm activities. In anticipation of local interest in fire wood, sufficient access to forest areas in vicinity of lot 7, would be provided. In consultation with the Provincial Forestry Branch, appropriate access, notably location would be determined.

The access road to parcel 4 b, from the rail line to the lease boundaries, would be about 100 metres. This road would be constructed as a farm access road for the use of the range of equipment required to develop the farm land and to manage the farm land. Whereas it is planned to develop lot 4b in 2024/25, road construction would not be initiated till 2023 or 2024. In the interim, domestic wood cutters could continue to use the existing access along the recently renovated railway track.

*Lot 4 was amended which resulted in the deletion of approximately 30 % of the lot (4a) from the proposal. Figure 4 shows the location of lot 4a and 4b.

** Lots 1 and 2 were amended which resulted in the deletion of approximately 20 percent of the two lots.

c) Wetland Alterations

There will be no alterations to organic (bog) wetlands. Portions of a mineral wetland on the oceanside of the highway, parcel 2 could be developed for pasture. This shallow depression could be filled with materials used in levelling mineral soils adjacent to the mineral wetlands. The wetlands on the oceanside of the highway drain away from freshwater water courses.

d) Buffers

Buffers will be established adjacent to wetlands and water and with private land as follows:

- Boundary adjustment to Parcel 1 would provide a wider buffer between farm development and the former waste disposal site. (at least 75 metres) In addition, poorly drained land was deleted from the parcel. In total this parcel was reduced by approximately 16 acres. (Figure 7)
- Boundary adjustment to Parcel 2 would provide a wider buffer between farm development and private land. (a reduction of about 12 acres)
- Boundary adjustment to lot 7 to provide wider buffer between farm development and Outside Island Cove Pond. The 90-metre buffer is consistent with zoning in the town of Hearts Delight-Islington's municipal plan along Brook Cove Brook.
- Lot 4a has been deleted to avoid road, bridge and farm development in close proximity to the water course and wetland. Furthermore, it was determined the agriculture potential of the lot could not justify the expense of a stream crossing.
- A 50-metre buffer would be established adjacent to lots 3 and 4b, located near Sooleys Marsh, and the wetlands and water courses. This wider buffer would be adopted as an enhanced precaution to minimize the likelihood of impact of farm land development and use on the wetlands and water courses. (Figure 6)
- With the deletion of lot 4a and the enhanced 50 metre buffer along the boundaries of Lots 3 and 4b, all organic peatlands and streams would have a buffer of 50 metres. The buffer would reduce the availability of farmland by about 15 acres on lots 3 and 4.
- About one acre would be deleted from parcel 6 so the lot would have a common boundary with the Town of Hearts Delight-Islington. (the parcel under application would be outside of the Town boundary).

e) Former Landfill

The proposed boundaries of Parcel # 1 (pasture) have been amended to provide a buffer between the former Waste Disposal Site and the pasture. Whereas the former site has been capped, sealed and ditched, it is concluded a 75-metre buffer would be sufficient to separate the former waste site and the pasture as previously discussed in 2.3.1 b. As shown on figure 6, a portion of the proposed Agricultural Crown Lease application (Parcel 1) in vicinity of the former waste disposal site has been deleted from Viking's proposal for land. Whereas the rooting depth for hay is likely less than ten centimetres, the vegetation would be confined to near the surface of the soil profile, which along with the buffer provides additional assurance the pasture grass would not be impacted by leachate from the former waste disposal site.

Viking would acquire an analysis of soil samples by an accredited laboratory for additional assurance that the soils have not been negatively impacted by activities on the

former waste disposal site. Viking would also determine if groundwater analysis is required for further determination of any impacts on the land caused by the former waste disposal site. Figure 7 shows the location of the proposed buffer around the former Waste Disposal Site along with inferred direction of groundwater flow direction.

f) Culvert/bridge installation

Based on field investigations, review of soils mapping and wetlands inventory conducted by Northlands Associates, it is not anticipated there would be a need for culverts or bridges as the amended proposal does not include stream crossings (12). As the land is developed, small culverts may be required to manage local, detailed drainage requirements in conjunction with on farm roads and farmland development.

If, during land development it is determined a culvert (s) is required, it would be designed and constructed pursuant to: Environmental Guidelines for Culverts, Water Resources Division, Department of Environment and Climate Change (13). The size, shape and location of culverts are designed in consideration of the area of the drainage basin, the size of the water course, with consideration to precipitation records for the area. (NB. Only the main stem of the Brook Cove Brook draining from Outside Island Cove Pond to the ocean is identified on the 1:50,000 topographical map). There would not be a stream crossing in the watershed of the main stem of Brook Cove Brook.

g) Erosion/sediment control

The establishment of buffers of at least 50 metres between field development and watercourses/organic peatlands is considered a reasonable width to minimize the likelihood sediment runoff from fields to areas where the sediment could enter water courses. The 50-metre buffer along lots 3 and 4b and 90 metres between Lot 7 and Brook Cove Brook represents additional protection of the watercourses. Furthermore, it is in the best interest of the farmer to establish a forage crop as soon as possible after the land is cleared. Grass fields stabilize the ground and further minimizes the opportunity for any run off of sediment. Filter fabric would be used in any areas where there is a chance for runoff from exposed soils. However, whereas it is unlikely culverts will be required, it is anticipated the distance between cleared land and water courses will be wide enough to minimize the opportunity of sediment runoff. However, if there is an opportunity of sediment runoff, particularly during the construction process and before the sod (hay) crop is established, the placement of filter fabric and or hay bales would be used to intercept any sediment before it flows towards a watercourse.

Amendments to Applications for Crown Land

Figure 6



Viking Fur Inc., Cavendish, NL
 Index of Titles & Structures

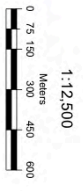


NIS Reference IN14
 NIS: 2016, UPL, COME, ZON
 Transient Member
 Department of Fisheries and Land Resources
 Agricultural Land
 April 13, 2020

**Adjusted lots:
 buffers and
 deletions
 Approximate locations**

Buffers edited by: H. Searth
 December 2021.

Area Conversion: 1 Ha = 2.47 Ac
 Designed for Illustrative Purposes Only



Former Waste Disposal Site Proposed 75 metre Buffer

Figure. 7



h) Buildings/Animal Shelters

Shelter is important for cattle, especially in windy, wet conditions. The proponent will maintain forested areas which will provide shelter to the animals. In addition, materials removed in the development of the land for pasture purposes will be placed in a windrow to create additional shelter. The project does not propose the construction of buildings.

i) Storage of Hazardous Materials

Viking stores all its hazardous materials, including fuels and lubricants in a secured space on the farm site. Viking will not use any hazardous materials in the development and maintenance operation of the fields. Heavy equipment associated with farmland development would be fueled in the fields. Pickups would deliver fuel to heavy equipment as required. Fuel tanks would not be left on the fields overnight. Other than the use of fuel and lubricants, the development of farmland will not require the use of hazardous materials including pesticides. On farm storage of fuel is located on a concrete pad.

j) Construction Equipment

The following is a list of equipment used to construct roads and to develop farmland:

- Excavator
- Bull dozer
- Tractors/ front end loading capability
- Farm tractors
- Wood cutting equipment, notably chainsaws, ATVs and snow mobiles.

k) Personnel Requirements for the Project

Viking has established business and personal relationships within the Region since 2004. The Company would use these Companies/individuals in the development of the farmland, notably land clearing. The Company's hiring practices demonstrate a commitment to hiring local and employment gender equity. At times, the Company obtains employees through the Country's Foreign Workers Program as it not always possible to find residents for the range of work done on the farm.

Heavy equipment operators (7502) will operate bulldozers and excavators for the removal of vegetation and rough land levelling. It is anticipated heavy equipment will operate for about three months a year, which infers up to 26 weeks of work for heavy equipment operators per year. (two operators)

Farmland development activities, notably stone and rock removal, drainage, land levelling in preparation for cultivation, manure spreading and seeding will be conducted by farm employees. (8431) These activities will take place throughout the field season with seeding no later than mid-September. Field conditions, such as saturated soils in the

spring, may cause delays in land improvement to avoid soil compaction, muddy conditions and rutting.

Farm personnel will be responsible for the care of the cattle, including general health care and feeding. Provincial Government agricultural veterinarians and livestock specialists will be consulted, as required, to assist the farm in developing and maintaining a healthy herd of cattle.

2.3.3 Operation and Maintenance

a) Pasture Operations: Cattle and Manure Management

The cattle would be pastured on land located on the ocean side of Route 80, the Trinity Bay South Highway. The animals would range on about 100 acres of pasture, within which the animals would have access to forested areas for protection against the elements. Viking would also construct a shelter with field sourced materials, such as rocks and vegetation, available from the development of the land for pasture. Shelter is particularly important to protect animals in times inclement weather.

The cattle would have access to most of the pasture, unless it is determined the animals have over grazed an area. Sustainable levels of grazing will help regrowth of the grass and facilitate overall management of productive pasture to ensure the animals have access to sufficient grass in the 'summer' grazing season. Typically, the cattle will defer to areas of better grass growth. Furthermore, the 'wandering' of cattle will minimize the opportunity of a concentration of manure, thereby reducing the opportunity for odours or flies.

In the winter the animals will be fed bales of hay, which would be placed in various locations to encourage the animals to keep active and use the entire pasture to avoid developing wet and muddy conditions. This would also ensure manure is spread over the pasture which would allow it to dry and decompose and ensure the entire pasture benefits from the manure.

The calves are typically born in the spring to coincide with the availability of fresh pasture and weather conditions conducive to the rearing of healthy animals. In the Fall calves are weaned and cows are mated.

A mature belted Galloway cow weighs about 1100 pounds. It is estimated a cow consumes about 24 pounds of forage per day. Therefore 100 cows would consume about 2400 pounds per day; about 33 tonnes per month. The animals require forage in the fall, winter and spring (8) months. Therefore approximately 260 tonnes of forage would be consumed outside of the pasture (grazing) season. Based on high average forage production of approximately 4.5 tonnes per acre, a minimum of 58 acres is required to grow enough forage for the cattle (14,15,16).

In terms of pasture requirements, grazing estimates, infer cattle need approximately 1.8 acres per cow/calf for a full year. Therefore, 100 cattle would require 180 acres of land. However, in the case of Cavendish Cattle farm it is anticipated the cattle would be grazed about four months per year, with feed provided for the other 8 months until pasture growth has accumulated to allow 'summer' grazing. Technically, a third, or 60 acres, would be required for summer grazing. If pasture grass is less than ideal whether it because of seasonal weather variables which will impact grass growth or in the case of excessive moisture, would result in muddy conditions, it is recommended the pasture acreage be increased by at least half and preferably doubled. In conclusion, 100 cattle/offspring should have between 95 to 120 acres of pasture. This acreage would also minimize the likelihood for the accumulation of manure.

b) Former landfill site

There is no evidence of contamination, other than some litter, in the area between the former waste disposal site and the amended boundaries of lot 1. In addition to the 75 metres, the pasture would be fenced which would keep the cattle from entering the former landfill. As stated, Viking would obtain an analysis of the soil to ensure leachate from the former waste disposal site has not impacted the soils proposed for pasture use.

c) Forage Land Operations (site preparation, manure spreading, drainage, avifauna management)

Site Preparation

The development of land for pasture and forage land, requires considerable improvements to make the land productive for agricultural use. As discussed in Section,4.2.4, the suitability of the land varies throughout the proposed development area. On the ocean side of Route 80, there are significant areas with poor drainage and shallow soils. The ridges of land to the east of Route 80 are moderately to well drained, however stoniness and depth to bedrock are limitations which must be improved to enhance the agricultural capability for long term forage production.

Phases of land clearing development.

The following is an outline of steps, reflective of Provincial Government Guidelines, which will be followed in the development of land for pasture and hay land (17):

- 1) In consultation with Provincial Forestry, merchantable wood suitable for fire wood would be removed before land clearing. The public would be offered to cut and remove the wood at no cost to the lessee. The proponents would not charge the public to harvest the wood.
- 2) Heavy equipment with the appropriate attachments (bulldozers with rakes, excavators) would be used to remove remaining trees, bush, roots and other vegetation considered non merchantable. Every effort shall be used to minimize the removal of topsoil and organic matter.

- 3) The land, particularly forage land would be levelled to facilitate the use of farm equipment during development and typical farm practices, such as cultivation, seeding, fertilizing, manure spreading and harvest.
- 4) Boulders and stones would be placed in windrows. Following the decomposition of organic matter, the windrows and associated soil may be excavated to access materials suitable for spreading on the existing fields.
- 5) Buffers along water courses, such as lakes, rivers, and streams and wetlands would not be cleared.
- 6) Land clearing would take place in dry periods to ensure most of the topsoil is left on the fields and not pushed into the windrows. Dry conditions facilitate the use of heavy equipment during land clearing and reduces rutting, soil compaction and the likelihood of sediment/nutrient runoff.
- 7) Drainage enhancement including French drains (stones in ditched covered with soil) and possibly, drainage tile and small culverts would be used if required to improve soil drainage which reduces the opportunity for soil ruts, improves trafficability, particularly in the spring and fall and allows the soil to warm up more quickly in the spring which encourages forage growth.
- 8) Brush would not be pushed into standing timber.
- 9) Windrows may be placed in low lying areas and left to rot as long as they do not block running water.
- 10) Windrows may be placed in strategic locations serving as windbreaks, thereby protecting fields and animals from high winds and serving as snow traps.
- 11) Windrows would be removed at the discretion of the farm, however at least two years is required to allow the vegetation to decompose, facilitating the removal of topsoil and organic matter.
- 12) Whereas all soils in the Province are naturally acidic, the farm would spread agricultural limestone at applications rates recommended by an Agricultural soils laboratory.
- 13) The fields would be levelled and seeded with a seed mix intended for pasture and forage production.
- 14) Annually, the first cutting of forage grass would be baled as dry hay and the second cut baled in silage wrap.

Manure Management/Spreading

Viking's manure management system, similar in concept to dairy farms, employs gutters which transfer the manure, urine, bedding and a small amount of waste feed to storage tanks where it is held till it is spread. On route to the storage tanks, solids are removed for composting or for field spreading. As a result, the 'manure' is approximately 97 % water.

Manure is an important source of nutrients, notably Nitrogen, Phosphorous and Potassium. Manure also adds organic matter to the soil which improves soil structure (tilth) and thereby improving the water and nutrient holding capacities of the soil. As a result, soil productivity is improved and the likelihood of nutrient movements from the

fields is decreased. Manure therefore is an essential resource to the farm to improve soils which are naturally infertile with low organic matter. The option of chemical fertilizers would be very expensive and would not contribute to improving soil structure.

The manure is transferred from the tanks to the fields in an enclosed manure tanker/spreader, hence there is no transfer of manure between equipment on the farm fields. The manure spreader deposits the manure on the fields from hoses with outlets located close to the ground. This design was selected by Viking to reduce odours as compared to the standard design used in the Province which sprays manure from the top of the tanker. Manure spread from the top of the tanker is more likely to result in a wider dispersion of odours.

Manure application rates are determined by the analysis of the soil and the manure to determine spreading amounts which will allow for efficient utilization by the plants. This information is also required to ensure excessive amounts of manure are not spread thereby reducing the opportunity of surface runoff or contamination of groundwater. Viking was one of the first farms in the province to develop a Nutrient Management Plan (NMP) which, based on the fertility status of each fields, and regular soil sampling (every three years) allows the farm to adjust manure and limestone application rates on a field-by-field basis.

The farm's plan is to continue to spread manure from the mink farm in the spring, summer*, (following the first forage harvest) and in the fall. The spring application of manure usually takes place in May. The timing depends on the conditions of the fields following the winter melt and the amount of precipitation in the spring. The farm aims to apply the manure as early as possible, however the fields must be dry enough so the equipment does not cause damage (notably rutting) to land. The purpose of the summer manure application is to provide nutrients to improve grass/forage growth in the summer and early fall. Manure spreading in the fall is also subject to weather and soil conditions, however the farm is required to spread it before the ground freezes to reduce the opportunity for runoff.

Environment and Natural Resources Canada states nesting periods for the island of Newfoundland is from mid-April to mid-August. The farm acknowledges Environment Canada's Guidelines: To Reduce Risk to Migratory Birds (18), that the removal of vegetation (chainsaw) represents a significant amount of noise in a natural environment. Consequently, the proponent would encourage domestic wood cutting outside of the nesting season from April 15th to August 15th. Typically, most domestic cutting takes place in the fall and winter. Whereas much of the land has been cutover and that farmland expansion is planned over a six-year period, Viking is confident most cutting will take place outside of the spring-summer nesting season. Viking will also conduct a survey of all parcels of land in the six months preceding wood cutting to identify any snag trees and more particularly trees that are nesting site for raptors.

Once the fields are developed, farm activities will include two harvests a year and two to three spreadings of manure. This activity is limited to a few hours for any given area on

the farm. Viking would establish a few small ponds as sources of drinking water for the cattle. These ponds may attract waterfowl and other avifauna. It is believed this would be considered a positive outcome for avifauna. (ponds would be less than 250 square feet) The spreading of the same amount of manure over a larger land base infers there is less of a chance for manure to accumulate on the surface of the ground. In late 2021 and early 2022 there were announcements of avian flu in the St. John's area. Viking will seek the direction of provincial veterinarians of any precautions which Viking may be required to follow.

*At the Public Meeting of May 19, 2021, Viking informed the Public it would not spread manure in the summer months on the oceanside of Route 80. In consideration of prevailing winds, recommendations of Viking's consultants, Independent Environmental Consultants Inc., (IEC) and consultations with the Tourism industry, it was concluded this action would reduce the likelihood of odours to residents who live down wind of the farm, notably in the Brook Cove Area, of Hearts Delight-Islinton.

d) Access Roads (public access)

Fox Farm Road is a public road maintained by the Provincial Government. The road was constructed to about 150 metres east of the hydro line where it continues as a resource access trail used by residents for wood cutting and hunting. Provincial Forestry and Crown Lands Agencies would require the maintenance of a right of way through or adjacent to proposed Lot 7 for ongoing access to wood resources in the domestic cutting area shown on Figure 20. Viking recognizes the public's right to access the interior lands which will be accommodated. The precise location of a right of way/resource access road would be determined in consultation with the agency responsible for forestry management if the Crown land application is approved.

Public access for domestic fire wood cutting on lot 4b and lot 3 would be from the former rail line This would allow residents to access the wood before the farm builds an access road which, for lot 4b is contemplated for 2026; lot 3 in 2022. Whereas much of the abandoned rail line was upgraded in 2021, improved access will facilitate residents' access to firewood on these two lots.

Crown land applications for lots 5 and 6 have direct access to Fox Farm Road.

Farm fields will be fenced/gated to control access to prevent damage to the fields and the forage crop. On the ocean side of the highway, access to new leases would be extended from farm roads on existing leases. Other than allowing residents to access fire wood, there would be no need for public access to the fields on the ocean side of the highway once the farm fields are developed.

In the past Viking required residents to acquire a note from the farm to cut firewood on the Agricultural Crown Land leases which allows the Company to time wood cutting and to ensure all merchantable wood is removed to the satisfaction of the Forestry Branch

before land clearing is initiated. Viking is confident relationships with can effectively continue to the satisfaction of Viking and domestic wood cutters.

e) Personnel Requirements

The butchering and processing of the cattle would be done at a licensed slaughter facility off of the farm. Farm labourers and managers will be responsible for the feeding and the overall welfare of the cattle, including regular assessments to determine if routine medical attention is required or if a request for professional veterinary care is needed. It is anticipated 2.5 positions will be required to oversee the management of the cattle and maintenance /harvest of the fields. As stated, land clearing would take up to six years to complete, with 26 weeks of work by heavy equipment operators per year.

2.3.4 Decommissioning and Rehabilitation

If it was decided to discontinue the operation of a cattle farm, the fields would continue to be used for spreading mink manure. If it was determined the Agricultural Crown Land leases (leases) were no longer required by the farm, the farm could sell the lease hold interest in the land for farm use or the leases would revert to the Crown. Typically, if the latter was the case, the Province would issue a public Call for Proposals for the future agricultural use of the Crown Land leases.

If the mink farm ceased operation, the Province and Viking Fur Inc. (lessee) would discuss the Proponent's future agricultural use of the lease which would be subject to reviews/assessments deemed appropriate by the Province. One option would be to use the farm for cattle.

If the Lessees decide to discontinue farming on all Crown Land leases at Cavendish, the Province would require the lessee to submit a decommissioning plan to ensure the infrastructure on the farm was removed or re purposed to the satisfaction of the Crown. The objective would be to ensure the property would not be a safety or environmental liability. This could include the removal of barns, levelling of the site and either the removal or securing the buildings. Viking would submit a plan to secure assets while alternate uses are considered.

The Province would give the farm reasonable time to sell the lease hold interest or use the land for some other agricultural use which would be subject to permitting. If Government determined it would consider an alternate use for the buildings, notably the cold storage, feed kitchen and operations related buildings, a detailed proposal would have to be submitted to Government for review by the appropriate Government departments and agencies. Considering the size of the buildings, history of community concerns and the nature of the proposed use, it is likely the proposed use of the buildings would require a registration as an undertaking pursuant to the Province's Environmental Assessment policies and regulations. In summary, decommissioning would be subject to the standards of the day and in consultation with relevant regulatory agencies

2.3.5 Regulatory Framework and Government Oversight

The following is a list of permits, regulatory approvals and requirements required for the Cavendish Beef Farm Registration (2002) The list includes other regulatory requirements which may impact development and activities in the area.

- 1) *Environmental Protection Act/Environmental Assessment Regulations:* Approval is required for the proposed project to proceed. Environmental Assessment Division, Department of Environment and Climate Change.
- 2) *Environmental Protection Act.* An Environmental Certificate of Approval, prepared by Service NL and released by the Agrifoods Development Branch, Department of Fisheries, Forestry and Agriculture is required for the Cattle Farm. Viking has a Certificate of Approval (C of A) for 15,000 breeding female mink (100 animal units) C of A# is; A-WMS11-024-2010OF issued in April 2020.
- 3) *Water Resources Act.* Permits for altering a body of water. (includes culverts and bridges) Water Resources Division, Department of Environment and Climate Change.
- 4) *Environmental Protection Act: Used Oil and Used Glycol Regulations; Storage and Handling of Gasoline and Associated Products Regulations; Heating Oil Storage Tank Regulations.* Pollution Prevention Division, Department of Environment and Climate Change.
- 5) *Public Health Act; Health and Sanitation Regulations; Development near drinking water wells and water supplies.* Department of Digital Government and Service NL.
- 6) *Urban and Rural Planning Act.* Protected Roads Zoning Regulations, Department of Municipal and Provincial Affairs.
- 7) *Forestry Act.* Forestry Branch, Department of Fisheries, Forestry and Agriculture. Lessees of Crown Land leases are not required to obtain a cutting permit, provided the timber is not offered for sale or barter. Permits required for burning of brush related to farmland development.
- 8) *Federal Fisheries Act:* The Department of Fisheries and Oceans will investigate activities in water bodies which negatively impact fish habitat, such as erosion/sedimentation.
- 9) *Occupational Health and Safety Act.* and Regulations. All activities, including contractors must be done in accordance with the *Act* and associated Regulations. Department of Digital Government and Service NL
- 10) *Canadian Migratory Convention Act.* Bird Act; Species at Risk Act. Federal legislation to protect migratory birds and species at risk. Federal Department of Environment and Climate Change.
- 11) *Endangered Species Act.* Provincial legislation to protect the Province's natural heritage. Wildlife Division, Department of Fisheries, Forestry and Agriculture.
- 12) *Animal Health and Protection Act.* Animal Protection Standards Regulations, Fur Farming Regulations. The Department of Fisheries, Forestry and

Agriculture. Viking holds a Fur Farm Operation License (19-003) issued pursuant to the *Act*.

This Section also requires the identification of:

- a) Government Policies, resource management plans and any study or planning initiatives.
 - The Province's, Way Forward Strategy /Agriculture Sector Work Plan established a goal to increase beef production as the Province produces one per cent of beef of what it consumes. (2)

b) Land use plans, zoning, wildlife areas, municipal buffer plans. Municipal planning, Provincial Land Use Atlas, Protected Roads Regulations. These planning tools are an important aspect of planning development in rural years.

- Regional/Provincial/National Objectives, standards, codes and/or guidelines elsewhere in the registration. E.g., Provincial (NL)Environmental Guidelines for Livestock Operations (19), National Code of Practice for the Care and Handling of Beef Cattle (20). The Code of Practice for the Care and Handling of Mink (21). These standards are discussed throughout the EIS. Additional details in section 4.2.4.f Land Use Zoning/Designations.

3.0 ALTERNATIVES

3.1 Alternatives to the Undertaking

The EIS Guidelines state the proponent shall identify and consider the environmental effects of alternative methods and/or sites for carrying out the proposed project. There is a requirement to discuss the advantages and disadvantages of the proposal and alternatives. It is further required to explain how the preferred alternative contributes to sustainable development; how the precautionary approach has been applied in project planning in reference to the operational history of the existing farm. It is stated this assessment be done from an environmental, economic and technical perspective. It is also necessary the assessment be conducted from an agronomic perspective.

The aim of the owners of Viking is to diversify and integrate the operation of the fur farm with the establishment of a beef cattle operation. The sustainable operation of the fur farm is based on the production of a high-quality mink feed from waste offal sourced from the marine products processing industry, Country Ribbon Chicken processing facility, other products from the agriculture industry and small amounts of materials from the food service industry. Historically, chicken offal was rendered into feed meal at a facility near St. John's. The feed meal facility had a number of environmental challenges in the operation of the business, including odour and water quality issues. Viking produces/manufactures a product in the province with local materials which otherwise would go to landfill.

The environmentally sustainability/ self-sufficiency of the farm would be further enhanced through the establishment of a beef herd which would be fed forage grown on the farm at Cavendish. Indeed, this business plan represents a unique model where the agricultural production is completely based on local materials. In the case of the mink, 100 percent of the product is marketed internationally. The production of beef would keep money in the Provincial economy and almost entirely accomplished with the use of local materials.

The Brundtland Commission defines sustainability as meeting today's needs without compromising the ability of future generations to meet their needs (22). There are many definitions of sustainability and it is often stated that sustainability is made up of three pillars: economic, social and environment. It is the proponent's opinion the proposed integration of the farms, based on converting what is often referred to as wastes into valued resources, to produce end products of fur in the case of the mink farm and meat produced on the cattle farm, meets the principles of a circular economy and more specifically the goals of the Brundtland Commission of sustaining resources for future generations. Concurrently, the proponents recognize their social responsibilities of being good neighbours and employers. Viking is willing to invest in physical improvements to the farm and administrative adjustments to minimize impacts on nearby communities, such as reducing the impact of farm odours on residents.

In 2015, the Farm Practices Review Board, (Board) established pursuant to the *Farm Practices Protection Act*, concluded manure spreading by Viking Fur Inc. (Viking) is an acceptable, indeed a normal farm practice. Furthermore, the Board stated Viking requires additional land to spread the manure in an agronomical and environmentally acceptable manner (6). Provincial Environmental Guidelines (19) and the Viking Farm's Nutrient Management Plan (23) support this recommendation. More particularly, from an agronomic and environmental perspective, an appropriate amount of manure must be applied to the fields to maximize nutrient efficiency for crop production while at the same time ensuring undesirable environmental effects such as polluting soil, surface waters or groundwater are avoided by not applying too much manure to the land.

The bottom line is that Viking needs more land to spread the liquid manure produced on the mink farm. The additional land would result in more hay, which could be produced at a reasonable cost, thereby contributing to an attractive cost of production for a herd of beef cattle. The following is an explanation of the alternatives, with a focus on the advantages and disadvantages of alternative sites, including the preferred option for forage and/or pasture expansion.

The following is a review of alternatives to the undertaking:

- a) Acquisition of undeveloped Crown land as proposed in the EIS, in close proximity to the existing farm. (preferred alternative)
- b) Acquisition of suitable undeveloped Crown land for forage production, at a new location.
- c) Acquisition of land for the establishment of a satellite beef farm.

- d) Developed (existing) farmland alternative
- e) Other land alternatives
- f) Equipment Considerations

a) Alternative Sites: The proposed, preferred alternative.

The proposal to consolidate the mink farm and the cattle business at one location has many benefits from environmental, agronomic and economic perspectives. The following is an overview of the benefits to the farm:

- The proposed Crown land leases are less than three kilometres from the existing farm. This would facilitate all matters related to land development and ongoing farm operations.
- Land development including wood/bush removal, land clearing, stone, removal, land levelling, cultivation and limestone spreading can be integrated within the daily routines of farm workers.
- Equipment can be safely left at the site during land development and general farm operations.
- Regular farm activities such as the transfer of the manure from the farm to the fields, manure spreading, forage cutting, bailing and transfer of bales to the farm, two or three times a season would be facilitated with the short travel time, year after year.
- Manure could be transported and spread by the same vehicle with existing tractors, with minimal time on highways and travel through communities.
- Financial and environmental (greenhouse gas) costs would be less than sites elsewhere because of reduced travel times.
- The Crown Land leases can be monitored on a regular basis and repairs to roads, fences, gates, fields etc. could be addressed efficiently and quickly.
- The care and handling of cattle is facilitated when the animals are located immediately adjacent to the existing farm.
- The health of the animals could be monitored on a regular basis. If a veterinarian is required, there is an opportunity for the veterinarian to visit the mink and cattle farm at the same time.
- Security of the animals can be monitored on a daily basis.

b) Acquisition of undeveloped Crown Land elsewhere on the Trinity Bay/Conception Bay Peninsula.

During the public consultations, opinions were expressed that Viking should expand elsewhere; that remote areas would be a more appropriate location for additional land and in particular for the spreading of manure. In general, the public often concludes with the Province's small population and extensive land base, there must be plenty of land for development, whether it be a farm or some other use, such as a waste disposal site.

In reality, the availability of land for agriculture is scarce in part because the limited soils base suitable for farming and secondly, due to other uses of land and land use

designations/zoning which restrict farm expansion. e.g., water supplies, municipal zoning. Furthermore, suitable sites would likely require expensive roads to access sufficient land off of publicly maintained roads. Finally, such sites would likely be considerable distance from Viking's home base in Cavendish, which would make such an area challenging/costly to develop and to manage over the long term.

Figure 8a illustrates some of the land use designations as identified in the Provincial Land Use Atlas (24). In addition to these primary designations, illustrated on the map, there are many more designations, many of which would preclude or hamper farm development. Figure 8b depicts land capability for agriculture. The areas in pink class 7 on a scale of 1-7 are not suitable for farming (25). The simultaneous view of the two maps, explains the opportunity for farm expansion, reasonably close to the provincial road network is extremely limited, if indeed available. Table 2 includes a list of sites of areas which include areas of land with capability for agriculture, (8a) however based on the Land Use Atlas map, (8b), would not be available for farming. e.g., water supplies, illustrated in blue.

Land Use Atlas /Agricultural Soils Capability

Figure 8a, Land Use Atlas

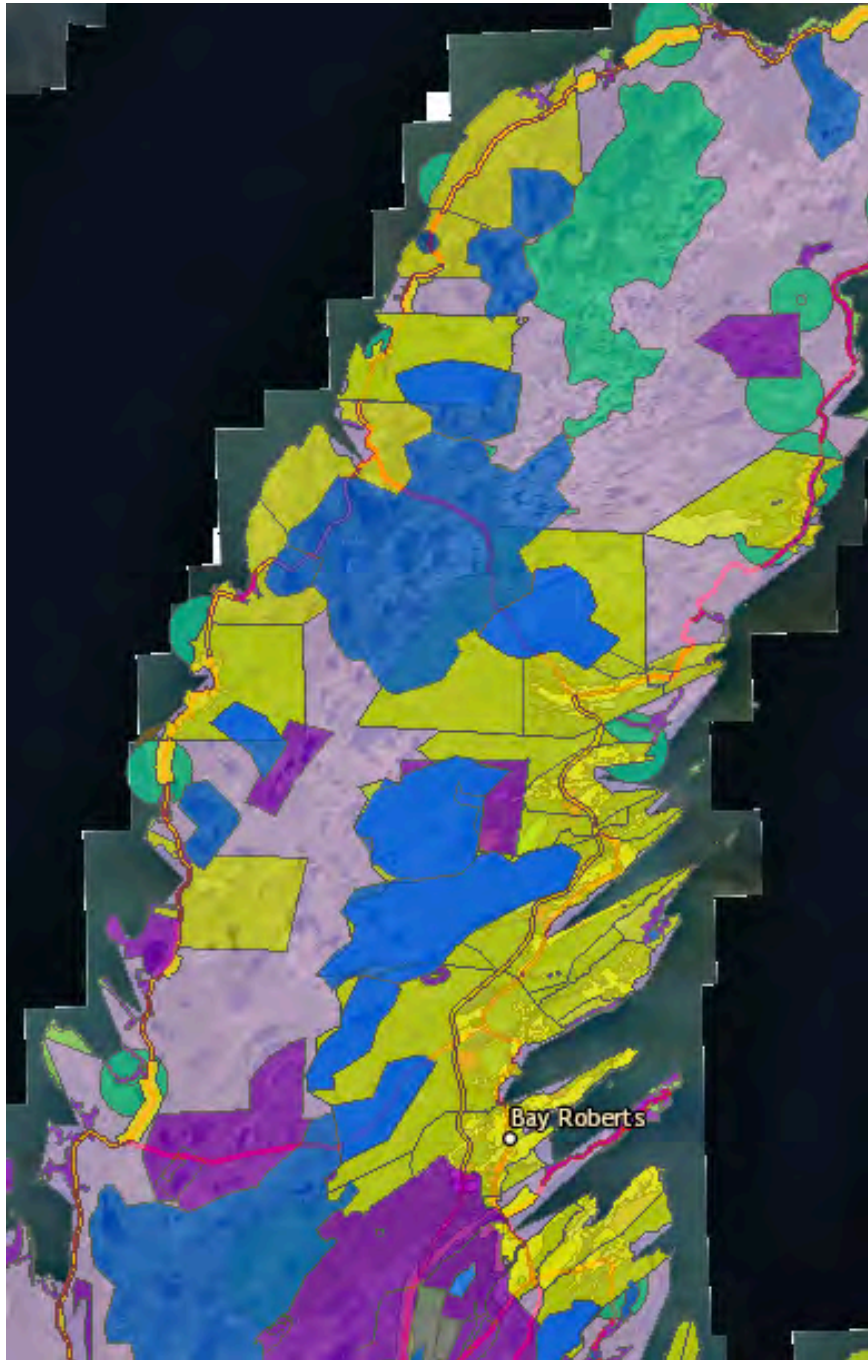
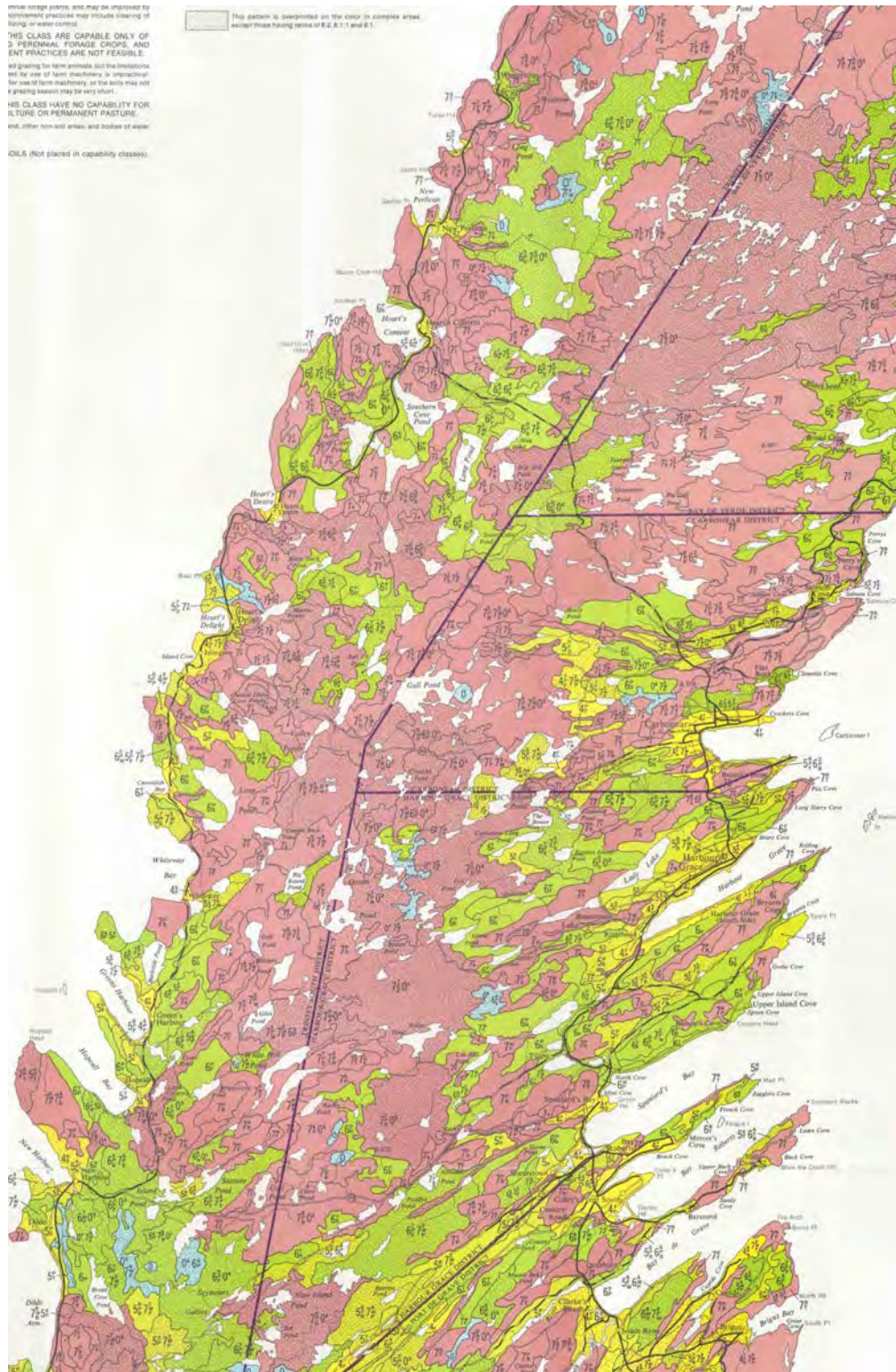


Figure 8b, Agriculture (soils) Capability



Possible Alternate Sites (Table 2)

#	Location	Agriculture Capability	Land Use Designations	Distance to Cavendish (by paved road)	Access road requirements
1	Dildo area	Class 5 and 6	Water supply, domestic cutting	22 km.	3 kilometres; large stream crossing
2	Track Road (Butlerville)	Class 5	Water supply; cabin development	43km.	~ 7 kilometres from Veterans Highway
3	Swansea	Class 5	Existing farm	39 km.	~ 3 kilometres from Victoria
4	Bannerman Lake	Class 6	Water Supply	44 Km	~ 1 kilometre from Carbonear
5	Flings Pond	Class 5	Water Supply/ cabins	44. km	-4 kilometer from Carbonear
6	Rocky Pond, Victoria	Class 6	Water supply cabins	37 km	Public road access
7	Greens Hr.	Class 6	Domestic cutting/park	10 km	~ 2 kilometres
8	Country Road	Class 5	Allocated; fragmented	43 km	12-15 km

Note: Agriculture capability ratings are listed from 1-7. There is no class 1 or 2 land in the Province. Very limited class 3. Most vegetable land is based on class 4 soils. Forage and pasture can be developed on class 5 and 6; pasture on class 6 with considerable intervention. Class 7 is not suitable for farm use. Class 7, pink; class 6 green, class 5, mottled green and class 4 is yellow.

If an alternative site was identified, there would be extensive disadvantages to Viking. The following is an explanation of the disadvantages based on a theoretical alternative site located 50 kilometres from Cavendish.

Disadvantages of alternate sites:

- An alternate site located at 50 kilometres distance from Cavendish, would require the purchase of tankers (and trucks to pull) designed to travel at highway speeds.
- A 27,000-litre manure tanker/spreader, suitable for highway travel would cost approximately \$150,000 - \$200,000 (26). In addition, there would be a need for a truck to haul the equipment, which would require additional driver's license

endorsements to drive. It would also require soft tires for field use which would be an added cost. The option would be a tanker (~ \$130,000) hauled by a farm tractor; however, the farm tractor would also be costly and would result in slower round trips.

Based on the transportation of 75% of the farm's manure it is estimated over 200 round trips would be required. The cost of the two to three hours round trip, including spreading, would be significant in terms of fuel, wages and vehicle maintenance. Greenhouse gases emissions would be greater with increased distance from Cavendish. Based on 100-kilometre round trips with fuel consumption of about 40 litres for 100 kilometres, it is estimated the carbon dioxide equivalents would equal 0.11 tonnes per trip (27). At 200 trips the manure trucks alone would produce 22 tonnes of Carbon dioxide equivalents. 200 trips would cost about \$12,000 in diesel fuel (27), (28)

- A flatbed would be required to transfer the bales of forage to Cavendish. If the farm developed 150 acres of land with a production of 10 round bales per acre, 1,500 bales would have to be shipped to the home farm at Cavendish, unless a satellite farm was established for the beef cattle. A flat bed carrying 25 bales infers 60 trips a year, inferring greenhouse gases of one tonne of carbon dioxide equivalents and diesel costs of about \$3,600.
- It is estimated it may take 90 days to transfer manure and forage with significant labour costs and vehicle maintenance.
- Land development and farm activities would be more costly in terms of wages and travel time.
- There would be ongoing disadvantages in regards to initial land development/renovation and on-going farm activities such as manure spreading, harvest and transfer of the forage bales back to Cavendish. The farm may have to duplicate equipment as the same equipment would be required at harvest time. There would be maintenance inefficiencies in regards to the availability of parts, tools, equipment and expertise.
- Overall, it would be more difficult to monitor the land base/infrastructure and to respond quickly to repairs. The security of expensive farm equipment would be a concern.

c) **Alternative site for Cattle**

The establishment of an alternative site for cattle would have the following disadvantages and advantages:

- The safety and care of animals would require herdsmen, however even herdsmen could not provide the same level of attention, indeed protection as having the animals located adjacent to the existing farm in Cavendish.
- Birthing's could not be monitored. Access in the winter, especially at one of the sites would be a challenge as access particularly if a farm access road had to be built to access lands at distance from publicly maintained highways.

- If existing farmland was available, suitability of such properties from a soils perspective is unknown; however, land improvement costs would be significant requiring cultivation, levelling, reseeded etc.
- Alternative farm sites would result in a greater amount of greenhouse gas production and travelling costs.
- If a satellite farm was established for the cattle, there would be further duplication of equipment and added costs associated with salaries for labour.

d) Developed farmland alternative

There are very few farm properties within an hour's drive of Viking. The Agrifoods Branch was not aware of any farms, within ~ 150 acres, available for purchase. Furthermore, existing regional pastures are at full capacity and not in a position to accept more animals. Depending on the specifics of existing farms there could be some advantages. Although the farms are not currently available, the following comments are made in respect to areas of farm activity in the area, within ~ 50 kilometres of Cavendish.

Advantages of acquiring existing farmland

- If developed farmland could be purchased on the Conception Bay side of the peninsula it would relieve Viking from clearing and developing new land. If permits could be obtained in a short timeframe, farm establishment could proceed relatively quickly.
- One area of farmland is about 12 kilometres from the built-up community, hence a wider buffer in regards to farm odours. (farm odours related to manure spreading) The other site has residential infill development adjacent to the closest fields. The built-up section of the closest community is about three kilometres from the fields.
- Some residents who live in vicinity of the existing farm at Cavendish would be pleased there would be less farm development in the area.

Advantage/disadvantages

- If the owners/lessees of the farms were willing to sell to the proponent, the capital costs would add to the expense of managing a fractured farm. If the land could be purchased at an attractive value, the cost of development could be an advantage, if less than developing Crown Land.

e) Other Alternatives

Viking has reduced the size of four of the parcels of land which were proposed for development and are under review as an EIS. These amendments were made to provide buffers along water courses, buffers adjacent to the waste handling facility, buffer between the pasture and non-agricultural uses and soil suitability for agriculture. In consideration of soil surveys and discussions with the Provincial soils' specialist, three

areas totalling a potential of 60 acres located further inland of the proposed development, of 60 acres of suitable land were identified as being suitable for forage production.

The advantages of these areas, located east and east and north of lot 4b, is that they are close to the farm and could be accessed from existing and proposed roads and fields. The areas would be further inland than existing fields and therefore in consideration of prevailing south westerly winds, there would be a greater chance odour would be directed away from the town of Hearts Delight-Islington. However, due to separation from existing pasture, the site would not be suitable for pasture. Furthermore, whereas cattle pasturing would not increase odours, there appear to be no grounds for establishing a more remote pasture at these sites. These areas would be slighter closer to Cavendish than existing farmland, which if used for manure spreading would increase the chance of odours if the winds were northerly in direction.

f) Equipment considerations:

The farm's manure spreader was designed to spread the manure close to the ground. Historically, spreaders used in NL spray manure from the top of the tankers, thereby exposing manure to winds which could spread the odours over greater distances. The best technology would be spreaders which inject manure into the ground. However, it has been understood soils in this province are too shallow and stony for this design.

During the preparation of the EIS, it was determined advances in technology have provided hope for injection systems which would be compatible for stony soils. Direct ground injection of manure has been developed in Scandinavia for stony soils, some of which are designed for perennial forage fields (29). Viking is investigating if such systems have been used on shallow, stony soils to determine if they would be appropriate for Newfoundland soils and in particular the land base at Cavendish.

In addition to reducing odour, (could reduce odours by 90% (30) an injection system would reduce loss of nitrogen and the opportunity for the risk of phosphorous runoff. An additional benefit is the retention of plant available nitrogen.

The challenge is cost and whether or not existing farm equipment could be modified to support the manure injection systems. Manure injection is time consuming as ground speed is slower than broadcasting manure. As a result of the slower speed, there is a requirement for more fuel, labour and operation costs. The maintenance requirements would also be higher.

Viking will continue to research liquid manure injection to determine if there is equipment suitable for Newfoundland conditions. It may be a case of shallow injection, which would not be as effective in the reduction of odour and if so, would it be worth the investment. E.g., Agronic equipment manufacturers of Finland. (31).

3.2 Alternative Methods of Carrying out the Undertaking

The Guidelines state the EIS compare alternatives for the undertaking and social costs and benefits, including those alternatives which cost more to build and/or operate but which have less harmful environmental effects.

The Odour Component Study and more specifically, the Qualitative Odour Risk Assessment and Mitigation Planning Report (Report) as prepared by Independent Environmental Consultants (IEC) concluded, odours from the proposal to pasture cattle, would be negligible (32) The Report explained cumulative impact by adding the proposal will not increase the overall odour risk on the community however the spreading of manure on an expanded pasture could, based on prevailing 'summer' winds impact the closest concentration of residential land use, along with tourist accommodations.

In response to the input from an owner of a tourism accommodation and IEC's odour risk assessment Viking did not spread manure on the ocean side of Route 80, which is upwind (prevailing winds) of the residential development between Brook Cove Brook and the farm, in the summer of 2021. This decision will proceed in future years and therefore manure will be spread on the oceanside of the highway twice a year; typically, before the May 24th weekend and in September or October. This will avoid the warmer, humid weather conditions which combined with seasonal outdoor activities, provides the greater risk of odours impacting residents and tourists and the tourism businesses. Combined with other administrative decisions, including spreading in respect to weather forecasts, informing the community of planned spreading events and smaller spreading rates, the risk of odours related to manure spreading should be effectively controlled and as inferred, limited to the highest risk areas to a few days in the spring and fall, when cooler weather will further reduce the likelihood of odours.

The EIS has resulted in an assessment of the existing farm to identify physical and administrative changes to reduce the impact of farm odours on the community. Therefore, the proposed cattle farm and farm land expansion has placed considerable scrutiny on the existing mink farm. Unlike manure spreading when odours typically last a few days, ongoing operation of the farm can produce odours for extended periods. As a result of the EIS assessment, Viking has decided to place a synthetic cover over the manure storage tanks, which can reduce odours by as much as 95% (33). The farm is very optimistic of the reduction of odours anticipated by this development. An added benefit of preventing precipitation into the storage tanks will result in fewer trips to transport the manure to the fields. Other techniques, such as increased thickness of compost caps, longer maturation of compost and fine tuning of the handling of separated manure and other organics would also contribute to odour controls. More expensive controls, which infer significant structural changes will be assessed, however these alternatives are longer term responses.

Viking is not aware of aware of any other agricultural alternatives which would allow the farm to diversify. The province is currently self-sufficient in dairy and poultry commodities. The province produces a small percentage of vegetables consumed in the

province, however the soils on the farm are unsuitable for cultivation associated with vegetable production. Furthermore, the proposed farm expansion would maintain a crop cover which would act as a carbon sink. In essence the proposal is a no till type of farm activity which would minimize release of carbon from the soil.

It is concluded the preferred alternative is the best alternative from an agronomic, economic and environmental perspective. The consolidation at one location would facilitate the efficient operation of the farm and reduce environmental and economic costs as compared to running a farm at different locations. The scrutiny of the EIS on the existing milk farm and more specifically the mitigative measures which will reduce the risk of strong farm odours from the farm and from spreading manure on an expanded pasture on the oceanside of the highway. Concurrently, amongst other mitigative actions, Viking is committed to investigate the potential of manure injection systems designed for rocky soils. The increase in buffers and deletion of lot 4b will protect the watercourses and the Highlands Marsh and Sooleys Marsh wetlands.

4.0 ENVIRONMENT

4.1 Key Issues

The Key Issues section requires Viking to discuss key issues related to the establishment of a cattle farm including but not limited to:

- Consideration of impacts on the quality of life of people who live, visit and work in the area.
- The effects on water bodies and in general the natural environment of the area must be discussed.
- Effects of the project on the tourism sector, including economic and employment value of the industry.

Specifically, the EIS Guidelines require Viking to prepare component studies to compile baseline data to evaluate the environmental effects along with mitigation and monitoring related to key issues, including but not limited to the effects of the proposal on tourism, residents and water courses. The EIS Committee also required a component study of Avifauna control and management, including a baseline study in respect to the presence of migratory birds. Therefore, the discussion of key issues will, for the most part, be based on the component studies and on issues expressed by the public at the public meetings/information sessions and in direct consultations with the tourism industry. Furthermore, data collected and analysed as a result of the maintenance of the diaries of odour and weather completed by the public in respect and support of IEC's Qualitative Risk Assessment and Mitigation Planning Report also provided focus on the key issue; concerns of farm odours (32).

Sections, 4.2 Existing Environment, including sub sections on Atmospheric, Aquatic, Terrestrial, Land Resource, including tourism discuss the current environment and

impacts. Section 6.2 includes predicted environmental effects, including aquatic, atmosphere, terrestrial, land including tourism, biodiversity and others.

4.2 Existing Environment

The following is an overview of the existing biophysical and socio-economic environment which may be affected by the project, especially in respect to the valued attributes of the area as identified in this section.

4.2.1 Atmospheric Environment

a) Climate and Meteorology

Nav Canada's overview of climatology of the St. John's airport states for the most part winds are determined by large scale weather systems. The prevailing winds in the Eastern Avalon are westerly, however they vary from month to month. Winds during the winter are predominantly from the west, whereas summer winds shift to a more south westerly direction due to the strengthening of the Bermuda High over the Atlantic Ocean. Stronger winds generally occur in the winter with storms moving north-eastward near the Island portion of the Province. Wind gusts to 35 knots or more occur frequently from the southwest. Very strong winds of 60 knots or more are associated with deep, low pressure systems that pass to the west of the Avalon Peninsula. Calm winds, only occur about 2% of the time (34).

IEC's report, Qualitative Odour Risk Assessment and Mitigation Planning Report (The Risk Report) includes additional meteorological data. The Risk Report stated whereas the closest meteorological station is located in St. John's, IEC used modelled data to facilitate analysis of wind direction and speed in the Cavendish area. Hourly historical meteorological patterns were obtained from a Department of Environment and Climate Change approved Weather Research and Forecast Non-Hydrostatic Mesoscale Model for Cavendish for the period of 2017 and 2018 (32).

The following is an overview of temperature, wind and wind direction normals from a number of sources.

Figure 9

Temperature and Wind Normals (Government of Canada), 1981 to 2010, Holyrood Generating Station (35)

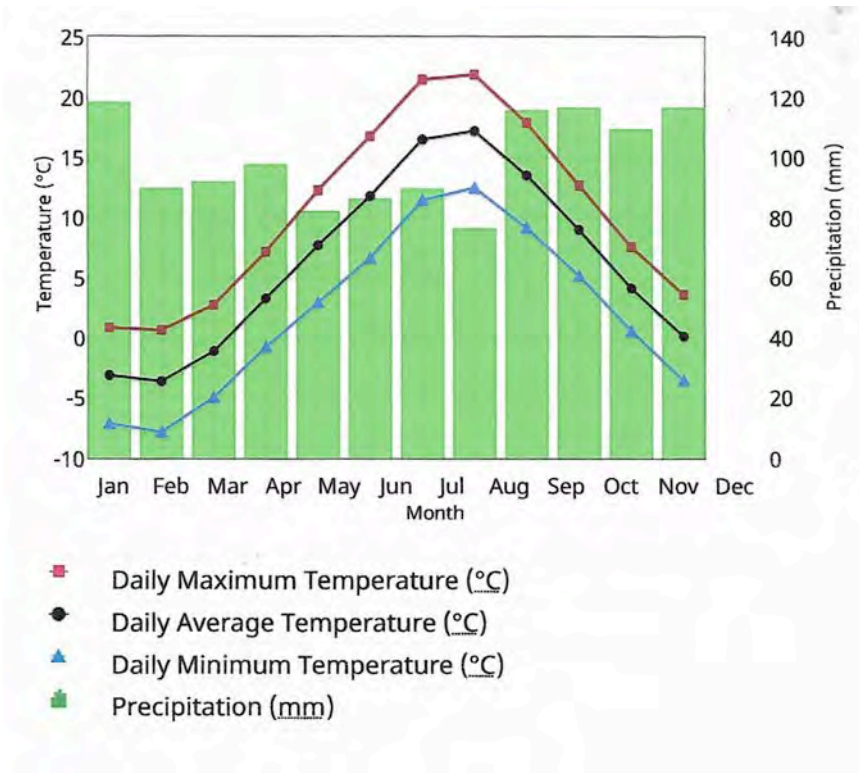
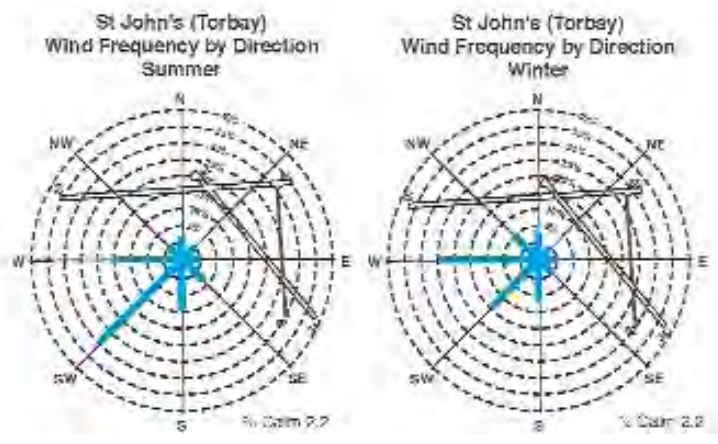


Figure 10

Prevailing winds in St. John's; Summer and Winter (34)

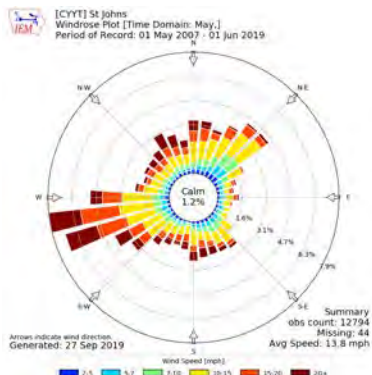


i) Prevailing winds for the year

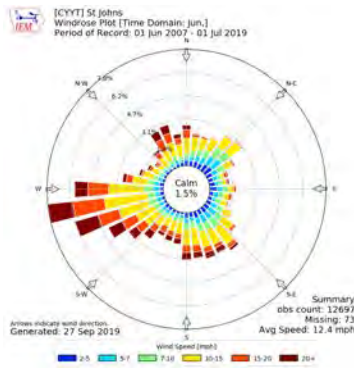
As discussed, winds tend to be south- westerly, notably in the months when outdoor activities are most frequent, including the spreading of manure. In addition, July to September have the lowest average wind speeds. The following wind roses further describe prevailing wind direction and wind speed from May to October.

Figure 11
Prevailing Winds from May to October

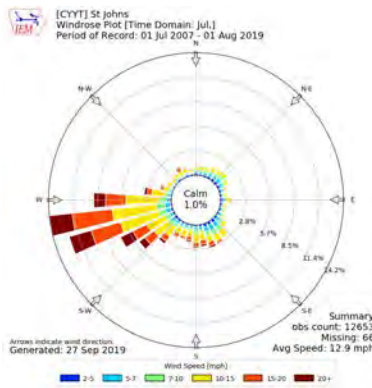
B) May



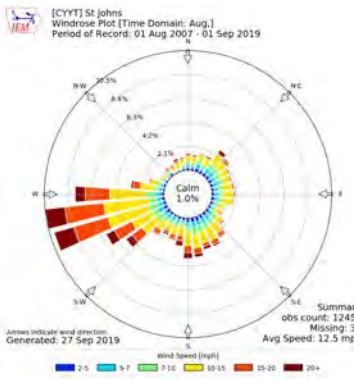
C) June



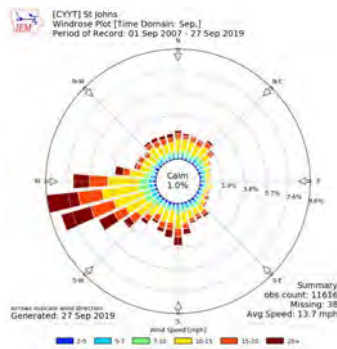
D) July



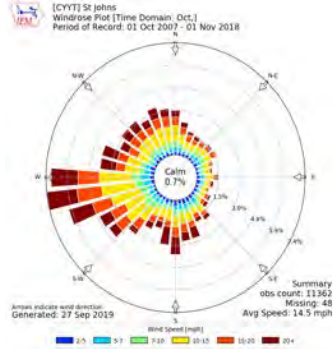
E) August



F) September



E) October



(36)

IEC's Risk Report determined, based on modelled data of 2017 and 2018, stated the dominant wind direction in the summer months, blow from the south-west, west-south-west and south-south-west approximately 59% of the time (32). These conclusions are consistent with the wind roses in this section.

ii. Storms

The majority of low pressures are extra tropical lows which develop south or west of the Island portion of the Province and move east or north eastward. As the systems move in easterly direction, they track over the island; these storms usually intensify and then eventually become occluded and slow down, or even "retrograde" (moving slowly westward)

Winter storms are more frequent and also more intense due to greater temperature differences between northern and southern latitudes. The systems usually move north-eastwards and bring snow, rain, or freezing rain and often a combination of all depending on the track of the specific system. If a storm moves east of the Avalon Peninsula there is a greater likelihood of cooler temperatures and it being a snow event.

In the summer months, the frequency and severity of the storms is reduced and the low-pressure systems follow a more northerly track as they cross the Province. Summer storms tend to go up over Labrador.

Hatteras lows develop off the coast of North Carolina, where cold air plunges over the Carolinas and meets the warm moist air over the Gulf Stream, can often result in an intense storm. During the winter when the temperature gradients are greatest, the systems aptly earn their description of "weather bombs." These severe storms are often difficult to predict (34).

iii. Local Conditions

The eastern side of Trinity Bay has a rugged coastline with a few small inlets, such as Whiteway Bay, Cavendish Bay and Hearts Delight Cove/Harbour. Winds tend to funnel

along the coastline with cornering into and around the inlets. Evening sea breezes are not as common as compared to other areas of the Avalon Peninsula, as land relief is less, so cool ocean air is not drawn inland as frequently as other locations of steeper cliffs or valleys (37).

The Risk Report explains variations in terrain elevation can change the shape of an odour plume (32). Generally, dispersion is increased when the winds carry the plume upslope while downslope winds lead to less dispersion and tend to concentrate odours in lower lying areas.

Specific to the detailed Project Area, the terrain is relatively flat on the westside of Study Area and gradually increases inland. The Risk Report explains odours would tend to follow the general topography of the land, channeled by higher elevations, with consideration of dominating wind directions which disperse odours in a north-easterly direction. It is concluded downwind receptors within the lower lying areas would be expected to be at a higher risk to odour exposure. It is also noted the farm is at a slightly higher elevation than many of the closer receptor locations located north east of the farm. See figure 21 for a pictorial perspective of terrain in the detailed study area.

b) Climate Change Observations and Trends

Climate Change is impacting the Province of Newfoundland and Labrador resulting in sea level rise, more frequent and intense storms, storm surges, coastal erosion and flooding which has had significant impacts on infrastructure and coastal environments. Igor in 2010 and the weather bomb of January 2020 resulted in extensive damage to the coastal environment and infrastructure. In 2011 personal observations of many landslides along Long Island Placentia Bay as a result of Igor (2010), where there was no other evidence of previous landslides. The January 2020 winter storm resulted in damage to bay mouth bars (barachois) throughout the Avalon and the north east coast (e.g., Bonavista, Knights Cove), Conception Bay South) of the Province are clear examples of the implications of climate change. In 2021 Hurricane Larry had recorded sustained winds of 96 kph and a gust of 145 kph at the St. John's airport (38). In 2005, Atlantic Canada experienced 65 hours of wind gusts over 80 kilometres per hour. In 2019, the number increased to 180 hours (39).

The explosion of ticks in the Maritimes and evidence of their arrival in this Province are blamed on a warmer environment. These have impacted people's enjoyment of the outdoors and have required the public to adopt procedures to protect them from, what can be dilapidating health impacts of ticks. Sea level rise, combined with increased severity of storms will continue to increase impacts on the Province (40).

In regards to the more frequent and more intense weather events, projections for the eastern part of the Province indicate the likelihood of even more severe precipitation events. Projections for St. John's give an indication of the severity of future precipitation events:

On a 24-hour basis, a 1-in-100-year storm is expected to bring 167 mm of precipitation by mid- century, an increase from the current climate's 137 mm (22% growth); and

On a 12-hour basis, a 1-in-100-year storm is expected to bring 150 mm of precipitation by mid- century, an increase from the current climate's 122 mm (23% growth) (40).

It is apparent, ongoing evaluation with structural improvements will be necessary for all businesses in this province.

Viking Fur Farm installed a subsurface drainage system which was designed in consideration of the large surface area of the roofs of farm buildings. The farm will review the capacity of the system and its ability to cope with large rain events. The manure storage was designed for nine months of storage. (manure and rainwater) The farm removal of accumulated liquid manure in October to ensure sufficient capacity till the next removal in May. In the fall of 2021 Viking decided to cover the liquid manure storages which will prevent the precipitation from entering the storage thereby providing additional storage.

As a result of the winter storm of 2020, Viking Fur Inc. has reviewed its procedures in regards to alternative power sources, including testing in advance of storms. In addition, although damage to barns was minimal, the farm conducted an assessment of all buildings to determine if structural improvements are required. Hurricane Larry caused extensive damage to Viking's processing facility. The reconstruction of this building included structural improvements with the aim of withstanding future storms.

c) Existing Sources of Greenhouse Gas Emission in the Study Area

For the purposes of reporting on the sources of greenhouse gases, at or near the 'project area', an area of ten kilometres was used; the same area the EIS Guidelines specified for the study of possible impacts on Tourism operations and assets.

The following is a list of greenhouse gas producers within the Study area:

- Residences (space heating; oil (In St. John's roughly a 70% space heating/30% oil heat split. Likely higher wood burning in the study area.)
- Cabins (wood burning)
- Parked Seasonal recreational vehicles (propane; electrical)
- Commercial fishers (diesel)
- Forestry (mainly domestic cutting) pickups (gas for the most part)
- Vehicular traffic, primarily along route 80. (gas and diesel)
- Restaurants (base board; lesser degree oil) Propane
- Personal care homes (base board; lesser degree oil) refrigeration; cooking) propane
- Agriculture (Viking Fur Inc.) (manure; farm equipment for field operations and animal management, feed kitchen/refrigeration)

An estimate of greenhouse gas production in the ten-kilometre study area from Whiteway to Hearts Desire was calculated as a percentage of greenhouse gas production in St. John's. Based on the report, St. John's Energy and Greenhouse Gas Inventory, the communities produce approximately 10,000 tons of carbon dioxide equivalents, (CO₂ E) on an annual basis. (the communities have a population of about 1.5% of the population of St. John's and therefore it was deduced they produce approximately 1.5 % of the CO₂ E produced in St. John's (41). Although variables such as industry, transportation and type of home heating make it difficult to directly compare rural Newfoundland and Labrador to the Province's largest city, the numbers help to provide insight of greenhouse gas production in this part of Trinity Bay along Route 80.

To further understand greenhouse gas production in the area is to consider the CO₂ E equivalents produced by vehicles. A 4 x 4 vehicle produces about 200 grams of CO₂ E a kilometre (42). Annual driving of 25,000 kilometres implies 5 tonnes of CO₂ E; 62,500 km (round trip Hearts Delight-Islington to St. John's, 50 weeks a year) would produce approximately 12.5 tonnes of CO₂ E.

Viking proposes to establish a herd of 100 cattle. Each year it is expected about 75 cattle will be born, raised and butchered. Halos software, developed by Agriculture and Agri food Canada, was used to estimate of greenhouse gases which would be produced on the farm. Based on the size of the herd (100 cattle/75 annual offspring, eco district and soil type it) is estimated 460 metric CO₂ equivalents would be produced on an annual basis (43).

Composting is an aerobic process (uses oxygen) which reduces or prevents the release of methane and nitrous oxide during the breakdown of organic materials. Methane is 26 times; Nitrous Oxide 296 times, more potent than carbon dioxide and therefore a significant contributor of global greenhouse gas emissions. Compost produces a stable product from composting farm organic wastes such as manures, bedding and feed wastes that can be used to improve and maintain soil quality and fertility (44, 45)

Carbon sequestration in the agriculture sector refers to the capacity of agriculture lands and forests to remove carbon dioxide from the atmosphere. Carbon dioxide is absorbed by trees, plants and crops through photo synthesis and stored as carbon in biomass in tree trunks, branches, foliage, roots and soils. By employing practises which that involve minimal disturbance of the soil and encourage carbon sequestration farmers may be able to slow or even reverse the loss of carbon from their fields (46)

Atmospheric concentrations of carbon dioxide can be lowered by reducing emissions or by removing carbon dioxide from the atmosphere and storing it in the ground, ocean or freshwater ecosystems. A sink is a process which removes a greenhouse gas from the atmosphere. Soil conservation practices not only reduce erosion but also add organic matter to soil. Viking's proposal is to establish pasture and perennial forage production systems. Consequently, the fields will be seldom tilled, thereby leaving a permanent grass cover. This will increase biomass production along with an increase in carbon content in

the soil. Extended crop rotations in perennial forage crops for hay and pasture are recognized as best management practices for sequestering soil carbon (47). Research from Finland has revealed a perennial cropping system under the boreal climate on a boreal mineral soil concluded a perennial cropping system based on timothy and meadow fescue mixture is an environmentally sustainable land-use option to mitigate CO₂ emissions in regions with short growing seasons (48).

d) Existing Odour Occurrences and Durations (temporal and spatial)

The study area within ten kilometres of Viking Farm can be described as rural in nature, consisting of three small towns, and residential infill along Route 80. Commercial fish handling involves landings and delivery, by trucks, to the processing plants(s) located outside of the Study Area. As described above most of the uses of land are related to residential and small-scale commercial pursuits which would typically not generate significant levels of odours. In the summer of 2020, there were reports of odours related to a community sewage project, however it is understood this would not be an activity which would produce odours on an annual basis.

Independent Environmental Consultants (IEC) was retained by Viking to complete an assessment of potential odour risks from the existing mink farm and proposed cattle project. The Qualitative Odour Risk Assessment and Mitigation Planning Report, (Risk Report) prepared by IEC included an overview of the sources of potential odour produced on the farm which includes, storage, removal and spreading of manure, mink, carcass disposal (composting) and feed manufacture and distribution (32).

IEC explains odourous compounds can be formed during the fermentation process where litter (bedding) urine, excrement and food remains decompose. In addition, odours can also form during respiration, digestion and evaporation from the animal's skin. Animal feces naturally contain elevated concentrations of ammonia, nitrous oxide and volatile organic compounds. The emissions will vary depending on environmental conditions such as, aerobic/anaerobic /anoxic conditions, temperature, humidity, wind speed/direction.

The mink farm produces 7,500 m³ of liquid and solid manure. The amount of manure produced on the farm varies throughout the year with about 90% produced between July and October. The manure is moved by gutter and pipe to the manure storage every one to three days, depending on the amount of manure produced. Between the barns and the storage, the waste is separated, whereby solids are removed from the waste stream and composted. There is potential for odour to be generated during the collection, transfer, separation and storage of manure. In addition, the storage of manure in tanks is also a source of odours, particularly in the summer when warm temperatures enhance the fermentation process.

Viking pelts approximately 130,000 mink on an annual basis, with most of the pelting taking place from November to December. The carcasses are stored in the compost containment building until the compost piles are constructed in early January. The piles

are constructed on a concrete floor as a series of layers alternating between a carbon source, most of which is used bedding with sawdust or baled grass if required. The compost piles are capped with 60 centimetres of a carbon source. The piles are turned periodically. The turning is most frequent in the early stages with the timing determined primarily by temperature and moisture levels along with the experience of the lead for composting. There is potential for odour during composting, including the curing process, when compost piles are left undisturbed until used or removed from the farm; most of the compost is removed from the farm.

There is potential for odours from the manufacture and handling of mink feed. Viking receives deliveries of chicken by-product on a daily basis. The receipt of other waste products, notably marine products are received on random occasions when the material is available. On receipt of the chicken by-products, is frozen in plastic containers and stored in the freezer storage. Feed for the mink is made daily and is delivered to the barns in open carts. The farm has implemented protocols whereby the receiving area for by-products and the feed kitchen are washed down daily and disinfected twice a week. All containers are cleaned immediately after the raw product is removed. All wash water from the washdown area passes through a filter which removes materials greater than 0.5 cm. The larger materials are transferred to the compost building and the remaining liquid and wastes flow to the septic system.

Stored liquid manure is applied to pasture and forage lands on Viking's land two or three times a year and twice a year on another farm in the immediate area. In total the manure is spread on approximately 110 acres of land. In addition, composted solid manure is spread on the fields as a fertilizer and as an amendment to supplement topsoil.

Before Viking commissioned a liquid manure system, the farm produced dry manure. Liquid manure has high concentrations of odorous compounds which people can find to be stronger as compared to dry manure.

The combination of the animals in the barns, the management of manures from the barns to storage, the compositing of carcasses and the spreading of liquid mink manure result in farm odours, which can be strong and at times offensive as determined in the various public consultation processes, including public meetings, interviews with tourism interests and of complaints submitted to Government.

It was determined in the IEC Report the likelihood of odour events was most likely on warm, humid days with light southwesterly winds (prevailing winds) in the Brook Cove area of Hearts Delight-Islington. More specifically, the IEC Report concluded the effect from the release of odours of the mink farm is considered moderately adverse for the most sensitive receptors located within 1,400 metres of the fur farm (32).

The results of the community odour survey, a component of the Risk Report, stated 82% of odour events were down wind of the farm. In the tourism consultations, operators in the Brook Cove area expressed concerns and experiences of odours attributed to the farm. (32). Meanwhile, an operator south of the farm (upwind in respect to prevailing summer

winds) explained he only experienced strong farm odours during northerly winds, particularly during manure spreading. The tourism consultations did make the observation that odours were almost always prevalent when driving by the farm.

The consultations with tourism operators, the diaries of weather and odour events, (part of the Risk Report,) and the comments voiced at the Public meetings/information sessions reflect the risk assessment determined by IEC. The strongest concerns about odours attributed to Viking came from property owners between (and including) the Brook Cove area and the farm.

e) Existing Fly Ecology, occurrences and duration (temporal and spatial)

For several years' neighbours south and north of Viking Fur Farm expressed considerable concern about high populations of lesser house flies. (*fannia canicularis*) Following the modernization of manure handling, from a solid manure to a liquid manure handling system at Viking Fur Farm, (2015) which removed habitat conducive for fly propagation, complaints of flies virtually disappeared, according to statistics of complaints provided by Service N (49). The 2020 survey of tourism operators, included complaints of flies for two businesses located north of the farm. In one of the cases, it was explained since about 2015 conditions had improved as there had been fewer flies, however there were significant number of flies in 2020. It was not determined the type of fly or the origin of the flies. In the other case, the owner of the tourism business explained flies have been a continuous problem for their facility. A couple of tourism operators located south of the farm stated fly populations (house fly like) were high early in the last decade but not a problem in the past few years.

The liquid manure system removes mink manure at least twice a week and daily when the mink reach adult size. The waste is transported by enclosed pipe to manure storage tank and thereby removing opportunities for fly propagation.

In 2018, Srabani Saha's graduate research, Impact of Field application of liquid mink manure on *Fannia canicularis* L. (Fannidae, Diptera) population in Cavendish, NL, concluded the application of liquid mink manure to the forage field will not positively increase the *F. canicularis* (lesser house fly) (50). In the Report it was explained the lesser house fly prefer fairly moist feces with 35-40% moisture providing the best conditions. Whereas liquid mink manure is almost 97% water it would not be a medium conducive for larvae development. The report further explained although liquid mink manure would increase the soil moisture and nutrient levels, with the possibility of becoming conducive for the lesser house fly, the research did not result in an evidence of breeding in any of the traps used in the field research. The Report stated: "overall, there is no evidence for that liquid manure application would attract any kind of fly populations over the long term."

4.2.2 Aquatic Environment (General)

a/b) Hydrological Features; Surface flow movement

Further to the discussion in section 2.3.1.d which provided an overview of the location of streams, ponds, tributaries, wetlands, Wetlands Map figure 12 illustrates the direction of flow of the brooks and from the wetlands. In addition, the map refers to wetland type and detailed acreages. In addition, a more detailed map of the Highland Marsh and Sooleys Marsh appears in figure 13.

c) Composition of Freshwater species]

The Department of Fisheries, Forestry and Agriculture website states there are 18 freshwater fish species in the island portion of the Province of which three were considered ‘sensitive’ including the: branded kill fish, mummichog and the sea lamprey. The other 15 freshwater fish, which have not been ranked as ‘At Risk’ or designated, ‘May be at Risk’ by the Committee on the Status of Endangered Wildlife Canada (51). (COSEWIC) According to General Status of Newfoundland and Labrador’s Freshwater Fish, there are 23 species on the Island portion of the Province, including:

Atlantic Sturgeon	Burbot	Ninespine Stickleback
American Eel	Northern Pike	Longnose Dace
Mottled Sculpin	Sea Trout	Lake Chub
Lake Whitefish	Branded Killfish	Charr
Longnose Sucker	Three-spine stickleback	Brook Trout
White Sucker	Atlantic Tomcod	Lake Trout
Slimy Sculpin	Sea Lamprey	Mummichog
Atlantic Rainbow smelt	Round Whitefish	

NB. In the List of Freshwater Fishes for Newfoundland, Canada, the Mummichog is not included in the list of 22 freshwater fish, nor is the Atlantic Salmon (52). The list of freshwater fish on the Department of Fisheries, Forestry and Agriculture is not broken down into “Labrador and Newfoundland” hence it is difficult to explain the difference in the two lists.

In 2003 the Branded Killfish and in 2006 the American Eel were identified as vulnerable under the Species at Risk Act. Whereas these two types of fish are considered at risk in the Province, they are candidates for a detailed risk assessment and research priority. To date no such research has proceeded (53)

Under the Federal Species at Risk Act, the Branded Kill Fish has been listed “At Risk.” Under the Committee on the Status of Endangered Wildlife in Canada (Committee) it is listed as Special Concern. There are ten known documented populations on the island;

none on the Avalon Peninsula. The banded killfish was listed as Special Concern due to the limited area of occupancy, limitation of potential for range expansion and potential threats for activities leading to habitat degradation. (54).

The Committee on the status of Endangered Wildlife in Canada has classified the American eel as threatened. (2012 (55) The loss of habitat, including the construction of dams, is the main reason for a decline in population.

4.2.3 Terrestrial Environment

- a) soil type and suitability for the intended use, pasture or forage.

Soils in the Study Area

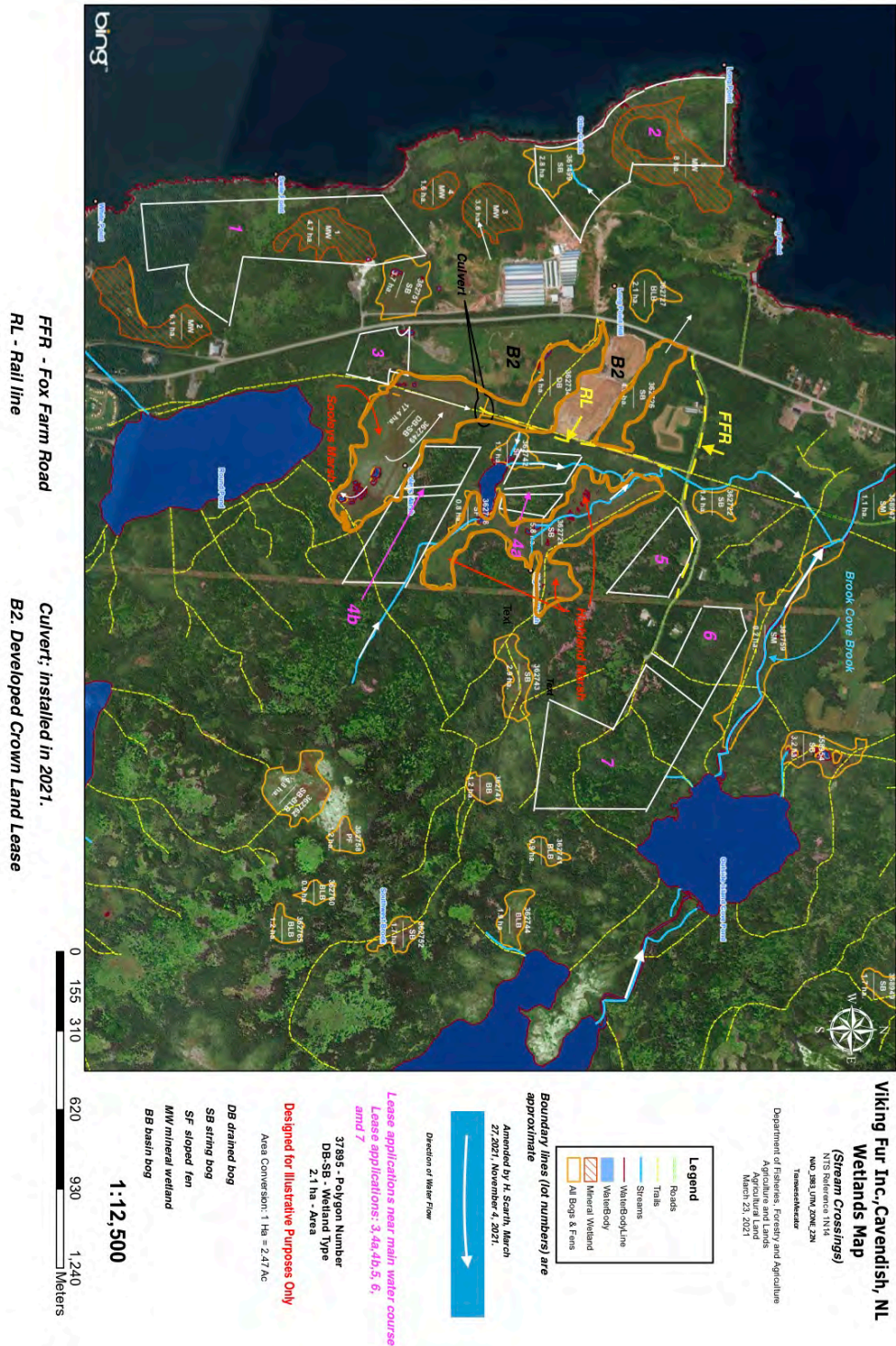
In the detailed Study Area, there are five map units which include the following soil groups:

- Torbay
- Hearts Content
- Cochrane Pond
- Pouch Cove
- Turks Cove
- Placentia Junction

In some cases, there are combinations of map units and therefore the area includes a varied landscape with a wide range of soils and suitability for agricultural development. All the mineral soils are formed on glacial tills. The following is an overview of the map units/soil groups to provide a general description of soils in the Study area. This information was obtained from regional soil surveys and were adopted from: Soils of the Avalon Peninsula, Peter Heringa, 1981. (Heringa Report) (56).

Figure 12

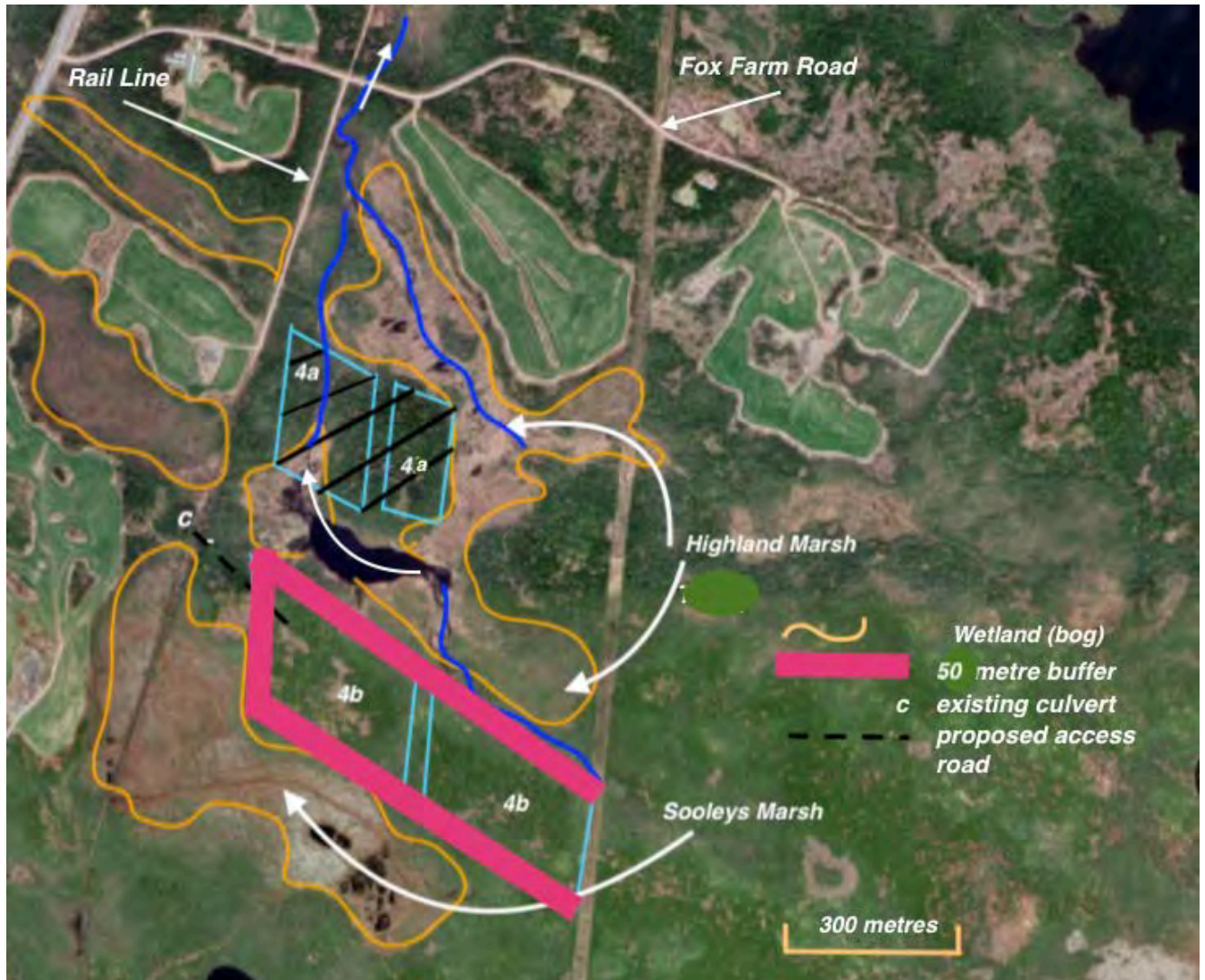
Wetlands Map



Detailed View of Amendments to Lots 4a and 4b

Sooleys Marsh and Highland Marsh (Wetlands)

Figure 13



Notes

- Lot 4 a has been deleted.
- 50 metre buffer on lot 4b; also lot 3, located west of this image.

Table 3**Soil Classifications**

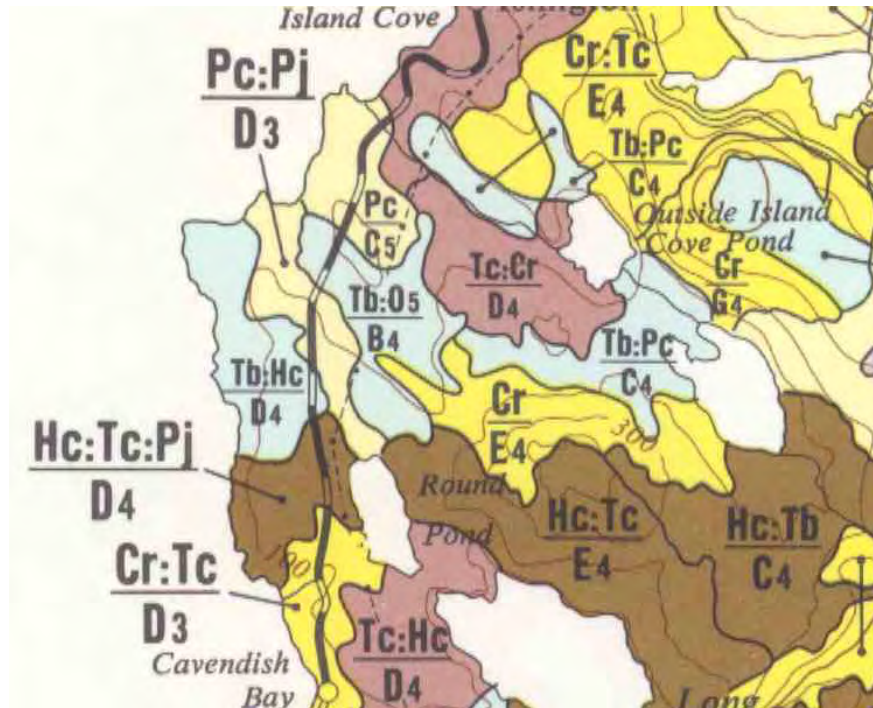
Map Unit	Topography	Drainage	Soil Depth	Land use
Cochrane Cr	Hilly terrain; slopes range from 5-20%	Well to rapidly well drained	35 to 60 cm	Most of the farming on the Avalon is on these soils
Hearts Content Hc	Rolling slopes range 5-20%	Moderately well on surface; internal drainage is imperfect	35-60 cm organic matters varies.	Use is limited by stoniness, topography and rockiness. Can be improved for pasture
Placentia Junction PJ	Moderate rolling; upper slopes 8-15%	Moderately good	35-60 cm	Suitable for hay and pasture land; better sites suitable for crop land
Pouch Cove PC	Undulating slopes; usually 2-10%	Imperfectly to well drained; imperfect to poor internally	As drainage becomes poorer; soil depth decreases	Generally exceedingly stony and wet. Can be improved for pasture and hay land
Torbay Tb	Level < 3 % slope	Surface drainage is poor	Shallow; organic soils can be in the 60 cm range.	With a few small areas used for pasture; these soils have little agriculture use
Turks Gut Tc	Slopes 4-30%	Good to rapid on surface	Similar to Cochrane soils	Historically used for pasture; stoniness varies

The Heringa Report is the result of a regional soils survey of the Avalon Peninsula, which provided a general overview of soils which could be used to identify areas of soils suitable for agricultural development. Larger scale surveys, more detail, were required to facilitate detailed farm development planning.

In regards to the Study Area, the above overview illustrates the variety of soil conditions in the area. Many of the areas are complex, with a combination of two groups. eg. Pc: Pj (Portugal Cove: Placentia Junction.) In this case, by looking at Table Map Units, one can learn that some of the area (Pouch Cove) is exceedingly stony and wet and that it can be improved for pasture and hay land; while the Placentia Junction soils are moderately well drained and suitable for hay land and in some cases suitable for cropland. (vegetables)

Some soils, including Torbay soils, which are very wet and shallow, have limited potential for pasture. Meanwhile, east of the highway there are Cochrane soils, (and Turks Gut) the soils which are reflective of the better soils on the Avalon Peninsula and representative of much of the farmland on the Avalon Peninsula. One of the most important attributes of these soils is that they are “well to rapidly well drained.”

**Overview of Soils in the Detailed Study Area
Figure 14**



Soil Suitability (Background)

In order to determine soils suitability for a variety of crops, such as forage/hay, vegetable crops and pasture, detailed soil surveys, including aerial photo interpretation and digging soil pits are used to determine soil properties which determine/influence the agricultural use of such soils. These soil properties include:

- Drainage
- Stoniness and boulders
- Texture (e.g., Coarse to fine (gravel to clay))
- Topography (slope length and steepness)
- Potential rooting zone (depth of soil)

Based on the soil properties, there are four levels of soil suitability for different types of farming. e.g., For pasture and hay/forage.:

Table 4**Soil Suitability**

A1	The map unit is suitable for a particular use. The soils of the map unit are relatively free of problems or limitations, or if they exist, they can be easily overcome.
A2	Suitable with moderate limitations for a particular use. The soils of the map unit have problems or limitations which can be overcome with good management and careful design. Input costs should be carefully assessed
A3	Suitable with severe limitations for a particular use. The soils of the map unit have problems or limitations which are severe enough to make use questionable because of costs of overcoming them or continuing problems expected from such use.
Unsuitable soils	The map unit is unsuitable for a particular use. The soils of the map unit have problems or limitations which are so severe that the inputs required to utilize the soil is too great to justify the effort under existing conditions.

57

The suitability ratings are based on soil and landscape characteristics. The following are not considered: size and shape of map unit, distances to market, location, farm size, land tenure, skill or resources of the operator (e.g., heavy equipment) and weather extremes.

The degree of suitability is determined by the most restrictive or severe rating assigned to any of the listed soil properties. For example, if the degree for suitability for a given crop is A1 for all but one soil property and that one soil property is in the A2 category, the rating for that soil is A2. Some restrictions such as stoniness, low soil organic matter and poor drainage can be reduced or eliminated with good management practices, thus raising the rating class.

Soil Suitability of the Farm and Proposed Expansion Areas.

The Provincial Agrifoods Branch has conducted detailed soil surveys of the Farm and expansion area. Soil suitability ratings for forage (hay) and pasture use were determined for the land which the farm has applied to expand their pasture and forage land base.

Figure 15, forage suitability, explains the land suitable for forage (hay) production is primarily located on the east side (interior) of Route 80. The soils are identified as A3 soils which have severe limitations for the production of forage. Although the land has severe limitations, the Farm has been successful in developing similar and adjacent lands for forage production. Heavy equipment has been used to remove boulders and rocks. Subsequent improvements in levelling the land have allowed the use of a broad range of farm equipment required to produce a forage crop. The availability of mink manure and farm produced compost have been essential contributors to improving soil quality, tilth, and fertility.

Figure 16 illustrates the suitability of the land base for pasture. A comparison with the forage suitability map shows that a lot more of the land base is suitable for pasture as compared to forage. This is because pasture can be established on 'poorer' land base. The

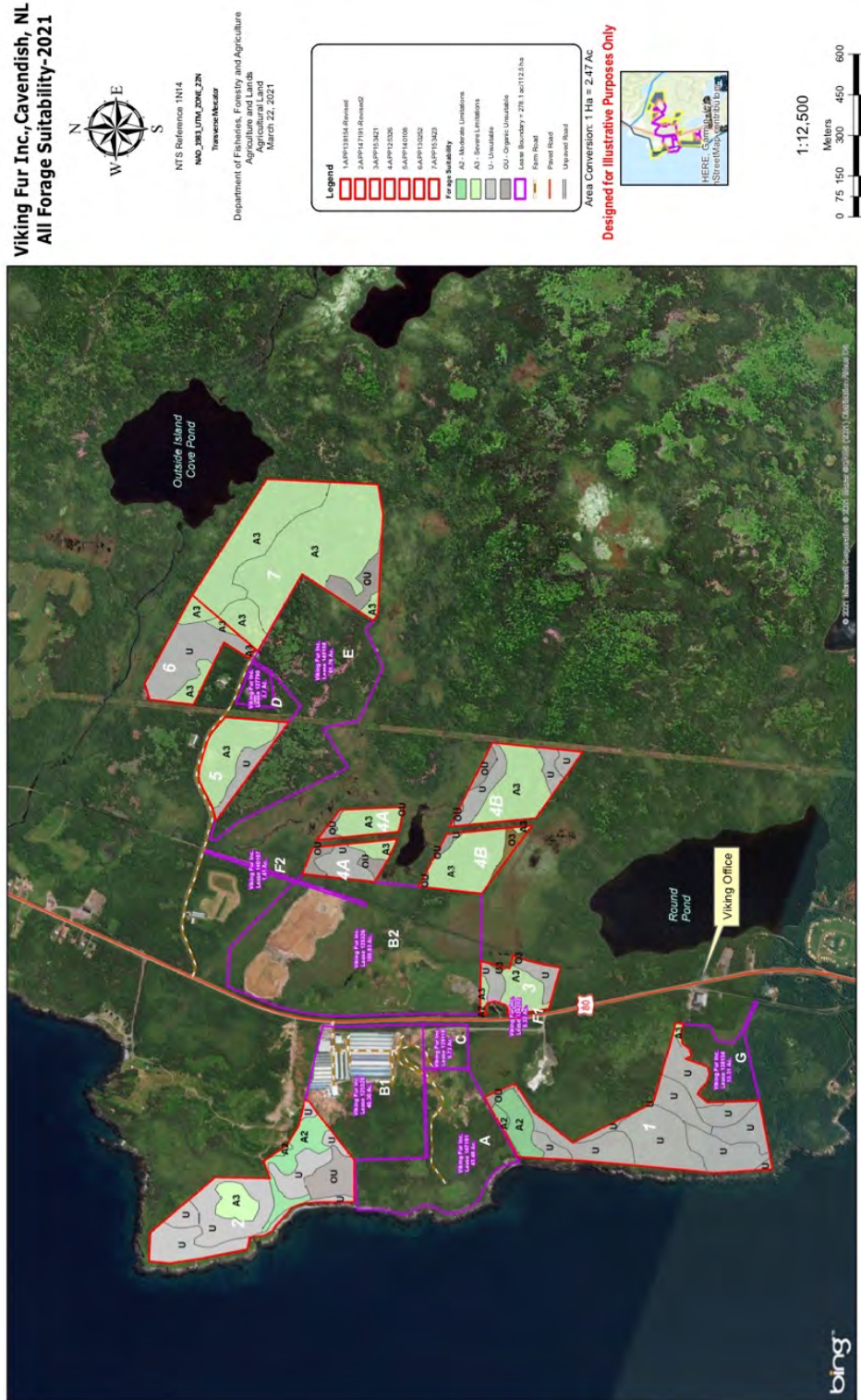
land does not need to be as level, as farm equipment is not needed for annual seeding or to harvest a crop. In addition, there is no expectation the pasture land will have to be renovated with farm equipment which would be particularly challenging because of the rocky conditions of the terrain. The farm has demonstrated its ability to develop similar, adjacent land for pasture purposes. The farm has the equipment, knowledge and supply of compost and manure to improve the productivity of these lands, primarily on the ocean side of the highway for pasture use.

Conclusion

The soils suitability ratings, combined with the success the farm has had in developing similar rated (soil suitability) landforms, provides a high degree of confidence in the soil suitability the ratings for forage and pasture and the proponent's ability to develop the land as proposed. As will be explained, a closer look of some areas in respect to soil suitability ratings and other buffers such as environmental, land use considerations, access challenges and requests from residents, will result in the adjustment of the boundaries of some lots, some of which will result in a significant decrease in the size of the parcels of land which the proponent has applied.

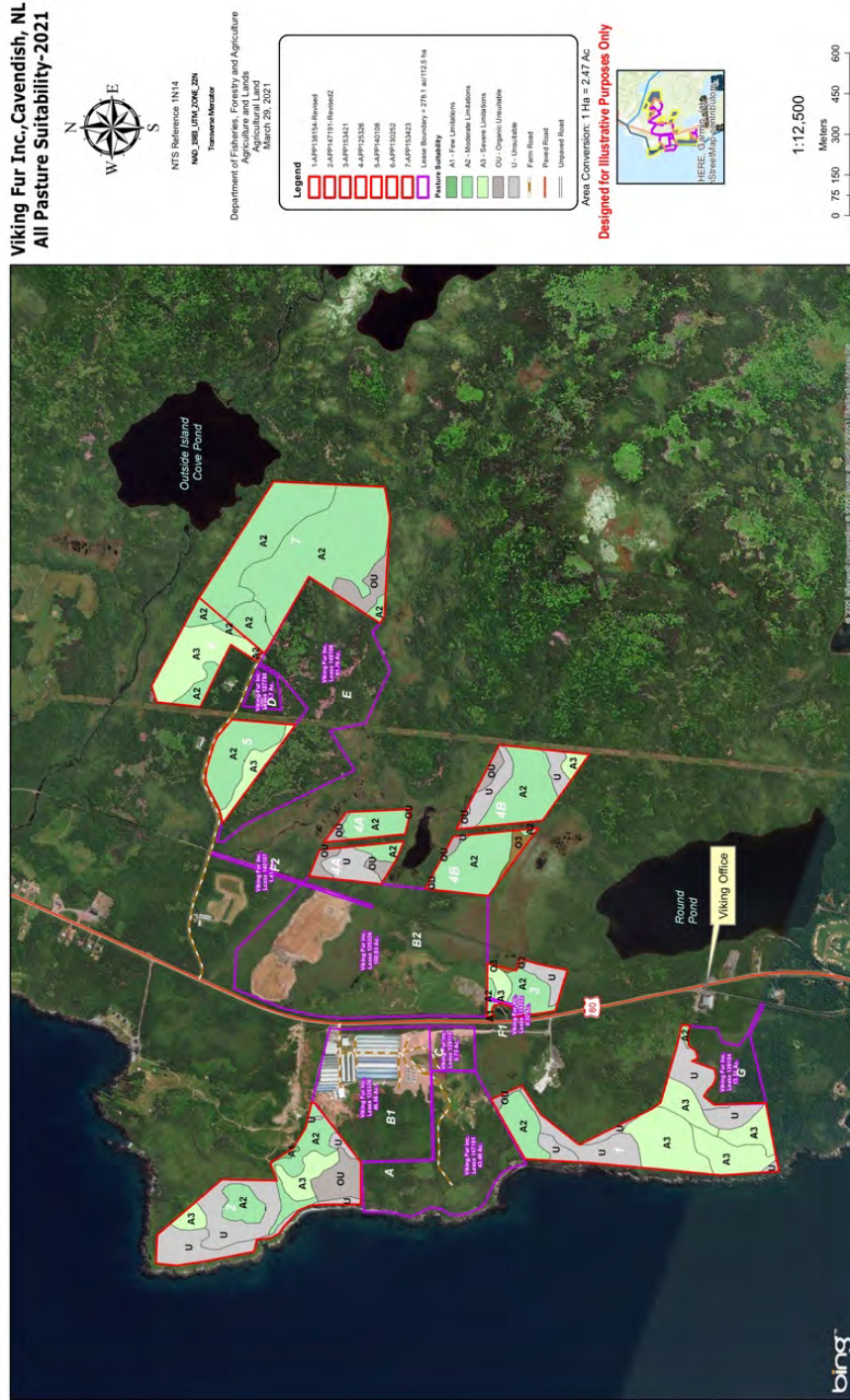
Forage Suitability of the Detailed Study Area

Figure 15



Pasture Suitability of the Detailed Study Area

Figure 16



b) **Location and Extent of Wetlands**

a) Wetlands and type

A wetland is defined as: *land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, vegetation which grows in wet conditions and various kinds of biological activity which are adapted to a wet environment.* (National Wetlands Working Group, 1997) (58)

There are two broad categories of wetlands including organic wetlands, which are commonly referred to as peat lands or bogs and mineral wetlands which are formed where an excess of water collects on the surface of mineral soils.

Organic wetlands include bogs and fens and are typically located on flat, poorly drained terrain, Wetlands are characterized by organic deposits greater than 40 cm deep and build up slowly due to wet, cool conditions with little or no oxygen. They can be open, shrubby and occasional (in Newfoundland) treed.

Within the Study Area, the 1:50,000 National topographical maps identify two areas of wetlands by the names of Sooleys Marsh and Highland Marsh. These two marshes are organic wetlands, or more simply, peatlands or generally referred to as bogs.

These peatlands, as illustrated on figure 12 are located within the project area, however Viking will not develop these areas for agricultural or any other purposes. Buffers will be maintained between the mineral soils planned for farm use and the peat lands. (see figure 13)

Bogs are peatlands which receive water only through precipitation. Bogs are nutrient poor and isolated from groundwater and surface run-off. Bogs are stagnant, non –flowing systems and have low plant diversity due to low nutrient availability. The surface of a bog is typically ‘dry’ (not much standing water), but with a thick ground cover of sphagnum mosses. Some bogs contain stunted black spruce and low-lying shrubs.

Fens are peatlands which receive water from a combination of precipitation, surface runoff and groundwater. They are more nutrient rich than bogs because of surface and groundwater inputs and have greater plant diversity. Fens can be nutrient rich or nutrient poor depending on water sources and nutrient availability. Nutrient–poor fens more closely resemble bogs, while nutrient-rich fens have more diverse and robust vegetation. Fens have a complex hydrology with high water tables and can transport large volumes of water and nutrients across the landscape often connecting wetlands systems over long distances. The vegetation in fens is dominantly covered of graminoid (herbaceous plant with grass like appearance) and brown grasses (58).

Sooleys Marsh

Sooleys Marsh, (Peatland) is located north of Round Pond, bordered by a developed Agricultural Crown Land Lease, B2 and proposed, Lease 4b. (Figures 12 and 13) The peatland is approximately 31 hectares (77 acres) in size. The peatland /marsh is more particularly described as a combination of a domed bog (convex surface), higher than the edges) and sloped bog (formed on sloping terrain; surface level with surrounding terrain). The sloped bog is located in the south eastern portion of the peatland, where it slopes and drains through a series of small ponds (flashets) towards Round Pond. The domed portion overlaps the former rail line. (figure 12).

Highland Marsh

Highland Marsh consists of approximately 16 hectares (40 acres) of sloped bog and 2.5 hectares (6 acres) of sloped fen. A brook cuts through the Highland Marsh in a south east/northwest direction where it eventually flows into Brook Cove Brook.

Ocean side of the Highway

Peatlands

There are two areas of sloped bog located between the highway and the ocean, with a total area of 6.5 hectares (16 acres) One area of 2.8 hectares (7 acres) is located on an existing lease and has not been developed for farm use. The remaining areas have been excluded from Viking's application for Crown land.

Mineral Wetlands

There are five areas of mineral (soil) wetlands located on the oceanside of the highway. (Figure 12) There are shallow organic deposits in saucer shaped depressions of less than 40 centimetres depth of peat. Of the five, two are on existing Viking Crown Land Leases; two are on proposed leases and the fifth is south of the proposed lot 1. Lot one was amended to delete the mineral wetland. Lot 2 was amended which resulted in the deletion of about half of the mineral wetland.

c) Terrestrial fauna, including mammals, avifauna and waterfowl

The Department of Fisheries and Land Resources, NL Government, states the following list of mammals, native and introduced to the Island.

Mammals (59)

Land Mammals

Native to Newfoundland

Order Artiodactyla (Cloven Hoofed)

- Caribou

Order Carnivora (Meat Eater)

- Black Bear
- Lynx
- Red Fox, Cross and Silver
- Ermine (Weasel)
- ***Newfoundland Marten (moved from “endangered” to “threatened” status in 2007 due to an increase in populations. (no populations on the Avalon Peninsula)***
- Otter

Order Rodentia (Rodent)

- Beaver
- Muskrat
- Meadow Vole

Order Lagomorpha (Rabbit & Hares)

- Arctic Hare

Order Chiroptera (Bats)

- Little Brown Bat
- Eastern Long-Eared Bat
- Hoary Bat

Introduced to Newfoundland

Order Artiodactyla (Cloven Hoofed)

- Moose

Order Carnivora (Meat Eater)

- Mink
- Coyote

Order Rodentia (Rodent)

- Eastern Chipmunk
- Red Squirrel
- Norway Rat
- Bank Vole
- Deer Mouse
- Red Backed Vole
- House Mouse

Order Lagomorpha (Rabbit & Hares)

- Snowshoe Hare

Order Insectivora (Insect Eaters)

- Masked Shrew

Avifauna

A survey of Avifauna was conducted over a three-day period in the spring of 2020 as explained in the Avifauna Control and Management Component Study. The purpose as stated in the EIS Guidelines was to identify and characterize the presence of migratory birds and avian species within the project foot print and surrounding area. Surveys were conducted on different habitats throughout the existing and proposed farm development. A total of 38 species were identified. The most common passerines (song, perching birds) were:

- 1) Fox Sparrow (38)
- 2) Dark Eyed Junco (31)
- 3) Robin, White Throated Sparrow (29)
- 4) Black and White warbler (25)
- 5) Cedar Waxwing (one flock) (20)
- 6) Swamp Sparrow, Northern Water Thrush (16)
- 7) Black and White Warbler (15)
- 8) Song Sparrow (14)
- 9) American Goldfinch (13)
- 10) Boreal Chic a dee (12)

The most common gull was the herring gull.

As explained in Table 5, the surveys were conducted on: May 16th, June 6th and June 26th. The normal trend of more species and birds as spring advances is reflected in the table. Additional details may be found in the Avifauna Control and Management Component Study.

Sections 6.2.3.1 and 9 discusses the protection of avifauna during the nesting season along with the need to identify and buffer raptor nests and snag trees. Snag trees are used as nesting sites for birds such as the Northern flicker which was identified during the surveys..

Table 5

Spring Return Dates (birds)

Date	Number of birds	Number of Species
May 16	87	14
June 6	108	21
June 26	132	22

d. Species Designated and Listed under endangered species legislation

The Species at Risk Act (SARA) was established to provide wildlife species additional protection against extirpation, extinction or endangerment. Species at Risk are classified

by the Committee on the Status of Endangered Wildlife in Canada. (COSEWIC) as extirpated, endangered, threatened or of special concern depending on the level of risk.

Provincially, wildlife species at risk are managed under the Newfoundland and Labrador Endangered Species Act. (NLESA) designed to complement the Federal SARA legislation. The NLESA protects wildlife species, subspecies or populations which are considered, endangered, threatened or vulnerable (60).

The avifauna surveys in the spring of 2020 did not identify species at risk as listed pursuant to the SARA and NLESA legislation. See Avifauna Component Study for details.

Gulls

The avifauna survey conducted as part of the Avifauna Control and Management Component Study (Study) identified over 500 gulls with the majority counted in the area of the mink farm; barns, compost shed, feed kitchen and feed storage (notably where the raw feed product is received and prepared for freezing). The component study explains, like any food processing facility, the gulls are attracted to the mink farm because of the potential feed source.

The Study assessed options to control gulls in an effort to determine if the numbers can be reduced. There are many 'exclusionary techniques' such as mechanical means, notably sharp spikes to deter birds from ledges. Overhead wires, mesh/screen, nylon strings etc. may be used to prevent birds from using specific areas. The exact reason why lines can be effective is unknown, however the placement in grid, parallel or random patterns has worked to prevent bird access to food, loafing or nesting areas. In addition, there are acoustic and visual tools and although approaches are most effective when mixing techniques, as eventually birds habituate to the options, including noise.

The farm will proceed with an audit of the farm to determine ways to reduce the attraction of the gulls to the farm. These would include the identification of access points, the handling of feed, coverings on the compost piles and the exclusion techniques which could be used on the farm. Further details are included in the Component Study, Volume 3.

e. Human-wildlife interaction

The Project is located in the Bay de Verde Moose Management Area 34. There are about 115,000 moose in the province and hunters remove about 25,000 annually, with a 65% success rate (61). The Wildlife Division and the Department of Works Services and Transportation is attempting to mitigate the frequency and severity of motor vehicle accidents with moose. This would include removal of more moose and the reduction of vegetation along roadways (62).

Moose hunting is popular activity the Trinity Bay Area. In 2015, there were 4128 applications for 500 either sex licenses and 200 licenses for bull only for Bay de Verde Moose Management Area 34 which includes the peninsula between Conception and Trinity Bays. In 2020 there were 600 licenses issued with a 57% success rate (63). Rabbit hunting and snaring remains popular in rural communities along the Trinity Bay shore.

The most discussed wildlife/agriculture conflict in the Province is moose damage to field vegetables, however Cavendish Beef Farm proposal does not include vegetable production, hence Viking does not anticipate any conflict with moose. In other areas of the Province, caribou will graze farmer’s forage fields, however the proposal is outside of the caribou range and therefore highly unlikely to be a problem in this area of the Avalon Peninsula (64).

4.2.4 Land and Resource Use

The Proponent shall describe relevant land and land resource use within the Study Area.

- a) Current Land Use; relationship amongst users
- b) Unique (sensitive sites, such as environmentally sensitive areas.)
- c) Tourism operators and assets
- d) Landscapes
- e) Zoning (not specifically identified in the EIS)
- f)
 - a) Current Land Use; relationship with any existing or future land use

Traditional use of the lands in vicinity of the land under application, has been for fire wood, hunting and berry picking, particularly east of Route 80. Many residents continue to burn wood to heat their homes. The Provincial Forestry Branch has explained that most residents will only cut wood in the immediate vicinity of their communities. The following is an overview of cutting permits in the areas near and including the project area.

Cutting permits in the Whiteway, Cavendish, Hearts Delight-Islington Area

Table 6

Domestic Area	Name	2020	2019	2018	2017	2016
I-8D	Valley Ponds	54	78	66	58	58
I-9D	Tickle Ponds	33	48	45	48	51
I-22D	Cavendish	6	7	5	6	

(65)

Over the years the economy of the communities of Whiteway, Cavendish, Hearts Delight-Islington and Hearts Desire have shifted from resource-based industries notably

fishing, to an economy based on commuting within the Avalon Peninsula and throughout Canada. In addition, a range of Government support programs are important to the residents of the communities.

Residential areas include residential infilling along Route 80 and the communities within ten kilometres of the current Viking Fur Farm are shown on Figure 2. Minute of Council 9-78 requires a buffer off 600 metres be maintained between livestock operations and residential development to minimize land use conflicts. The combination of the buffer, boundaries of the municipality of Hearts Delight -Islington and residential infilling limits, pursuant to Protected Roads Regulations, have limited residential development to beyond 900 metres of the farm. In the past 17 years, 10 houses have been built within 1.5 kilometres of Viking Fur Farm Inc.

b) Description of nearest potentially sensitive human receptors

The following is a list of land use in the area, including those which may be the most likely to be impacted (sensitive) by the operation of the existing farm and proposed project.

Uses of Land

- About two kilometres northeast of Viking Fur Farm is a farm owned by Alfred Bishop. This 49-acre farm includes 28 acres of farmland. Viking and Mr. Bishop have an agreement which allows Viking to spread liquid mink manure on these fields. These fields are about half a kilometre from land under application as part of this project proposal. Liquid manure is not spread in the summer months.
- About 0.9 km north of Viking Fur Farm are four rental cottages. (Ocean Delight Cottages) The cottages are downwind (prevailing south westerly's in the summer) from the farm and owners have expressed strong concerns about odours and in particular in the late summer of 2020. In recent years, the level of fly activity has lessened as compared to the years leading up to ~2015.
- North-North east of Viking Farm, 1.75 km, a brook (Brook Cove Brook) passes under route 80 where there is recreational area of outdoor activity, including a swimming hole. Between Brook Cove Brook and Viking farm, there are 17 houses which, in respect to prevailing south westerly winds, are located down wind of the farm and therefore may be the most likely to experience farm odours. The IEC Risk Report states the likely risk effect of odours from the existing mink farm on this area is considered as, moderately adverse. The operator of tourism accommodations business explained odours have been strong in this area, particularly in late summer of 2020. A new subdivision is under construction at about 1.5 km. from the farm. which as of November 2021 included three houses, one of which is under construction. Viking Fur recently converted a former lounge to a 4-unit apartment building. The core of the Community of Hearts

Delight-Islington is located north of the brook for about four kilometres in a northerly direction.

- Hearts Desire is located about nine kilometres north of Viking Fur Farm.
- A camp ground is located about 1.6 kilometres south east of Viking Fur Farm. Outdoor activities, including the use of Round Pond for swimming and boating are an attraction. The closest of the proposed fields would be about one km away. Existing fields are about 1.3 km from the campground. Historically, the business experienced flies, however not in the past~ five years. Whereas the business is up wind of the farm, odours are seldom experienced, unless manure is spread during northerly winds.
- South (~ 3.8 kilometres) of Viking Farm is Browns Restaurant and cabins. This site based on tourism has recently expanded into accommodations, including Blazing Horizon Cottages. With increasing distances 'up wind, in respect to prevailing winds, there is less of a chance of odours. Consultations with the tourism operators, indicated odours have not been an issue.
- Pitcher Pond Golf course is located south, about 6 kilometres from Viking Farm.
- The core of Whiteway, Eastern Corner, is about five km (south) from Viking Fur farm.
- Shag Rock Manor, seniors' home, is located about 6 km (south) from Viking Farm. Golden Years manor is located 2.6 kilometres north east of the farm.
- There are four houses within 1.5 kilometres south of the farm. (Figure 17) At the public meeting/information session one family stated odours are a concern.

Closest Residential/Tourist Development to Viking Fur Farm
Figure 17



Tables 7, 8 and 9 illustrate land use within ten kilometres of the farm. In addition, the following tables describe the location and distance of a variety of land uses from Viking Fur Farm. *NB. Letters and numbers in column 1 refer to sites on map figures 2, north and south.*

Accommodations within ten kilometres of Viking Fur Farm/Cavendish Cattle Farm.

Table 7

*	Name of Accommodations	Location	Type/size	Distance and direction to the Project (farm)	Latitude/Longitude
A	Legges Sunset Inn	Whiteway	3 suites	5.3 Km. NWN	47 41 50 N 53 28 47 W
B	Blazing Horizon Cottages	Whiteway	7 cottages	4.8 km. NWN	47 42 09 N 53 29 12 W
C	Ocean Delight	Whiteway	Cottages	4.6 km. NWN	47 41 59 N 53 20 01 W
D	Shag Rock Cottage	Whiteway	1 cottage	3.5 km. North	47 22 23 N 53 29 08 W
E	Ocean Delight	Cavendish	4 cottages	0.9 km. South	47 45 00 N 53 29 39 W
F	Brook Cove Cottage	Hearts Delight	1 cottage	1.9 km. SW	47 45 24 N 53 29 06 W

Tourism and Recreational Assets within ten kilometres of Viking Fur Farm/Cavendish Cattle Farm

Table 8

*	Name of Attraction	Location	Type	Distance and Direction to the Project (farm)	Latitude/Longitude
1	Backside Pond RV Park	Whiteway	176 service sites, 20 semi service, 27 tents	8.3 km. North	47 40 01 N 53 29 38 W
2	Jimmy Rowe Walking Trail	Whiteway	Walking Trail 2.5 kilometres	7.6 km. North	47 40 41 N 53 28 59 W
3	Whiteway Festival	Whiteway	Summer weekend festival	6.6 km; NWN	47 41 33 N 58 28 43 W
4	Pitchers Golf Course	Whiteway	18-hole golf course	6.2 km. NNW	47 41 26 N 53 27 54 W
5	Browns	Whiteway	Restaurant	4.4 km. NWN	47 42 09 N 53 29 04 W

6	Cavendish Festival	Cavendish	Summer weekend festival	2.8 km; North	47 43 05 N 53 29 35 W
7	Burgess Fishing Property	Whiteway	Historic Site	2.8 km. N	47 42 56 N 53 29 30 W
8	Shag Rocks	Whiteway	Lookout;	1.8 km. NWN	47 41 34 N 53 28 41 W
9	Round Pond Trailer Park	Cavendish	RV Park; trailers	1.8 km. NWN	47 43 33 N 53 29 24 W
10	K. Chislett Mem. Park	Islington	Swimming Hole Ball Filed	1.6 km. SW	47 45 19 N 53 29 09 W
11	Western Point Walking Trail	Hearts Delight-Islington	Walking Trail 1.0 kilometre	3.5km. SW	47 46 07 N 53 28 48 W
12	Hearts Delight Marina	Hearts Delight	Marina	4.0 km. SW	47 46 17 N 53 28 00 W
13	Northern Point Hiking Trail	Hearts Delight - Islington	Walking Trail 1.7 kilometres	4.4 km. SW	47 46 45 N 53 28 28 W
14	Swimming Hole	Hearts Desire	Swimming hole/park	8.0 km. SW	47 48 29 N 53 26 45 W
15	Chicken Coop	Hearts Delight	Restaurant	3.5 km SW	47 46 09 N 53 28 10 W
16	Ball field	Whiteway	recreation	4.4 km. NWN	47 41 26 N 53 27 54 W

Seniors Homes, farms and residences

Table 9

*	Seniors Homes	Location	Type		Latitude/Longitude
i	Shag Rock Manor	Whiteway	Seniors Home	5.8 km NWN	47 31 30 N 58 28 39 W
i	Golden Years Manor	Hearts Delight	Seniors Home	2.6 km. SWS	47 45 54 N 53 28 36 W
	Farms				
a	Viking Farm	Cavendish			47 44 33 N 53 29 47 W
b	Alfred Bishop 1.	Islington	Sheep	1.9 km SW	47 45 16 N 53 28 31 W
c	Baccalieu Sod Farm	Hearts Desire	Nursery Sod	5.5 km. SWS	47 47 21 N 53 28 07 W
d	Viking Office	Cavendish	Office		47 43 50 N 53 29 37 W
	Residence				
	1.4- 1.6 km south of the farm	4 houses	Residences on main road	1.4 km. Closest house NWN	47 43 47 N 53 29 29 W
	1.1to 1.7 km north east of the farm	17 houses and a 4-unit apartment	Residences (on main road)	1.0 km. Closest residence SWS	47 45 06 N 53 29 23 W

* Letters and numbers refer to sites on maps (figure 2, north and south)

(66)

c) Unique sites/ environmentally sensitive areas/ protected areas

The following areas are noted as requiring special attention in the EIS.

- The former landfill will be excluded from the Crown Land Application. Combined with a re alignment of Lot one, the buffer between proposed farm development and the former waste disposal site would be at least 75 metres. (Figure 7).
- A buffer of 90 metres along the main stem of the river, which drains from Outside Island Cove Pond to the ocean in Hearts Delight-Islington, would be maintained between the river and land leased for agriculture. (Hearts Delight-Islington Municipal Plan includes an environmental zone along the river where it passes through the municipality.)
- There will be no encroachment on organic wetlands. Buffers of 50 metres will be maintained between farm development and the organic wetlands.
- The lease application, Lot 2 north of Viking Fur Farm and towards the ocean has been reduced to provide a wider buffer between the farm and private land.
- Lot 4a is deleted from the proposal thereby removing the need to construct a stream crossing and leaving riparian area in its natural state. The buffer along lots 3 and 4b has been increased to 50 metres.
- Shag Rocks, a bird breeding site, is located approximately four kilometres from the project.

d) **Tourism operators and assets**
(see section 4.2.5, Tourism Resources)

e) **Landscapes**

The landscape along Route 80 varies with views of the ocean, winding roads through many communities and boreal forest, with lakes and bogs. In recent years, particularly in the communities along the southern part of Route 80, from Dildo to Greens Harbour commercial and residential infilling have increased the human foot print of the landscape.

It has been stated that “landscape is more than our physical surroundings. It encompasses our experience and perception of all the elements of the physical environment that surround us-the natural and cultural.” People value landscape differently. Landscape can have a social and community value and it contributes to a sense of identity. Furthermore, people value landscape for many different reasons. For some its seen as a place for wildlife habitat and as a cultural record of where people have lived (67). (and played, worked and relaxed)

In the preparation of the EIS, those in the tourist industry explained the vastness of the Trinity Bay shore, let alone the Province, especially when compared to their urban homes in Europe, was a major attraction to tourists. Residents who attended the Public Hearing for the EIS, expressed concerns of a loss of landscape, with the replacement of boreal forest with farm fields which in at least one person's opinion would result in the loss of traditional activities of berry picking. Over the years, concern was expressed as to the loss of a tree screen along Route 80 adjacent to the Viking Fur Farm., which has changed the landscape from a boreal forest to farm buildings and hay/pasture land.

Landscapes change and change is not inherently positive or negative. In recent years Viking has developed farm land on both sides of route 80 and would like to further expand its farm land base in both areas. Residents are aware of these changes and individuals have had different reactions to these changes. Viking's plan is to develop approximately 185 more acres over the next six years. It is estimated about 55 acres (Crown) and 20 (freehold) on the ocean side of route 80 and about 110 on the interior side of the highway

Cattle Grazing on Viking land

Figure 18



On the ocean side of the highway, pasture land is visible from the highway. (figure 18) The proposed expansion of pastureland would be on the downward slope to the ocean. Consequently, most of the new pasture land would not be visible from the highway.

Currently, forage/hay fields are visible on the interior side of the highway as shown on figure 19. (picture from the fields towards the farm buildings) The proposed plan is to develop more forage land, lots 5, 6 and 7 on the inland side of the highway, the majority of which will be accessed from Fox Farm Road. As the elevation increases, in an uneven fashion, a portion of the new hay fields would be added to the view scape. The smaller leases, lots 3 and 4, would not be seen from the highway as they are located behind hills located between the expansion land and the highway. A considerable portion of these hills have been developed for farmland in the past ten years.

View of forage fields towards Viking Farm Buildings

Figure 19



The change of landscape from boreal forest to a mixed pattern of forest and farm fields represents a significant change. Not surprisingly, this change from a natural landscape to a more cultured landscape is not everyone's preference. Conversely, pastoral scenes with cattle and a background of ocean, provide a more varied landscape to visitors and residents. Indeed, many have enjoyed this 'new landscape' which would add to a range of vistas along Route 80. Agricultural landscapes are not nearly as common in Newfoundland and Labrador as in other Provinces. In recent years, farm field expansions have taken place on nearby Roaches Line and the Trans-Canada Highway near Ocean Pond. Whether or not these landscapes are offensive or pleasing to the eye will vary amongst individuals.

g) Zoning/Land Use Designations

The control of land use development, including the protection of land, is for the most part based on zoning. Typical of rural parts of the Province, planning policy in the Study Area is varied, based on municipal plans and land use designations as illustrated in the Provincial Land Use Atlas which is accessible on the internet (24).

Viking Fur Farm and the land proposed for farm expansion are located south of the Hearts Delight-Islington Town Planning Boundary and north of the Whiteway and the community of Cavendish which is a Local Improvement District. Approximately one acre of lot 6 is located in the Hearts Delight-Islington Municipal Planning Area. To facilitate the application process, this area would be deleted from the proponent's application. Cavendish does not have a land use plan, however the Provincial Land Use Atlas, includes residential infill along community roads and Route 80. In addition, sections of Route 80 are zoned pursuant to the Protected Road Zoning Regulations, (The Trinity South Highway Protected Road Plan) which includes zoning (68). Hearts Desire has a planning boundary and an extensive protected water supply. Whiteway does not have a municipal planning area or a municipal plan.

Provincial Land Use Atlas/ Study Region

The Provincial Land Use Atlas (Atlas) identifies land use designations throughout the Province. The Atlas includes many designations, including but not limited to: Municipal boundaries, water supplies, cabin, agricultural and forestry designations, including domestic wood cutting. The Atlas also includes archaeological, nature/wilderness protection and other designations. The Atlas is a valuable planning tool to protect the Province's resources and to guide development to areas which are suitable for a proposed use of land.

Within the Detailed Study Area, (Study Area) approximately 2.0 by 3.0 kilometres, the Atlas identifies four land use designations including: protected roads, agriculture, forestry and the former Cavendish waste disposal site. The protected water supplies for the communities of Hearts Delight-Islington and Whiteway are located outside of the Study Area, however a protected water supply located south of the project area is shown on the Zoning map. Figure 20. The water supply is located about 600 metres from the closest

parcel of land in the project proposal, lot 4b. Lot 4b and the water supply are in different watersheds.

Development along Route 80 is zoned and controlled pursuant to the Development Control Regulations. In vicinity of the farm, most of the corridor is 400 metres deep, however the corridor narrows in the southern part of the corridor to a depth of 60 metres. In the 400 metre Rural Conservation zone, agriculture is a permitted use. This designation does not allow residential infilling. The 60-metre corridor, zoned Mixed, allows residential infilling (68).

The agriculture designation was established many years ago to guide the development of land in vicinity of a fur farm operated by the local development association. This designation requires applications for Crown Land development be referred to the Provincial Department responsible for agriculture. As a result of this designation residential development has not been permitted.

A domestic cutting designation on the Land Use Atlas, described on figure 20, overlaps lot 7, which has been proposed for forage production. Lot 7 represents 14 percent of the entire domestic cutting area. Much of the area within the proposed lot has been cutover. The map also shows the location of small domestic cutting areas located on the oceanside of the Highway, south of the existing farm.

The former waste disposal site is now being operated by the Eastern Regional Services Board as the Cavendish Waste Recovery Facility as a depot for the temporary waste storage destined for landfill or recycling.

The Land Use designations/zoning would the proposed agriculture project as “a permitted use.” The main land use designation is Agricultural and Forestry in the Provincial Land Use Atlas and a Rural Conservation Zone, pursuant to the Development Control Regulations for Route 80. Agriculture would be a permitted use within the Rural Conservation Zone and in the agriculture and forestry designation of the Land Use Atlas.

Municipal

Hearts Delight-Islington

The Hearts Delight-Islington Municipality, located north of the Study Area, includes ‘Town’ zoning along Route 80. This zoning allows residential development up to the southern boundary of the municipality which is about 700 metres from Viking Fur Farm buildings. The plan states residential development in this area is subject to buffers required by the Department responsible for Agrifoods. The Town’s plan includes ‘rural’ zoning up to the Town’s southern boundary and an ‘environmental’ zoning designation along the brook (Brook Cove Brook) which drains from Outside Island Cove Pond to the ocean. (69). About one acre of parcel 5 located within the Town’s boundary would be deleted from Viking’s proposal.

Whiteway

The Department of Municipal and Provincial Affairs identifies plans and development regulations registered under the *Urban and Rural Planning Act* does not include a listing for the community of Whiteway. Consequently, at this time the Community does not have a municipal planning area or municipal plan in legal effect. The Provincial Land Use Atlas includes a land planning designation within which development applications received by the provincial department responsible for Crown lands are referred to the Community of Whiteway.

4.2.5 Tourism Resources

The tourism industry in Newfoundland and Labrador has had substantial growth in recent years. In 2009, the industry contributed \$790 million to the economy, supporting almost 13,000 jobs. By 2013 the industry had grown to \$1.1 billion and 18,000 direct jobs (59). In 2017 the Province's goal was to reach \$1.6 billion in annual tourism spending in 2020. Government NL (70). The development of the tourism industry showed signs of a levelling off before the pandemic, as there was 3.5% decrease in the number of non-resident visitors to approximately 500,000 from 2016 to 2018.

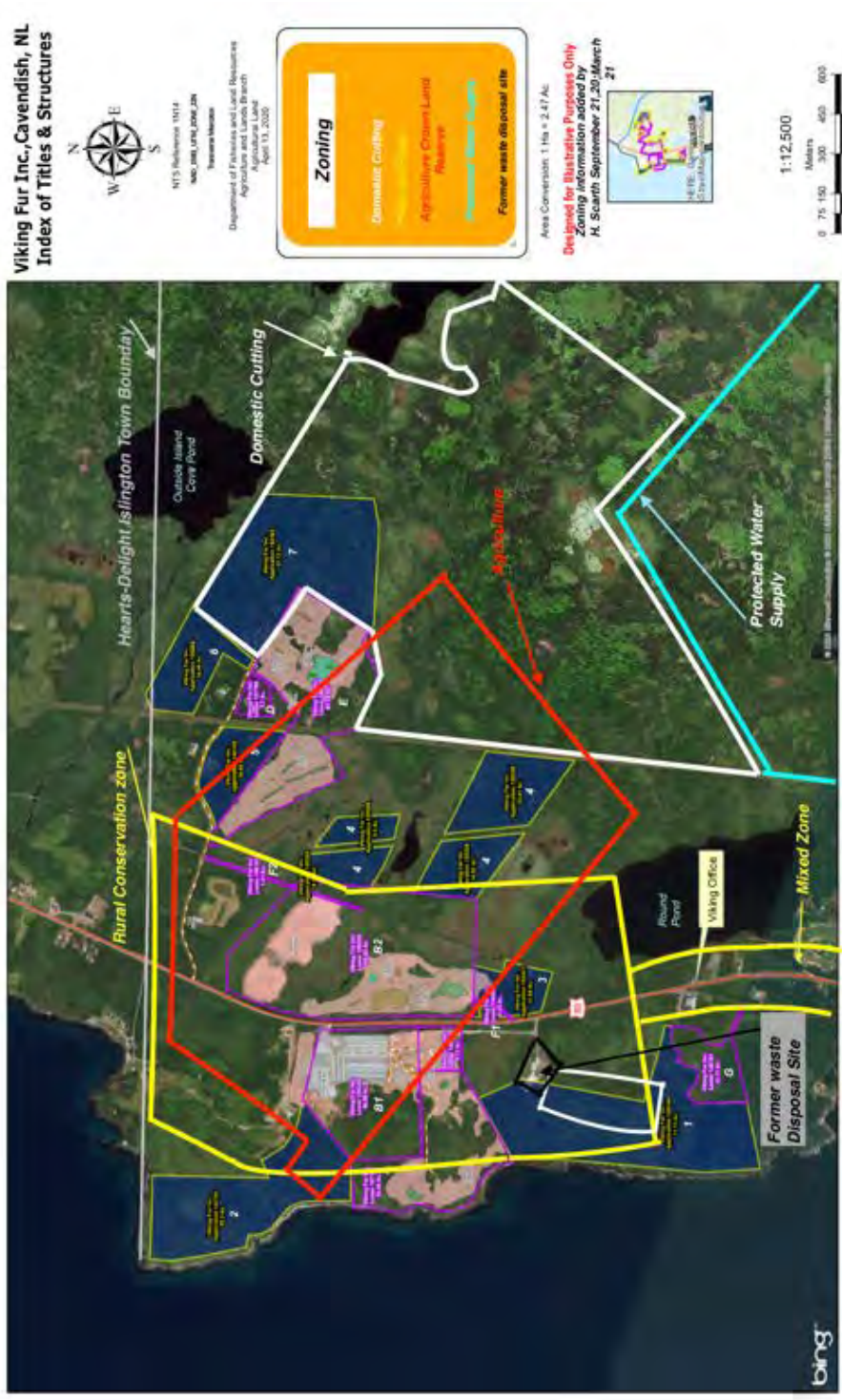
The Province's vision recognizes the Province has become well known for its landscape, scenery, culture and heritage. Furthermore, the importance of balancing the growing tourist traffic while maintaining what is special about the province requires close attention to using sustainable tourist practices to ensure the industry continues to develop (71). Table 11 provides a list of tourism assets within ten kilometres of the project area; Table 12 is a list of attractions from Dildo to Hants Harbour.

The Province of Newfoundland and Labrador sees the potential of the tourism industry to strengthen the Province's economy, often in the rural areas of the Province where opportunities are needed to stem the flow of out migration. Award winning tourism advertising based on scenery, the people and culture has been successful in attracting visitors to the province.

In 2020 non-residential travel dropped by 79 % and occupancy decreased by 19.3% to 26.96 %. The Atlantic Canada 'travel bubble' resulted in a boost to non-resident travel in the Province, however resident travel was very important to the tourism industry. By the end of the summer of 2020 the Province's research indicated 57% of residents had taken overnight leisure trips. At the time it was reported about 60% of residents were felt comfortable in travelling in the Province (72).

Land Use Zoning and Designation Map

Figure 20



The main attractions in the area include a golf course, scenery and general outdoor activities such as walking, fishing, boating and in general, relaxation. As shown on Table 12 there are other attractions between Dildo and Hants Harbour, outside of the ten-kilometre Study Area. These attractions along the east side of Trinity Bay also encourage people who choose to book accommodations within the Study Area. These attractions include, museums, (the cable station ranked as the seventh largest attraction to an historic site) hikes, boat tours, gallery, craft beer restaurants and a conference centre. There are festivals and events along the trail including: Hearts Delight-Islington Festival, Cavendish Beach Festival and the Shag Rock Festival within the Study Area.

The Province has encouraged tourism to the Trinity Bay/Conception Bay area by promoting the Baccalieu Trail, which extends around the peninsula. The Baccalieu trail provides a full day of driving for people who are satisfied with a windshield perspective view of the attractions. It is evident the many attractions along the route provide a variety of experiences which could entertain visitors for longer periods of time.

Within ten kilometres of the proponent’s proposed expansion area, there are six businesses with accommodations as identified in the Province of Newfoundland and Labrador’s tourism guide. These businesses include cottages, chalets, cabins and rooms within the owner’s residence. In total, the sites can accommodate approximately 100 people. In addition, there are two trailer parks which have a focus on travel trailers and to a lesser extent, tenting. These two operations can accommodate approximately 270 trailers and 25 tents. In addition, tourist operations include: Pitchers Pond Golf Course, Browns Restaurant the marina in Hearts Delight-Islington.

Table 10 includes a listing of tourism related operations and assets within ten kilometres of the existing farm/project area. During the preparation of the EIS, including conversations with tourism operators, it was explained there are many other attractions along route 80 which draw tourists to the area. Table 12 lists these assets located in the broader region.

Table 10

Tourism Related Operations and Assets

Accommodations within ten kilometres of Viking Fur Farm/Cavendish Cattle Farm.

*	Name of Accommodations	Location	Accommodations	Distance and direction to the Project (farm)
A	Legges Sunset Inn	Whiteway	3 suites	5.3 Km. NWN
B	Blazing Horizon Cottages	Whiteway	7 cottages	4.8 km. NWN
C	Ocean Delight	Whiteway	Cottages	4.6 km. NWN
D	Shag Rock Cottage	Whiteway	1 cottages	3.5 km. North
E	Ocean Delight	Cavendish	4 cottages	0.9 km. South
F	Brook Cove Cottage	Hearts Delight	1 cottage	1.9 km. SW

Table 11

Tourism Assets within ten kilometres of Viking Fur Farm/Cavendish Cattle Farm

*	Name of Attraction	Location	Type	Distance and Direction to the Project (farm)
1	Backside Pond RV Park	Whiteway	176 service sites, 20 semi service, 27 tents	8.3 km. North
2	Jimmy Rowe Walking Trail	Whiteway	Walking Trail 2.5 kilometres	7.6 km. North
3	Whiteway Festival	Whiteway	Summer weekend festival	6.6 km; NWN
4	Pitchers Golf Course	Whiteway	9 hole golf course	6.2 km. NNW
5	Browns	Whiteway	Restaurant	4.4 km. NWN
6	Cavendish Festival	Cavendish	Summer weekend festival	2.8 km; North
7	Burgess Fishing Property	Whiteway	Historic Site	2.8 km; North
8	Shag Rocks	Whiteway	Lookout; boating destination	1.8 km. NWN
9	Round Pond Trailer Park	Cavendish	RV Park; trailers/tent sites	1.8 km. NWN
10	K. Chislett Mem. Park	Islington	Swimming Hole	1.6 km. SW
11	Western Point Walking Trail	Hearts Delight-Islington	Walking Trail 1.0 kilometre	3.5km. SW
12	Hearts Delight Marina	Hearts Delight	Marina	4.0 km. SW
13	Northern Point Hiking Trail	Hearts Delight	Walking Trail 1.7 kilometres	4.4 km. SW
14	Swimming Hole	Hearts Desire	Swimming hole/park	8.0 km. SW

* Letters and numbers refer to sites on maps (figure 2, north and south)

Table 12

Tourism Attractions between Dildo and Hants Harbour

Assets Outside of the ten-kilometre study area

Attractions in the Region (Name)	Location	Type
Cable Station	Hearts Content	Museum/Provincial Historic Site
Wooden Boat Museum	Winterton	Museum
Dildo Boat Tours	Dildo	Boat Tours

South Dildo Whaling and Sealing museum	South Dildo	Museum
Dildo Brewery and Museum	Dildo	Craft beer, museum, restaurant
Doctors House	Greens Harbour	Hotel, conference centre
Mizzen Trail	Hearts Content	trail
Mizzen Heritage Museum	Hearts Content	Museum
Sugarloaf Trail	Winterton	Trail
Outside Pond Trail	Winterton	Trail
Baccalieu View Walking trail	Hants Hr.	Trail
Lighthouse Trail	Hants Hr.	Trail
The Baccalieu Gallery	Hearts Content	Gallery

The recreational sites include a ball field in Whiteway and parks in Hearts Delight - Islington at the mouth of Brook Cove Brook and at the southern entrance to Hearts Desire.

4.2.6 Heritage Resources

a) historic and archaeological resources

The Baccalieu Trail Heritage Corporation's document, Baccalieu Trail Archaeology, explains some of the oldest European settlements in North America were established on the peninsula between Conception Bay and Trinity Bay. E.g., Cupids, Bristol's Hope and Carbonear. The communities of Hearts Desire, Hearts Delight-Islington, Cavendish and Whiteway were settled in the late 18th century.

According to local resident John Critch in a 2005 interview, Cavendish was settled by the Jackson and Critch families who relocated from across Trinity Bay from Deer Harbour (73). Mr. Critch, also explained, in addition to the fishery, many people worked in the 'lumber woods' and that there were four or five lumber mills in Cavendish. A story board in Whiteway, provides a description of the Drover sawmill which was powered by the diversion of water from Jimmy Rowe's Pond, the location of a current day hiking trail. There was a lobster cannery in the community in the early 1900s. The Trinity Bay railway operated to at least the 1930s. Mr. Critch, witnessed a train derailment with a load of paper from the Grand Falls paper mill.

The Provincial Archaeology Office, Government of Newfoundland and Labrador explained there are no known archaeological sites in Cavendish proper, however there are sites within ten kilometres which have potential for new sites particularly near the coast (74). Despite the archaeological potential, there has been very little assessment in the area. Within ten kilometres of the Regional Study Area there are two known sites including a Maritime Archaic stone tool at Whiteway and early 19th century European interhouse at Backside Pond Park. Just outside of the Study area to the south at Hopeall and Dildo there are Maritime Archaic Pre-Inuit, Beothuk and Beothuk ancestor sites. The presence of the Beothuk is well documented in Trinity Bay including John Guy's meeting at the bottom of the bay in the fall of 1612 (75).

b) paleontological resources

The area within ten kilometres of the farm does not include areas designated as significant palaeontological (fossil) sites that are protected under the *Historic Resources Act*. There are no known significant fossils in the area (76).

c) architectural resources

The Burgess Fishing Property Municipal Heritage Building is located in Whiteway. The building has a wooden, steep gable roof which was designated as a Canadian Historic Place. It is located on the beach where historically there were many similar sheds associated with the fishery. The building's architecture style reflects its utilitarian functions, notably the bulk salting of fish (77).

Note: Reid's General Store in Heart's Delight-Islington was deregistered as a historic place.

d) burial, cultural, spiritual and heritage sites

There are several churches and graveyards in the area between Whiteway and Hearts Desire. There are not any within the detailed Study Area (the foot print of the existing farm and proposed expansion) of the proposed development between Cavendish and Hearts Delight-Islington.

4.2.7 Communities

a) communities, industries and population demographics

The Regional Study Area, the area within ten kilometres of the proposal, includes Hearts Desire, Whiteway, Cavendish and Hearts Delight-Islington. The total population of the four communities, 2016 was 1560 people, with approximately 30% over the age 64; 60% between 15-64 and 10 % under 15(78).

Table in *Section 4.2.4 Land and Resource Use* identifies seven tourist accommodations, two restaurants and a golf course in Whiteway. There are two retirement homes in the Study Area, in Whiteway and Hearts Delight-Islington. There is a marina in Hearts Delight-Islington and Jacksons Boatyard Ltd. In Whiteway which has had up to 40 employees since it was established in 1976. The communities include a number of service-related businesses such as hair styling, auto repairs, mechanical, kitchen cupboards, stores and Government offices (79).

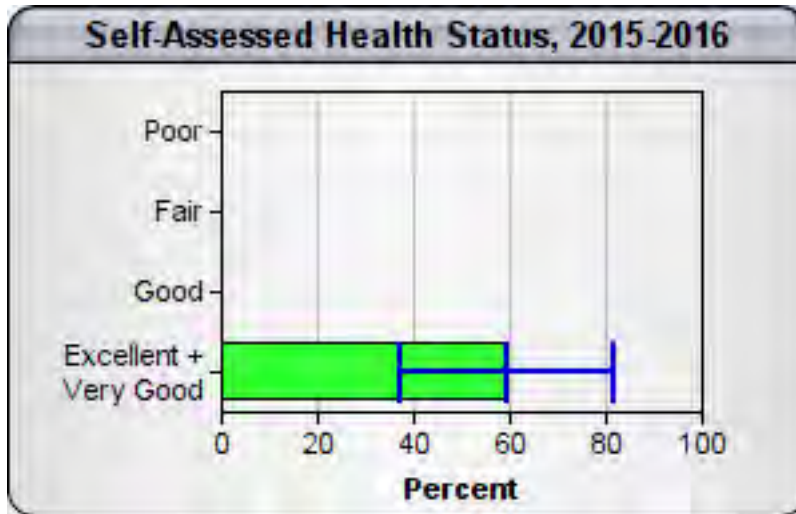
b) health services and social programs

Eastern Health has a Home and Community Care clinic is located in Heart's Delight-Islington. An Eastern Health Needs Assessment Report stated that 90% of the Trinity

Shore's population have a family doctor and the majority of people are satisfied with the travelling distance to their physician.

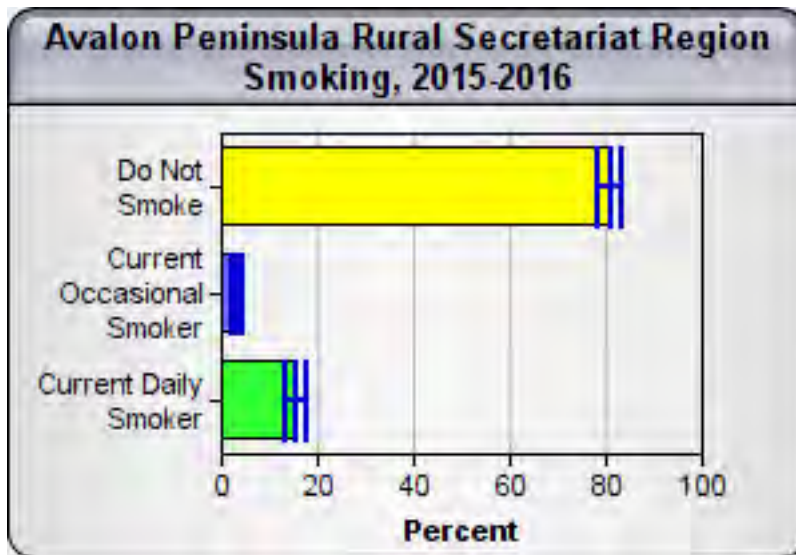
People in the broader region from Dildo to New Harbour rated health status as very good to excellent (80).

Table 13



Approximately 80% of the region's population do not smoke.

Table 14



c.family life, recreation and culture

The Town of Hearts Delight-Islington has a Recreation Committee, whose purpose is to: ‘enable our residents to lead a physically active, healthy lifestyle’. The Committee has special events, including fund raisers for the support of sports teams and the Town’s “Kids Club” (81)

The Town, with the support of other Government Department and Agencies is investing in an expanded marina and is confident the scenic attractions will result in an increased interest in recreational boating. There is a swimming “hole” at the southern entrance to the community.

The Pitchers Pond Golf course at Whiteway has been a popular attraction for residents and visitors since 2005. In 2020 16,000 rounds of golf were played at the course (82). There are popular RV parks in Cavendish and Backside Pond, Whiteway. These private businesses also provide camping opportunities for the general public

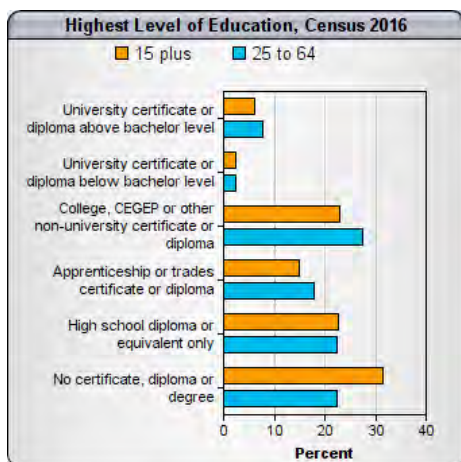
d) education and training facilities and associated programs

The closest schools to the Study area are Ackerman, in Greens Hr., K – 6 and Crescent Collegiate in South Dildo, Grade 7 to Level 4.

In the region from New Harbour to Dildo the 2016 Census reported 31.5 % of people aged 15 and over did not have a high school diploma as compared to 23.4 % for the Province. Approximately 6% have a Bachelor’s degree or higher compared the 14.8 % for the Province.

In the Local Area 3: Hearts Delight Area it was reported 22.5% of people 25 to 64 years of age do not have a high school diploma. In the same area about 7.6% of people aged 25-64 had a Bachelor’s Degree or higher, compared to 18.3% in the Province as a whole,

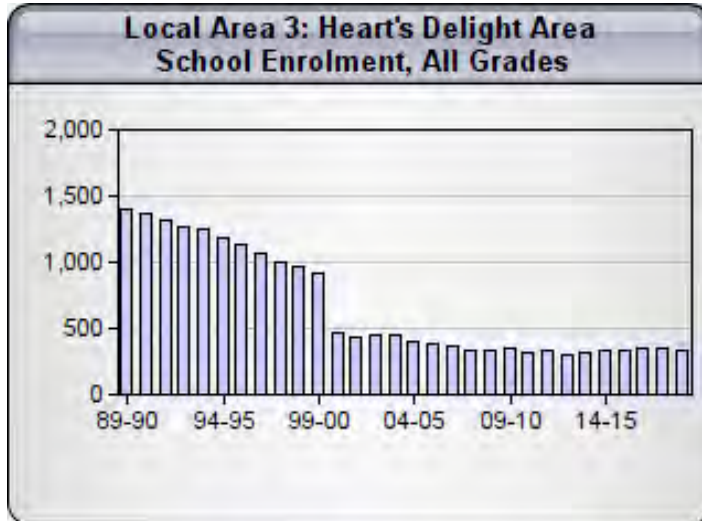
Table 15



School enrolment

Following significant declines in enrolment from the mid 1980s, the school population has been stable.

Table 16



e) housing, accommodations and property values

There are approximately 725 houses in the four communities. Approximately 88% of the homes were owned versus rented compared to 77 % for the Province. The average shelter costs were about \$1000 a month (78).

4.2.8 Economy, Employment and Business

The Community Accounts reference includes profiles of “Local Area 3: Hearts Delight Area.” The profile includes communities from Dildo to Hearts Desire. Although, it includes an area greater than the ten-kilometre Regional Study Area, a general overview of the Region is useful in the discussion of the economy, employment and business in the south/east side of Trinity Bay.

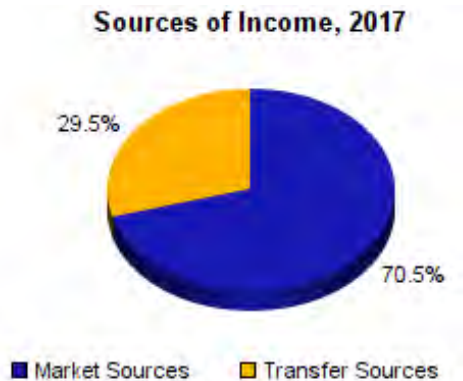
a) Economy

The 2017 gross income of every man, woman and child in the Local Area 3: Hearts Delight Area was \$30 000. (\$37,100 for the Province) Half of the families had incomes of more than \$68,800 in 2017 as compared to \$89,200 for the Province. The average family income was \$83,900 in 2017; (\$108,400 for the Province. (78)

The 2017 self-reliance ratio for the Hearts Delight Local Area 3 was 70.5%. This is a measure of the area’s dependency on government transfers such as: Canada Pension, Old

Age Security, Employment Insurance, Income support Assistance etc. A higher self-reliance ratio indicates a lower dependency. The self-reliance ratio in the Province was 79.9% (78) See also Section 4.2.7.a.

Table 17 Self Reliance



b) Employment

In 2017, 2,160 individuals reported earnings from employment in tax records, averaging \$34,900 gross income from employment. In 1999, 2,140 individual reported earnings from employment tax records, averaging \$14, 600 gross income from employment. In the Province the reported earnings averaged \$45,300 gross income from employment

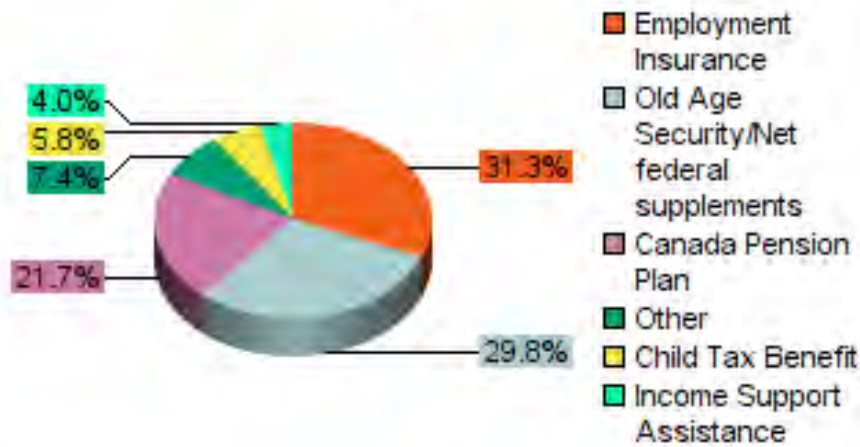
In the area, 2016 census, the employment rate was 40.9% while the unemployment rate was 16.9%. There were 1,770 individuals in the labour force (83).

c) Availability of skilled and unskilled

Unskilled labour refers to work that does not require a certain set of skills or formal education. Some examples include, grocery clerks and cleaners. Because of the

Table 18

**Transfer Payments - Amounts by Source
2017**

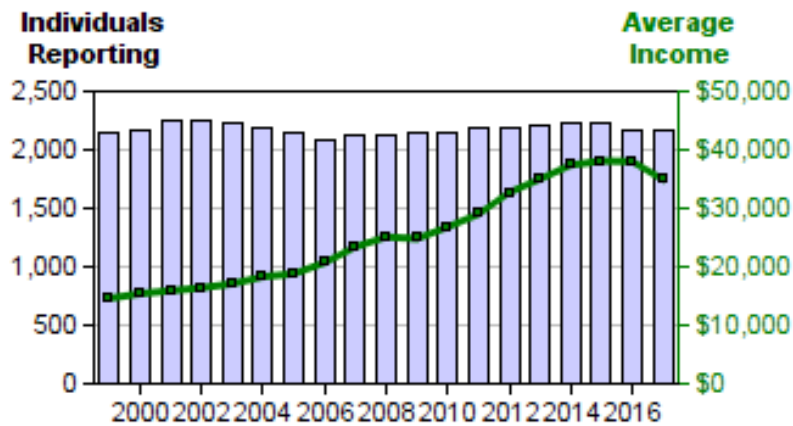


Total: \$37,486,000

Other Includes: Other Government Transfers (0.2%), GST credit (1.5%), Workers' Compensation (2.4%), Provincial Tax Credits (3.3%)

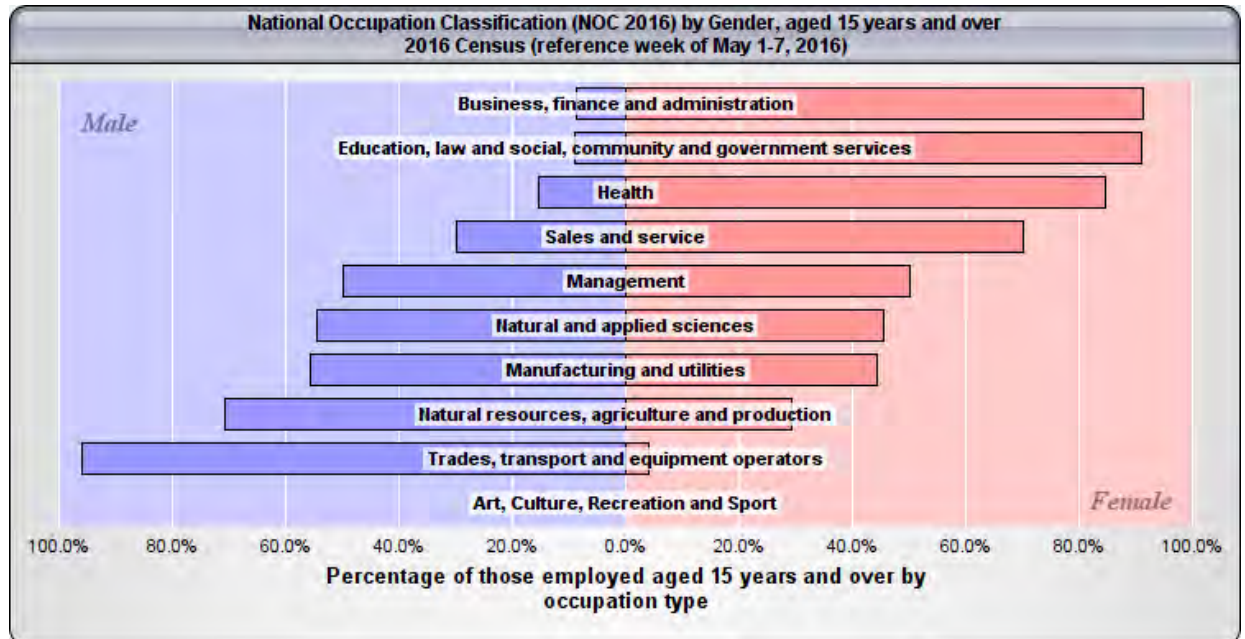
Table 19

Individuals Reporting Employment Income



Work by Occupation and Gender

Table 20



many technological advances there is more of a demand for skilled than non-skilled employees (Indeed)

On the Avalon Peninsula, particularly outside of the St. John’s metro area, from 2006 to 2016, the percentage with a high school education or less, declined from 36.8% to 25.8%. Consequently, it would appear individuals are responding to the improved job prospects for higher educated individuals. However, the need for non-skilled employees, many of whom were considered essential, during the pandemic, is a fact on the Avalon Peninsula, particularly outside of the St. John’s metro area. However, as the pandemic continues, help wanted signs are a common sight throughout the Avalon Peninsula; indeed, the entire Province. The top five occupations in 2016 were:

- Fishers
- Home support
- Retail sales
- Cashiers
- Construction trades helpers and labourers.

This group accounted for 16.9% of employment. (of which fishers were 4%) (83).

The combination of an aging, declining population, suggest the demand for unskilled labour will increase. Indeed, as stated help wanting signs are a common

sight in the region. * Specific to the proponent, unskilled farm labourer positions could not be filled within the Province, and therefore a few positions were recruited outside of the country.

- From 2006 to 2016 the population on the Avalon Peninsula outside of the St. John's metro area decreased by 4.3% and the population of people aged 24 or younger decreased from 26.7% to 21.8% (83).

d. Employment equity and diversity including under-represented groups.

The Provincial Government has reported there have been significant increases in native and immigrant populations in the Avalon Peninsula, outside of the St. John's Metro Area from 2006 to 2016 in the Native populations increased 0.7% to 4% while immigration populations have increased from 0.9 to 2.4% of the Province's population.

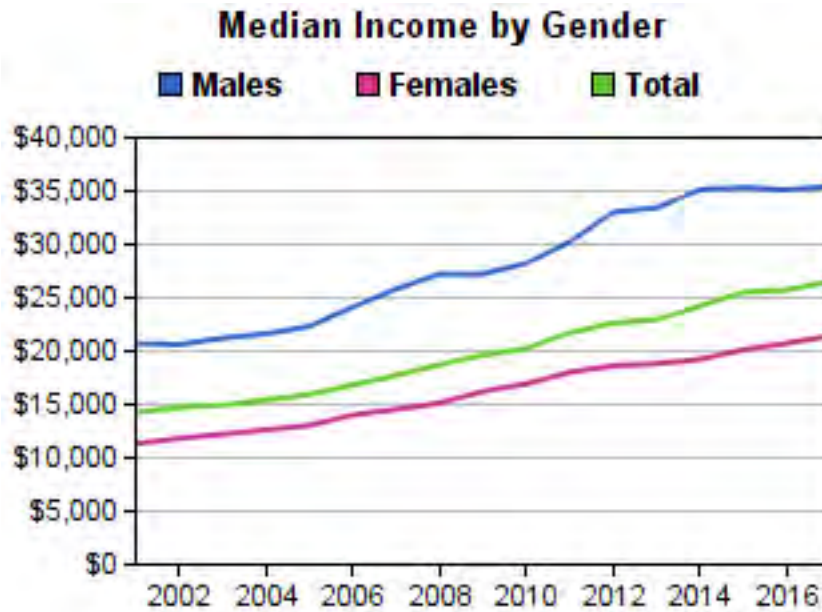
Using panel data for 10 Canadian provinces over 1990–2015, a report by the International Monetary Fund found that a 1 percentage point increase in the labour force participation among women with high educational attainment would raise Canada's overall labor productivity growth by 0.2 to 0.3 percentage point a year. This suggests that if the current gap of 7 percentage points between male and female labor force participation with high educational attainment were eliminated, the level of real GDP could be about 4 percent higher today (84).

The value of gender equity to society and individuals is generally accepted, however opportunities for gender equity in the rural workplace is a challenge, especially for those not in a position to commute 'long' distance to work. Furthermore, high skilled jobs are not readily available without a long commute.

Median Income by gender

The following graph illustrates that males continue to make more money than females. Females in the Local Area 3: Hearts Delight Area make 40 % less than males. In the province, females make one third less than males.

Table 21



4.3 Component Studies

The EIS Guidelines required the completion of four Component Studies to obtain baseline data requirements to support the evaluation of environmental effects and/or develop mitigation measures and follow up monitoring programs. The Component Studies include:

- 1) Evaluation of Land parcels (Existing and Proposed)
- 2) Odour
- 3) Avifauna Control and Management
- 4) Tourism and Potential Effects on Tourism Operators.

The Component Studies are required to be Stand-Alone documents. The Studies are identified as Volumes 1 to 4.

5.0 Data gaps

The management of manure to ensure productive crop growth requires soil testing to determine the nutrient status of the soil; more particularly the levels of nitrogen, phosphorous and potassium. With knowledge of the nutrient content of the manure, application rates are adjusted for different fields. As an example, more manure could be spread on a newly cleared field as compared to a field where manure has been spread for many years. Viking's manure management plan requires soil testing every three years. The soil testing also provides recommendations for limestone to adjust ph in the soil. The correct ph will maximize the efficiency of nutrients applied to the crop.

Whereas the cattle will add to the manure applied to the land, it will be necessary to determine application rates based on the nutrient status of the soil, the mink manure and cattle manure. This will also depend on the number of cattle. Consequently, there will be a need for on-going soil analysis to determine application rates in consideration of the variables of mink and cattle manure, amounts and nutrient value and soil fertility.

The use of manure injection systems, where liquid manure is injected into the ground, is known as an effective means of reducing odour. Viking will continue to investigate; however, videos of recent Scandinavian technology show it being used on deeper, less stony soils as compared to Cavendish soils. At present, the equipment does not appear adaptable to Newfoundland conditions and in particular Cavendish soils.

The assessment of the effectiveness of actions to reduce odour will require the participation of the public. The preparation of the Odour Component Study included the preparation of diaries to record odour and weather by residents. This concept was an effective approach to community engagement which will be considered when determining alternate methods of community engagement to assess the effectiveness of mitigation techniques to reduce odours. This is further discussed in the Component Study, referred to by Viking's consultants as a component of an Odour Management and Control Plan Framework. The details of the engagement have yet to be determined.

6.0 Environmental Effects

6.1 Predicted Future Conditions

Not Proceed.

If the project does not proceed, the farm runs the risk of applying too much manure on the farm's existing land base and the Bishop property in Hearts Delight-Islington. (Nutrient Management Plan states the mink farm needs about 150 more acres for the mink manure; Farm Practices Protection Board also stated its opinion for more land.) As discussed in Section 4.3.2, excessive amounts of nutrients, beyond the carrying capacity of the land and the ability of plants to use the nutrients, will increase the opportunity of water pollution of ground water or surface water; and plants may suffer from the excessive nutrient loads. The trafficability of farm equipment would be reduced resulting in muddy conditions which would hamper farm equipment and production. Farm odours would likely increase/last longer as larger amounts of manure would take a longer time to break down as compared to spreading over wider acreages as proposed by the project.

The proposal for sufficient land for manure spreading and pasturing cattle, would allow the maintenance of a productive pasture and forage crop. The lack of cultivation will allow the storing of carbon in the soil.

The IEC Risk Report stated the cattle herd would not increase odours and overall, the level of risk for landowners closest and downwind of the farm would remain the same;

the cumulative effect would not increase. However, spreading liquid manure on new pasture closer to residences may have an impact. The decision not to spread liquid mink manure on the oceanside of Route 80 would reduce the risk of odours in the summer. The combination of covers on the mink manure storage tanks and no spreading on the oceanside of Route 80 in the summer, will reduce the risk of odour impacts on residents, notably in the Brook Cove Area. If the project does not proceed odours risks may increase because manure will have to be applied at greater rates, thereby increasing the opportunity for odour.

If the farm is not provided the opportunity to acquire additional land and Government Agencies conclude the farm must reduce the production of manure through the reduction of mink, the business of Viking would be impacted; resulting in a reduction of employment.

If the project does not proceed there will be less conversion of forested land to farmland. The harvesting of wood would continue. The landscapes will remain unchanged.

The Province would miss an opportunity to produce a greater percentage of food that it consumes.

6.2 Predicted Environmental Effects of the Undertaking

The prediction of environmental effects (positive and adverse) for the proposed cattle farm, including the development of forage and pasture land, is based on the following environmental components:

- 1) Atmospheric Environment
- 2) Aquatic Environment
- 3) Terrestrial Environment
- 4) Land and Resource use
- 5) Tourism Resources
- 6) Heritage Resources
- 7) Community
- 8) Economy, Employment and Business

The analysis includes a discussion and description of the likely environmental issues associated with the farm proposal. If the potential effects can be attributed to a particular phase of the development, such as construction and operation, the effects will be discussed in sub sections specific to each environmental component.

6.2.1 Atmospheric Environment

6.2.1.1 Construction

The potential interaction/effects on the Atmospheric Environment during the development of farm (construction phase) relate to the use of equipment. Land clearing

would include various activities including tree cutting and removal, followed the use of excavators and /or bulldozers to remove the remaining vegetation. During this phase rocks would be removed and ground levelled to allow farm equipment to cultivate and seed the ground. The use of equipment would result in noise, dust and engine emissions at the locations where the activity takes place.

The potential of noise from chainsaws to impact residents would vary depending on where the cutting takes place. The proposed lots on the interior side of Route 80 are located at least a kilometre away from residential areas, in an area where chainsaw use is a common activity. The closest residential areas are located south and east of proposed parcel #1, with the closest resident about 250 metres from the proposed fields. Field development on Lot 2 would, at the closest point, be about 450 metres from the Ocean Delight cottages.

Similar to chainsaw activity, the use of heavy equipment would result in noise during land clearing. Whereas the proposed farm expansion would take place on seven parcels of land over a period of about six years, the potential for noise to impact residents should be limited to one particular year when the activity takes place on the parcels closest to the residence/residential areas. In consideration of the size of parcels one and two, wood cutting and land clearing would be scheduled to include as much buffer as possible during the summer and early fall when outdoor activities are most prevalent.

Best Management Practices for land clearing require the farm to conduct related activities during periods of 'dry' soil conditions. This reduces soil compaction and the likelihood of runoff. Furthermore, dry conditions facilitate the farmer's ability to preserve topsoil. The dryer the conditions would increase the likelihood of dust. Typically, dusty conditions would be restricted to the area of farm development and would not persist because of changing weather conditions.

Overall, the clearing of land during the development of farmland would not have a significant impact on residents/businesses in the area based on the separation between the land development and the residents/businesses in the immediate area. It is also concluded the emissions from one or two pieces of land clearing equipment would disperse and not impact the closest receptors in the area. However, the farm would minimize land clearing activities in the summer and early fall in the areas closest to the communities when there is the greatest opportunity for people to be outdoors, particularly in proximity of Brook Cove (residential area) and Ocean Delight Cottages. During the clearing of approximately 100 acres over the past ten years, Viking has never had a complaint in respect to noise, dust or vehicle emissions and therefore Viking is confident the farm land expansion (construction) would not impact residents. If there was an issue in the more sensitive outdoor season, Viking would have more remote locations to develop land.

The public sessions and consultation with the tourism industry did not identify concerns for the potential for noise, dust and engine emissions in regards to land development. However, Viking has stated it will monitor land development in respect to the possibility for noise, dust and emissions.

6.2.1.2 Operations

Background to the Odour Component Study

The Environmental Impact Statement Guidelines (Guidelines) for the Cavendish Beef farm required the preparation of an Odour Component Study to consider: 1) the odour baseline from the existing facility, and 2) the projected odour based on the facility operation described in the registration document. Viking in agreement with the Department of Environment and Climate Change proceeded to obtain assessment of potential odour risks from their mink and proposed cattle farm. * Viking contracted Independent Environmental Consultants, IEC, who submitted its Report, Qualitative Risk Assessment and Mitigation Planning Report, Cavendish Beef Farm in September 2021. (Risk Report) The Risk Report is the basis to the Odour Component Study.

* In the Spring of 2020 Viking discussed the preparation and applicability of a modelling study with the Department of Environment and Climate Change. (The Department) The Department concluded a modelling study was not an appropriate means of addressing odour concerns and informed Viking to obtain an alternative from an environmental consulting company. Independent Environmental Consultants Inc. (IEC) was engaged and recommended a 'risk report', including public consultations along with recommendations to mitigate odours be prepared. This approach was acceptable to the Department and IEC was contracted to prepare the study and report. Additional details are explained in the covering note/outline to the Odour Component Study.

The assessment evaluated potential odour risks originating from Viking's current and future farming operations with respect to residents and communities in proximity to the farm. The potential odour effects were assessed using a qualitative risk assessment approach based on an analysis of odour generating activities at the farm, current mitigative measures, historical odour complaints, an odour survey completed by local stakeholders, local meteorological and topographical features of the area and the sensitivity of receptors and potential loss of amenity. Based on this information, a qualitative analysis of potential odour risks on local residents was completed by ranking the magnitude of the odour potential, the effectiveness of the resource-receptor pathway with respect to odour dispersal and the sensitivity of the community to odours. Based on the results of the odour risk assessment, a series of supplemental odour management options were prepared and a framework for an Odour Management and Control Plan (OMCP) was developed.

The Cavendish Beef Farm Proposal includes an expansion to 100 beef cattle/calf operation and the clearing of about 110 acres of forage land on the interior side of route 80 and about 55 acres of pasture land on the ocean side of the highway (Crown leased land and an additional 20 acres on freehold land). It is proposed to spread mink manure from the existing Viking Fur Farm on the proposed pasture and forage fields. The cattle would be pastured on the oceanside of the highway.

The Risk Report based its assessment on the evaluation of the following:

- the source of odour; farm activities, including manure spreading. In addition, the nature of the odour such as odour type, unpleasantness/controls etc.,
- the pathway through which the odour travels. E.g., distances, terrain, wind direction;
- and the receptors, notably residential and tourist stakeholders.

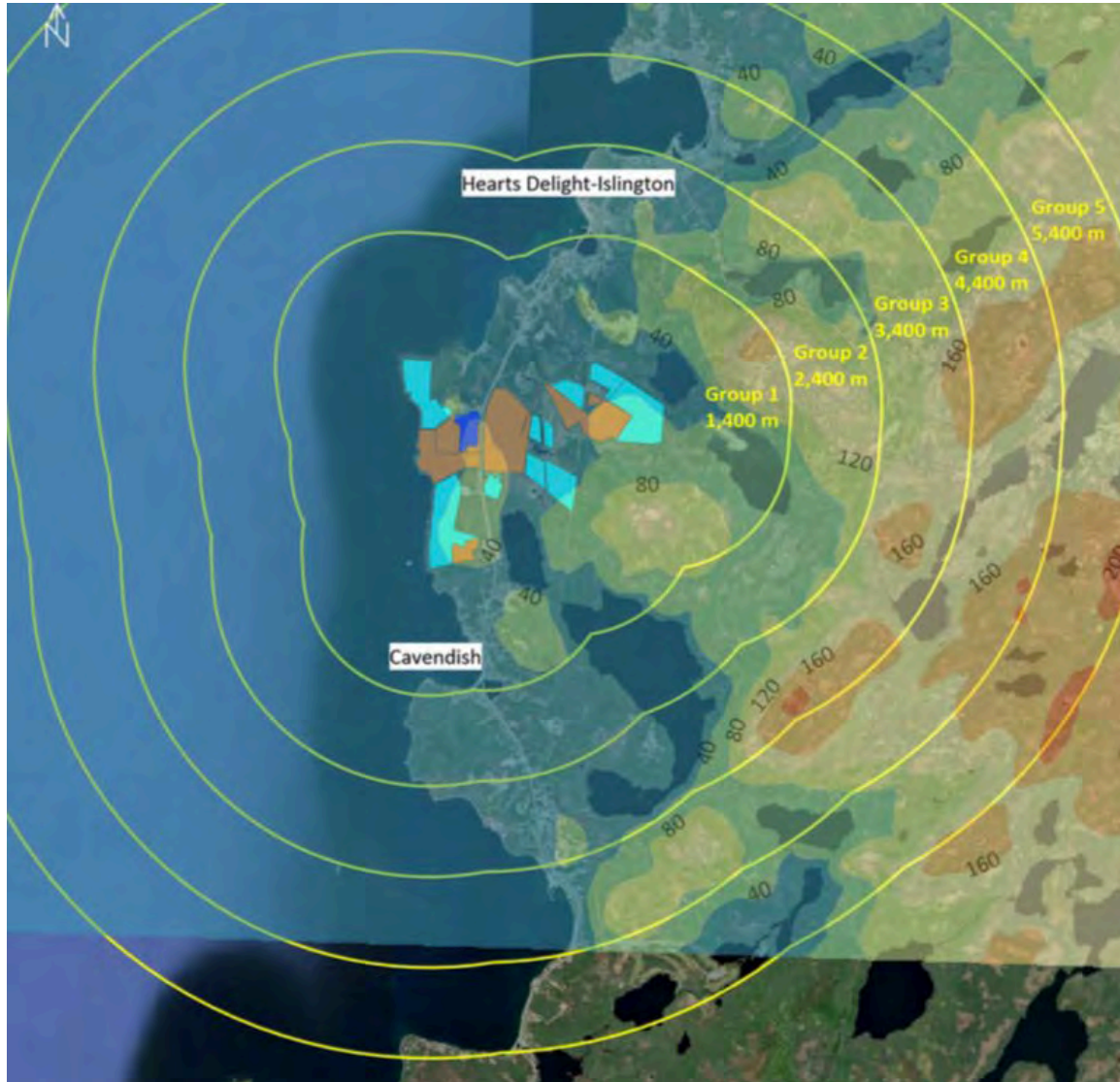
The Risk Report assessed the odour potential of the *proposed* cattle/farmland expansion and the *existing* Viking Fur Farm (32). The assessment evaluated potential odour risks to the local community that are originating from Viking's current mink farm, manure spreading activities and future cattle operations.

On the basis of, user expectations on enjoyment of amenity; and the duration and frequency of exposure of individuals **Risk of Odour Effect** was characterized as either negligible, slightly adverse, moderately adverse or substantially adverse. For development projects, the overall odour effect is likely to be considered significant if it is Moderately Adverse or Substantially adverse, while for Slightly adverse or Negligible effects, the impact may seem to be acceptable or tolerable.

IEC concluded odour from the *existing* mink farm and manure spreading activities could be characterized as moderately adverse within 1,400 metres of the farm and slightly adverse from 1,400 to 3,400 metres (Figure 20). (Table 5-6: Likely Odour Effects Existing Mink Farm and manure spreading activity, IEC's Report.) In consideration of this table, IOC concluded: The presence of a **Moderately Adverse** effect at the most sensitive receptors warrants consideration to additional controls to reduce odour risk. IEC recommended supplemental odour controls in Section 6.1 of their report. These controls are included in Section 8, Mitigation and Residual Effects.

Pictorial Perspective of the Terrain.

Figure 21



This conclusion on odour risks is reflective of consultations the proponent had with tourism operators located approximately 900 metres and 1,900 metres ~ north east of the farm.” These operators are located downwind of Viking and in the late summer of 2020 were upset by the level of odours. During the consultations with tourism operators, conducted in November of 2020, it was explained the operations had lost business and clients expressed considerable annoyance about the odour levels which in some cases resulted in refunds (85). At the time, one operator expressed her recommendation that

manure not be spread in the summer which is the height of the tourism business when people spend more time outdoors. This recommendation was included in the IEC's Risk Report and implemented by Viking in the summer of 2021.

The tourism operators located south of the farm explained odours were seldom an issue, unless manure was spread during northerly winds. There was an agreement amongst the participants in the survey, that odours are almost always strong when driving by the mink farm, which would also be reflective of the Risk Report due to the close proximity of the farm to the road, as close as ~ 75 metres.

Odour Risk of the Proposed Cattle Farm

Pasturing of cattle

The Risk Report explains whereas the cattle would be pastured throughout the year, there would be a 'high degree of manure dispersal' within the pastureland. It was further stated whereas the cattle would be pastured there would be no need for a constructed area to manage/store the cattle manure. As a result, the Risk Report explained the odour potential would not increase with the addition of cattle to the farm. The Risk Report concluded the cattle operation would have low odour potential (32).

In addition to the Risk Report's conclusions the cattle operation would not add to farm odours, odours on farms are produced mainly by the decomposition of manures by various types of microorganisms. The activity of the different microorganisms, (which depends on temperature, moisture content, oxygen level and other characteristics of manure) determines the type of gases and the rate at which gases are produced. When enough oxygen is available, manure decomposes aerobically and most of the gases released have very little odour. Therefore, the year round pasturing of cattle proposed by Viking would result in the aerobic decomposition of the cattle manure with negligible odour. When the microorganisms are deprived of oxygen, manure decomposes anaerobically and most of the gases have an offensive odour. Liquid manure is stored in tanks in anaerobic conditions and therefore the spreading of mink manure has potential to impact residents because of the high odour levels (86, 87, 88).

Further to assessing the likelihood of odours associated with beef farms (pasture) Provincial Agriculture officials reported traditional regional pastures throughout the Province are not known as sources of odours and that she was unaware of odour issues associated with beef farms in the Province (89). The Government official responsible for the administration of the Farm Practices Protection Act (Right to Farm Legislation) in the Province determined there had not been any cases of odour issues associated with beef farms in Nova Scotia or New Brunswick (90). (She was not able to obtain an update from Prince Edward Island) The beef cattle specialist in the Department of Agriculture, Food and Rural Affairs in Ontario informed the proponent that odours were not an issue with beef farms in that Province (91). The coordinator for the Farm Practices Protection Act in Ontario stated odours were not an issue on beef farms during the five years in which she had responsibilities associated with the Farm Practices Protection Act (92). At the public

meeting, it was suggested a visit to a local beef farm or a regional pasture would provide a first-hand appreciation of the minimal odours produced by pastured cattle.

Odour Risk of the *Proposed* Cattle Farm

Spreading mink manure

At present, Viking spreads liquid mink manure over the farm's existing land base of approximately 110 acres and an additional 30 acres of land controlled by other farmers, on both sides of Route 80. The proposal could result in the spreading of the same amount of manure over an additional land-base of a maximum of 185 acres. (buffers and undevelopable land will reduce this number) The spreading on expanded pasture on Parcel 2 would result in spreading manure closer to the Ocean Delight tourist operation and the Brook Cove area of Hearts Delight-Islington. (about 450 metres from Ocean Delight cottages and about 700 metres from residences near Brook Cove). Figure 17 shows the location of the closest residences and accommodations.

Spreading on parcel 1 would result in the spreading of manure as close as 200 metres of residences located in a southerly direction from parcel 1. In respect to prevailing winds, residences in Cavendish are located up wind of the proposed manure spreading. However, a concern was expressed at the Public meeting, that manure spreading on new pasture lands on Parcel 1 would increase the likelihood of strong odours on residents who live on the north side of Cavendish. This would be most apparent if manure was spread during northerly winds. During the consultations with the tourism industry, a tourism operator whose operation is located south east of the existing farm, explained odours are generally not a problem, unless mink manure is spread during northerly winds.

The IEC's Risk Report states the spreading of mink manure has a high odour source potential because of odorous compounds. In addition to prevailing winds, temperature, wind velocity and humidity also impact the 'strength' of the farm odours. Specifically, warm/hot humid weather combined with calm winds would increase the likelihood of the receptors experienced strong farm odours (32).

IEC concluded the cumulative odour effects, of the existing mink farm and the proposed project from the release of odours was considered moderately adverse for the most sensitive group (1,400 metres) and slightly adverse for group 2 and 3 receptors located 1,400 to 3,400 metres. IEC states the spreading of manure on additional pasture and forage lands areas is not expected to change the risk category (moderately adverse) of odour effects. However, IEC explained whereas 'receptors' (Brook Cove Area) are within 1,400 metres of proposed parcel 2, they may experience a higher receptor sensitivity given the possibility that liquid manure spreading could occur closer to their properties.

IEC explained based on the results of the odour risk assessment, a series of odour management control options, in addition to those currently practised, were recommended for the current mink farm, including manure spreading. These actions included a range of

administrative and physical controls which are stated in IEC's report and in Section, Mitigation, 7.1, and Residual Effects Determination of Significance, Section 8.

In 2021 Viking agreed with two of the recommendations in the IEC report: 1) covers of the manure storage tanks, a physical control; and 2) no spreading manure in the summer months on the oceanside of the highway. (the latter also recommended by the owner of a tourist accommodations business).

In the summer of 2021, liquid mink manure was not spread on the oceanside of Route 80 which will continue to be a precautionary strategy to reduce the risk of strong odours to residents/property owners. This practice would reduce the risk of odours north and south of the farm in the summer. Discussions with the owners of the two tourist accommodations in December of 2021 reported that odours in the summer of 2021 were not as nearly as bad as in 2020. This is encouraging, and will need to be monitored/assessed in consultation with the community in the future. The farm plans to continue to spread manure in the spring, summer and fall on the interior side of the highway, which is not directly up wind from the Ocean Delight cottages and the Brook Cove Area/southern part of Hearts Delight Islington. The spreading of the same amount of manure over a larger land base would result in faster absorption into the ground with a corresponding reduction in odours. Viking also purchased covers for the manure storages which will be delivered to Viking early in 2022 and installed in the spring once the tanks are emptied.

IEC also recommended a framework for an Odour Management and Control Plan (OMCP) should be developed and implemented across the entire farming operation. The OMCP would address how odours will be managed and controlled so as to prevent or minimize impacts on the community. It would also include follow up and monitoring requirements including the involvement of the community.

NB. Odours and the Risk Report are further discussed in Land and Resource Use, Tourism Resources, Economy, Employment and Business. 6.2.4.

6.2.2 Aquatic Environment

The environmental analysis for the Aquatic Environment considers and evaluates the possibility of the impact of the proposal on surface and groundwater and fish and fish habitat.

The concept of sustainable agriculture recognizes that agriculture must be carried out in a way that neither contributes to water pollution nor threatens the health of aquatic systems. Agricultural activities modify the natural ecosystem which may negatively impact water quality. The potential agricultural effects on aquatic ecosystems include:

- Sediments carried into water by soil erosion
- Nutrients from manure and synthetic fertilizers draining into the water
- Pesticides carried into the water
- Clearing of trees and shrubs from shoreline

- Land clearing; construct drainage ditches, straightening natural water channels

The entry of manure into water courses can increase ammonia levels which can negatively harm fish. In addition, bacteria from the manure consume oxygen as the manure breaks down which can cause fish to suffocate.

6.2.2.1 Construction

The Brook Cove Pond watershed includes a tributary which has a watershed consisting of about four-square kilometres within which are Sooleys and Highland marshes. The marshes are organic wetlands (bogs) with a total acreage of approximately 125 acres. There are two brooks, with a combined length of approximately three kilometres which flow through the two marshes. Within the Sooleys/Highland Marsh watershed, Viking applied for parcels and 3, 4a, 4b and 5. Parcels 6 and 7 are in the watershed of the main stem of Brook Cove Brook.

The protection of riparian zones, (the vegetated zones beside the brooks), wetlands and ponds is a key measure to protect water quality of the watercourses. In general, the protection of riparian zones has the benefits of:

- Reduce flooding by storing water during high water events, particularly during spring runoff
- Preserve ground water recharge and discharge
- Retain nutrients to curb their movement into waterways
- Reduce sedimentation and help to conserve topsoil on the fields (93) (94).

In Newfoundland and Labrador riparian zones have not been extensively developed for farming as compared to other jurisdictions. This is in part due to poor soil conditions near water courses which are too shallow and stony to justify development. In addition, for almost 50 years the province has allocated land for farm use as Agricultural Crown Land leases without a provision for a fee simple grant. These leases include reservations along water courses which are retained as Crown Land. The leasing policy also allows the Province to place additional conditions, including wider buffers where it is concluded enhanced protection of a watershed/water course/wetlands is required, such as a protected salmon river, water supply, recreational area etc.

Specific to the Highland/Sooley Marsh, these ‘marshes’ would be excluded from an Agriculture Crown Land lease. A 30-metre buffer has been a condition for several forage/vegetable farm registrations approved pursuant to the Provincial Environmental Assessment process since the time of the registration of the Cavendish Beef Farm, including two dairy farms. As explained in section 4.2.2/ Figures 12 and 13, it was decided to increase the buffer between lot 4b and the water courses/organic wetland (bog) to provide additional assurance for the protection of water quality with the related benefit of protecting the bio diversity of the area. In addition, Viking decided to delete lot 4a, which removes the need for a stream crossing and the development of land near the main

tributary of Brook Cove Brook. The 50-metre buffer has also been applied to lot 3. The buffers of lots 6 and 7 will be at least 90 metres from Outside Island Cove Pond and Brook Cove Brook, which is consistent with the Municipality of Hearts Delight-Islington Town's plan.

The clearing of land will leave the topsoil exposed until it can be cultivated, seeded and a sod cover established. It is during this phase of development there is the greatest chance for sediment runoff. The best management practice is to seed the land immediately following land clearing/cultivation. Windrows created as a result of land clearing would also filter any runoff, along with the buffers thereby capturing any sediments in runoff from the cleared land.

The farm would not use pesticides during the development of the land or for the management of pasture and forage.

Construction and farm equipment would be fueled from a tank on a pick-up truck. Fuel would not be stored on the land where the land would be developed. Fueling of equipment will be conducted outside of buffer zones to ensure no fuel, lubrication products etc. enter the water courses. The Environmental Protection plan would include commitments that the farm has ready access to absorbent pads and hay bales to confine any materials which would be considered hazardous to water quality.

The withdrawal of lot 4a combined with Government's installation of a culvert near lot 4b in the summer of 2021 means there are no stream crossings in Viking's proposed expansion, therefore removing the need for a culvert or a bridge. If during farmland development it was determined a culvert was needed, e.g., across a ditch it would be installed in compliance with the requirements of the Water Resources Division, Department of Environment and Climate Change. However, it is recognized an application to the Department is not required.

6.2.2.2 Operations

Cattle would be pastured on the Oceanside of Route 80; hence the cattle would not have access to the Brook Cove Brook watershed, including the buffers and water courses. On the ocean side of the highway, the water courses are limited to small areas of drainage which could be described as intermittent with changing rates of flow as a result of seasonal variations and rainfall events. Some of these drainages are a source of water for the beef, hence it is in the farm's best interest to protect the water quality of any watering holes.

The cattle would roam over a broad acreage to access grass whether it be in the summer or outside the growing season when the animals are fed baled forage which will disperse the manure. There is potential for some accumulation of manure which would be monitored to ensure drinking supplies for the cattle are protected.

The farm proposes to spread liquid mink manure on fields on both sides of the highway. This would include trucking the manure from the manure storage tanks to all parcels of land. Whereas the tanker is also used to spread the manure, there would not be a need to transfer manure from a tanker to farm equipment, thereby eliminating a potential opportunity for a spill. In the proposal, the furthest field from the manure tanks (field 7) is less than three kilometres from the farm. As in the current farm operations, the manure would be trucked across the Brook Cove tributary on the Fox Farm Road. Whereas Fox Farm Road is a public road managed by the Provincial Government, the culvert is maintained for resource use including farm equipment. The former rail line which extends south from near where the brook passes under Fox Farm Road, is very close to the brook, especially near Fox Farm Road. Whereas there are no stream crossings there are no plans for the installation of culverts. Combined with the buffers, the risk for spills into a watercourse would be low.

The spreading of liquid manure is recognized as a possible contaminant of water courses. However, whereas the manure is 97% water, the manure will soak into the ground very quickly, thereby minimizing the chance for overland flow to a water course. Furthermore, the buffers (naturally vegetated) are an effective method of limiting the potential for manure to impact water courses. In the case of lot 7 a wide buffer is proposed to be consistent with the Town of Hearts Delight-Islington's Town Plan and due to a slope of about 5-20 percent between lot 7 towards Brook Cove Brook. The 90-metre buffer represents a significant wider buffer than the 15-30 metre buffer which is usually required for agriculture in the Province. In some cases, buffer widths are based on the slope of land between the farm activity the water course. If a factor of 1.5 was multiplied times the percent of the slope, (20 times 1.5) would suggest a slope of 30 metres, a third of the buffer width proposed in the EIS (95). Finally, the pasture and forage will have a permanent sod cover, with bare ground existing between the time the land is cleared and the hay crop established. It is not anticipated the forage fields will be cultivated to revitalize the hay crop. Instead, the farm would direct seed, whereby the ground is "scratched" and seeded, thereby maintaining a crop cover.

The proposal would not increase the amount of mink manure which the farm spreads each year. However, it would allow the farm to reduce the spreading rate of manure, thereby reducing excessive accumulation of nutrients in the soil and the opportunity for runoff of nutrients. This would be a positive, environmental benefit of access to a larger land base for the farm. Pesticides will not be used for forage and pasture development or crop maintenance.

6.2.3 Terrestrial Environment

The terrestrial environment is composed of the land environment which would be influenced and/or be influenced by the proposed Project, including soil type, the location of wetlands and wildlife.

6.2.3.1 Construction

Construction includes: the cutting of all merchantable wood before land clearing, removal of remaining vegetation and rock, cobble size and larger and placed in windrows. The land is then levelled, cultivated, fertilized with liquid mink manure and seeded. The land base suitable for forage production is primarily located on the interior side of Route 80. With the use of heavy equipment, the knowledge gained in developing comparable landforms and the availability of liquid manure, the farm could establish productive forage fields on the land under application, most of which are directly accessed by the existing Fox Farm Road. The land on the oceanside of Route 80 exhibits more challenges to develop for farmland. In consideration of the exceedingly stony soils, poor drainage and unevenness of terrain, cultivation for anything other than pasture would not be possible unless exceedingly large investments were made. Once pasture land is established, subsequent renovation does not require ploughing to renovate the pasture.

Viking would require residents to remove merchantable wood from the Crown Land leases before land clearing. Viking would issue letters to residents explaining conditions and locations to where to harvest trees. Clearing would take place in compliance with all relevant permits, guidelines and regulations, including the conditions of the Crown Land Lease, which would identify the applicable reservations (mostly 50 metres) along water courses and wetlands.

It is not anticipated there would-be long term adverse interactions with wildlife. It is likely wildlife, including the keystone species, moose, would avoid the various parcels of land during the development of the farm land. There is similar environment in the immediate area of the proposed expansion, which would attract wildlife. In regards to avifauna, Viking is aware of the key bird nesting season is from mid-April to mid-August. Whereas many of the parcels applied for have been cut over, Viking would encourage residents who have been issued cutting permits by the farm, to focus cutting outside of the nesting season which is consistent with Provincial Forestry's Forestry Unit 1 observations that residents typically harvest firewood in the fall and winter (96). It is noted birds will establish new nests in subsequent years. During the bird survey, the greatest number and variety of song birds were found along the transitions of the various habitats. During three days of a bird survey, there were no avifauna identified which were listed as being rare or identified as a species at risk. Before any permits are issued for cutting, the farm will do a walkover of the parcels to identify any snag trees which may be used by birds for nesting. There were sittings of Northern Flicker which nest in tree cavities, hence there is potential for such nest sites (97). The existence of raptors nests would be reported to Provincial wildlife.

Viking would not develop organic wetlands for any purposes. The farmland development would take place on mineral soil with the possibility of farm use of a mineral wetland on Parcel 2.

6.2.2.2 Operation

Forage would be cut and harvested twice a year in mid-June to mid-July and in September/ October. On the east side of Route 80 (the interior) manure would be spread in May and following the two harvests of forage. (summer and fall) On the ocean side of Route 80, the manure would not be spread in the summer. Therefore, activity on the fields would consist of the cutting and harvesting of the forage on two occasions and three applications of manure on the interior of Route 80; two spreading's on the oceanside of Route 80. Therefore, significant use of farm equipment would be limited to a maximum of five events per year.

It is not anticipated there would-be significant interactions with wildlife. In other areas of the Province, caribou often graze on forage, however caribou range does not include the Study Area of the EIS. The most significant conflict with wildlife and farms is moose damage to vegetable crops. Whereas Viking would not grow vegetables, this would not be an issue on the proposed project. There would be a reduction in moose habitat, however the new farmland represents a small percentage of moose habitat on the Trinity/Conception Peninsula.

The cattle would be pastured throughout the year on the oceanside side of the highway. The farm will provide small watering holes for the cattle, which would be less than a couple of hundred square feet. These ponds may attract a small number of waterfowl.

The extension of access roads, in particular from Fox Farm Road, would allow easier access by residents to the interior lands east of Route 80. This would allow people more access to the wildlife and forestry resources of the Peninsula. Whereas domestic cutting and hunting require permits and or licenses, the harvesting of these resources would be monitored and controlled as determined by the Department responsible for forestry and wildlife.

6.2.4 Land and Resource Use, Tourism Resources, Economy, Employment and Business

6.2.4.1 Flies

For several years' neighbours south and north of Viking Fur Farm expressed considerable concern about high populations of lesser house flies. (*fannia canicularis*) Following the modernization of manure handling, from a solid manure to a liquid manure handling system at Viking Fur Farm, (2015) which removed habitat conducive for fly propagation, complaints of flies virtually disappeared, according to statistics of complaints provided by Service NL (98). Concern has been expressed if the diversification would result in high populations of house flies and secondly if spreading mink manure on the expanded acreage would result in a resurgence of fly populations.

A research project, based on two years of field research by a Memorial University graduate student at Viking Farm concluded: “overall there is no evidence that liquid manure would attract any kind of fly populations over the long term.” In 2018, Srabani Saha’s graduate research, Odour Impact of Field application of liquid mink manure on *Fannia canicularis* L. (Fannidae, Diptera) population in Cavendish, NL, concluded the application of liquid mink manure to the forage field will not positively increase the *F. canicularis* (lesser house fly) In the Report it was explained the lesser house fly prefer fairly moist feces with 35-40% moisture providing the best conditions. Whereas liquid mink manure is almost 97% water which would unlikely be an appropriate medium for larvae development. The report further discussed that although liquid mink manure would increase the soils moisture and nutrient levels, with the possibility of becoming conducive for the lesser house fly, the research did not result in an evidence of breeding in any of the traps used in the field research. The Report stated: “overall, there is no evidence for that liquid manure application would attract any kind of fly populations over the long term” (99). Tourism operators located south of the farm, reported the fly problems of several years ago are at the time of the survey not an issue.

In regards to concerns of flies, the proposal is to allow the beef to pasture throughout the year. Whereas the manure would be deposited over a broad area, manure paddies would not accumulate. Furthermore, the paddies would crust over, reducing access to flies. The Pest management Specialist for the Department of Fisheries, Forestry and Agriculture states the Department has not dealt with issues of flies on pastures, because manure does not accumulate on pastures. Manure on pastures is typically in small areas which dry up quickly and do not provide a hospitable breeding ground for flies. It was further stated the Yellow Dung Fly (*Scathophaga* sp) has been recoded as a beneficial species as a predator to other flies which would further manage fly populations (100)

In Nova Scotia an employee with Perennia Food and Agriculture explained in regards to beef that she was not aware of any nuisance complaints of flies (101). In Nova Scotia there are 1200 beef farms (102). Newfoundland and Labrador’s individual with responsibilities for Right to Farm legislation was not able to identify any issues of fly complaints on beef farms with her counterparts in the Maritime Provinces (103) The coordinator for the Farm Practices Act in Ontario stated there have been no nuisance fly issues in the past five years in that Province, which is the time period she has had responsibilities for the Act (104).

6.2.4.2 Odours

Based on the findings of the IEC Risk Report, the interviews of the owners of the tourism businesses and the Public meeting, it was concluded the number one issue is the impact of strong farm odours on the community. The following is an overview of the odour issues and in particular, where the main concerns are within a 10-kilometre radius of the project.

The Qualitative Odour Risk Assessment and Mitigation Planning report (IEC Report) reported the following observations:

- Dominant wind direction during the summer months, where the majority of historical complaints were received, blow from the south-west, west-south-west and south-west 59% of the time. On that basis, it is likely that winds will be blowing towards sensitive receptors during regular summer farm operations.
- Odour intensity generally decreases as the plume (odour) moves farther away from the source of odours.
- Most of the odour complaints reported to Service NL since March 2014 were outside of the winter months, during the seasons when temperatures and humidity were elevated
- The community-based engagement conducted as part of the Risk Report, reported that 82% of the odour events were downwind of Viking Fur Farm.
- On days when Viking spread manure, 11.8% of odour survey responses identified an odour event; on days when they did not spread manure, 9.8% identified an odour event
- 83.7% of the entities, when reporting strong odours recorded a temperature of “warm” or “hot”
- The IEC report explains odour complaints tend to increase proportionally to increase in ambient temperature, humidity and wind speed.
- The exposure to odours would be impacted by the time residents/tourists spent time outdoors or indoors with windows open.
- The Tourism and Potential Effects on Tourism Component Study indicated that:
 - Most of the tourism businesses south of the farm seldom detected odours unless there was a northerly wind (blowing from) which does not frequently occur;
 - Some businesses to the north of the farm have expressed concern about strong odours (notably in August 2020) and reported that a number of clients had to be refunded. Concern was also expressed about losses in future business revenue and deferring the expansion of operations due to odours. See also, Atmosphere, operations, 6.2.1.2.
- The proposed cattle operation (pasturing) is considered to have low odour potential
- The existing mink farm and mink manure spreading has a risk potential, described as ‘Moderately Adverse’ for the most sensitive group who lived or operated businesses within 1,400 metres of the farm.
- Mink manure is spread 2 to 3 times a year
- The Cumulative Odour Effect of the existing farm and the proposal is considered moderately adverse based on the existing mink farm, the spreading of mink manure and the cattle proposal. Therefore, IEC concluded the proposed cattle project would not increase the risk of high odour impacts. As discussed under the atmospheric section, manure spreading on new pasture lands, particularly upwind (prevailing summer winds) may add to the odour. Although concerns of odour are not as prevalent south of the farm towards Cavendish, one business explained, during consultations with the tourism industry odours are occasionally strong if manure is spread during a north wind. At the public information session, it was

explained a residence located a couple of hundred metres south of the proposed expansion has experienced odours on a frequent basis.

Without physical or administrative mitigative efforts, the potential impact of odours continues to be moderately adverse with the addition of the cattle farm. Spreading of mink manure more on expanded pasture towards existing property owners, including Ocean Delight Cottages, represents an opportunity for increased odours during spreading.

Although Viking was required to prepare an EIS because of its proposal to diversify into beef with an expanded land base, the EIS has resulted in significant scrutiny of the existing farm with several recommendations as to how to mitigate the level of strong odours. During the preparation of the EIS, the farm made an administrative decision not to spread manure in the summer on the existing pasture on the oceanside of Route 80, which would be applied to an expanded pasture if the project was approved.

A decision was also made to cover the mink manure storage tanks to reduce the flow of odours from the tanks. These and other mitigation actions will reduce odours of the existing farm and mitigate any increases of odour from spreading on new pasture land north and south of the farm. Furthermore, an expanded forage land base will allow the manure to be spread at lower rates thereby allowing the manure to soak into the ground more quickly. The proposed land base on the interior of Route 80 is further inland, therefore not directly upwind of the Brook Cove area.

6.2.5 Biodiversity

Biodiversity is a term used to describe the variety of life on earth. A basic definition of biodiversity includes the variety of animals, plants and microorganisms that exist on our planet, the genetic variety within these species and the variety of ecosystems they inhabit. The boreal forest has a less diversity of large plants, such as balsam fir, black spruce, white spruce and birch as compared to other forests. The boreal forest has a greater diversity in the number of microorganisms, over a large portion of these organisms remain largely unrecorded and unstudied.

The boreal forest of much of the Trinity Bay-Conception Bay Peninsula has been identified as part of the Maritime Barrens Forest Ecosystem. The area with its cool, foggy and windy summers and relatively mild winters, with intermittent snow is typical of this forest ecosystem. Furthermore, long slopes, often referred to as ridges by agricultural interests, are representative of the most productive sites which also apply to agriculture (105).

The Detailed Study area includes a variety of diverse ecosystems/ecozones including: wetlands (bogs), watercourses, forested areas, cut over forested areas, along with pasture and forage areas. The proposed project would result in the conversion of forested areas to farmland which would add to the existing agricultural land base associated with Viking and two other farms in the immediate area. In reference to the detailed study area, less than 12 percent of the area would be converted to farming from forest cover. The percent

is less if the 10-kilometre study area was considered, when the farm expansion would represent ~ one percent of the area. The cumulative effect of the existing and proposed cleared land base would be about 18% of the detailed study area. The proposal would not result in the conversion of wetlands for farm use. In addition, all watercourses would be protected with a minimum 50 metre buffer. Furthermore, all organic wetlands (bogs) would include a 50-metre buffer, which to Viking's understanding exceeds provincial requirements for applications for Agricultural Crown Land Leases and reflects a precautionary approach to development in the general vicinity of water resources. The 30-metre buffer has been required in most (about ten) of agricultural forage and vegetables projects which were registered and leased pursuant to the environmental assessment process since the Cavendish Beef Farm in February 2019. In a couple of cases the proponents recommended a 50-metre buffer which was accepted and made a condition of approval in the release of the two projects. (106).

The conservation of wetlands and riparian zones, (the area between aquatic ecosystems, including lakes, rivers, streams, ponds and wetlands and upland terrestrial ecosystems) is key to protecting water quality, wildlife diversity and in general the sustainability as an ecosystem. Specific to agriculture, buffers protect water quality through the filtering of nutrients and bacteria. The retention of natural vegetation will ensure a stabilized 'riverbank' minimizing the likelihood of erosion. The protection of the wetlands (bogs) and water courses, along with residual forested land which is unsuitable for farm development would maintain a landscape diversity. The protection of the wetlands and watercourses would provide for a wildlife corridor and a transition zone between and amongst the ecozones (107). During the avifauna survey (Avifauna Control and management Component Study), it was noted the highest number of song birds were observed in transects between ecozones and where the ecozones connected. Some of the lowest populations were in forested areas. It is understood song birds would lose existing nesting sites; however, they would relocate the following year (108).

The Federal Government's report, Wildlife Habitat Capacity on Farmland Indicator explains pasture and forage agriculture uses of land have the highest capacity for wildlife of all agricultural land uses (109) The report states there was a reduction in the Maritimes of wildlife capacity when there was a decline in beef production and a corresponding increase to annual crops. The report did not comment on wildlife capacity on agricultural lands in NL. This may be because compared to other provinces the Province has a small amount of farmland.

In addition to the maintenance of buffers/reservations along the wetlands and water courses, Viking's deletion of lot 4a would reduce the proposed farm development which is closest to the watercourse/Sooleys and Highland Marsh. Lot 4b is located between two bogs which would require a reservation of the 50 metres. At the closest point lot 5 is almost 150 metres of the Sooleys/Highland Marsh tributary where it intersects Fox Farm Road. The recommendation for Lots 6 and 7 is to include a reservation of 90 metres.

In view of the buffers along the watercourses/wetlands, the distance of most of the land located a long distance to water bodies and that the proposed farm use is for permanent

grass cover, this project would protect the sustainability and the overall health of the bio diversity of the Brook Cove Brook watershed, including the tributary which drains from Sooleys and Highland Marsh.

6..2.6 Heritage Resources

The Provincial Archaeology Office informed Viking there are no archaeological areas of importance within the Large-scale Study area, within the footprint of the existing farm or proposed expansion of the farm's land base (74). The Department of Industry, Energy and Technology has stated the area within ten kilometres of the farm does not include areas of significant (paleontological (fossil) sites that are protected under the *Historical Resources Act* (76) In regards to architecture, the Burgess Fishing Property Municipal Heritage Building located in Whiteway was designated as a Canadian Historic Place (77). There are no buildings of architectural interest between Cavendish and Hearts Delight-Islington. Furthermore, although there are several churches and burial sites within ten kilometres of the project area, the expansion area is limited to undeveloped Crown Land.

6.2.7 Communities

The area within ten kilometres of the Project has a population of about 1560 people (2016) of which about 60% are between the ages of 15 and 64. Approximately 88% of the homes in the area are owned compared to 77% in the Province.

There is a community health clinic in Hearts Delight Islington while the closest hospitals are in Whitbourne and St. John's. Hearts Delight-Islington has a Recreation Committee and the marina at Hearts Delight-Islington and the golf course in Whiteway are the largest recreational developments. There are many walking trails in the communities. Hunting and cutting for fire wood remain popular activities in the communities. In addition to the golf course and marina, there are seven tourist operations with about 100 'beds' within ten kilometres of the project. There are two seniors' home and a variety of service-related businesses such as service stations and hair dressing. There are manufacturers including boat building and kitchen cabinets.

Residents at the Public Meeting and Information session expressed opinions that Viking was greedy and that too much land was being converted to farm use to only the benefit of Viking. The impact of odours on businesses has been described while a resident explained the farm had impacted the value of her residence. Another individual stated the farm had divided the community between those who work there and those who have been negatively impacted. In essence, the sense from these residents was that Viking should find an alternative location.

IEC's Risk Report states because of the odours which the Report describes as moderately adverse, for the most sensitive receptors "warrants consideration to additional controls to reduce odour risk." This recommendation is largely based on the existing farm. Viking has proceeded with an administrative control, there will be no longer spreading mink manure on the ocean side of the highway, when odours are strongest and the tourism

industry at its busiest and a physical control, the covering of the manure tanks. Section 8 illustrate several more actions to control odours.

The tourism consultation process, in addition to the previously discussed concerns expressed by the businesses which operate businesses down wind of the farm, included opinions that business's must co-exist; Viking must seek out the best of expertise/advice and ensure the most appropriate management practices are implemented in a consistent manner. The Company must "do it in the right way; from the beginning, to avoid future costs to them and the community." It was further stated, no one wants business to suffer. There was a general respect for those who provide employment and the necessity to operate in a fashion which allows other businesses to manage and plan for a successful future.

The sensitivity of the fly issue in the earlier years of the farm is appreciated by the farm. Concerns of the existence of the lesser house fly have been drastically reduced. Overall, it is generally accepted that there have been extensive improvements (reductions) in respect to flies.

Viking recognizes its responsibilities to be a good neighbour and regardless of the final decision of the EIS registration, the farm has proceeded with the precautionary approach by implementing activities to reduce odour and with other methods to further reduce odours. Concurrently, the Risk Report states the proposed cattle farm will not increase odours. Conditions from an odour perspective will improve. (As discussed, odours from spreading on new land closer to residential areas will be mitigated against by not spreading in the summer.) Other mitigative actions, on-going and new, will help control odours on the farm and during the spreading of manure.

Construction

The development of the farm fields would provide employment for equipment operators during the time of year and type of weather when the work can proceed. It is anticipated the work will occupy two operators work for three months a year for about six years. Although there is noise associated with heavy equipment, it is anticipated due to the distance between the development and the communities, people will not be impacted by the sound of heavy equipment and chainsaw use. This opinion is based on Viking's experience in clearing and developing farm land over the past ten years which has not resulted in complaints of noise.

Operations

The potential for farm odours has been discussed in respect to the Atmospheric Environment and the Land Resource section. Specific to communities, at the public meeting, concerns were expressed about the impact of the existing farm has had on property values. More particularly of a house which had been on the real-estate market for a long time. The particular property was located in the Brook Cove area within the Town of Hearts Delight-Islington. located about one-kilometre northeast of the Viking

Fur Farm. The main reason expressed for the lack of sale was the distance to the farm and the farm odours which were they explain were very strong.

The farm has expanded since it was purchased in 2004. Concurrently, 7 houses have been constructed between the farm and Brook Cove Brook since 2004. In the last three years a 13-lot subdivision has been under development adjacent to the ocean, north of Brook Cove. The lot prices were reduced to a value of \$17,900 to \$24,900. The subdivision is located about 1400 metres downwind (summer prevailing winds) of Viking. As of the fall of 2021 two houses have been built in the subdivision and one is under construction.

There are other lots in the Town with an asking price, real estate internet, of about \$15,000. In the fall of 2021, there were only a few houses for sale in Hearts Delight-Islington, with one house showing a decline in the asking price by \$30,000 from April to October 2021. It is not apparent the reduction in sale price was in any way based on any impact of the farm.

Farm odours have been the main concern. Despite the concerns of farm odours, the 13-lot subdivision has proceeded, albeit at a moderate pace, which suggests purchasers of the lots concluded the farm odours could be tolerated when experienced.

It is Viking's understanding, for most people, the presence of the Lesser House Fly has not been a significant concern in the previous five years, especially as compared to a period of about ten years ago. This is also reflective of the listing of complaints submitted to Service NL (98) and discussions with tourism operators.

As part of the EIS, the operations and odour potential from Viking Farm were scrutinized. As a result, the farm is proceeding and contemplating physical and administrative controls to manage (reduce) odour. Farm odours are inevitable; however, the farm must do whatever is reasonable to control farm odours. The decision not to spread mink manure on the oceanside of Route 80 and the installation of covers on the manure storages are two responses to the EIS process which will reduce odour.

6.3 Accidents and Malfunctions

Oil/gas spill:

Land clearing and development, along with the general operation of the farm, includes the use of farm equipment (tractors) and heavy equipment. There is a potential for an oil spill when refuelling, a rollover on uneven land or an accident on publicly maintained road, Route 80 and Fox Farm Road. The maximum amount of fuel capacity on a farm tractor is about 50 litres. Heavy equipment would be refueled from a 200-litre tank in a pick up while farm equipment would be filled at the farm. Bull dozers and excavators used for land clearing have a fuel capacity of about 100 litres, depending on the type and size of model.

The worst-case scenario would be if a truck leaked its contents into a watercourse. The tributary of Brook Cove Brook passes through a culvert on Fox Farm Road and drainage along the former rail line is near existing parcel B2 and proposed lot 4b. These two areas are the closest locations where farm vehicular traffic passes by watercourses.

Spill kits, including absorbents and booms will be maintained on the farm and on heavy equipment during land development. The farm will maintain a source of clean hay/hay bales to be used as a dam and/or to facilitate the cleanup of a spilled product. Refuelling in the fields will be done at least 100 metres from any watercourse. If the spillage could not be cleaned up with the use of booms, absorbents and hay, Viking would hire the services of a vacuum truck to remove fuel products from the truck and/or environment.

Manure Spill

The spreading of liquid manure includes trucking the manure from a few hundred metres to approximately three kilometres from the storage tanks. Similar to an oil spill, the worst case for an accident would be along Fox Farm road or the former rail line as there are ditches which could transport the liquid manure to the water course. Whereas the manure truck/spreader carries approximately 10,000 litres of liquid manure, an accident which caused sufficient damage to the tanker, could theoretically, result in a spill of 10,000 litres.

The farm will have a ready supply of hay bales which could be placed between the spill and the likely pathway towards a ditch/watercourse. Farm equipment would be used to remove the manure and haybales which would be placed in an area where runoff to a water course is unlikely. If the farm tractors could not remove the liquid manure, a vacuum truck would be hired to remove the manure.

Farm equipment and heavy equipment travel at a slow speed which further reduces the opportunity for an accident. If there was a leak of manure on one of the fields, the extent of the leak could be controlled with bales of hay and or be collected by the farm and spread elsewhere on the farm. If the bales of hay were saturated by manure, the hay could be composted in the farm's compost shed. Whereas there are extensive buffers between the fields and watercourses/wetlands, overland flow would be stopped before the manure could flow off of the fields.

The transfer of the liquid manure from the storage tanks to the manure tankers is done manually. The system includes piping to prevent 'siphoning' of the liquid manure out of the tanks. If there was a leak it would be cleaned up with hay and farm tractors for composting or spread on fields depending on the amount of hay added to the manure.

The manure separator component of the storage system could overflow. If so, the manure could be scraped up by readily available farm equipment and transferred to the compost shed. The manure storage system, including separator is located close to the hay storage, which would allow for a quick response to dam and/or absorb any leakage.

The largest culvert is located on Fox Farm Road, a publicly maintained road. If a culvert was washed out during the time of year when manure is spread, there would be an inconvenience to the farm, however the farm has sufficient storage, which would allow it to defer spreading until the culvert was repaired. Similarly, the smaller culvert, on the former rail line near lot B2 could be replaced in a short timeframe. Furthermore, there are other fields where manure could be spread until the culvert was repaired.

Feed Products

Raw product delivered to the farm for the manufacture of mink feed is delivered by truck and deposited in a hopper, from which it is augured into the farm's cold storage. The materials are solid and combined with a paved surface around the hopper and cold storage, a spill could be quickly maintained. Farm equipment, notably farm tractors could efficiently scrape up the spill.

Escaped cattle

The failure of a fence line could result in the escape of cattle from Viking's pasture. As a result, the cattle could enter private property or, a worst-case scenario, onto a publicly maintained road. Cattle are focussed on access to feed which is always available on the pasture, whether it be by grazing in the summer months or from hay bales outside the grazing season. It is anticipated Viking would be informed of roaming cattle as soon as they were observed by the general public. This would result in an immediate response by Viking to return the herd to the pasture and to secure the fencing. Viking will also maintain feed grains which would very effective in enticing cattle to the pasture.

Covers for Manure Storage; Release of Gas

The covering of the liquid manure storage tanks reduces the release of gas and odour to the atmosphere. Because the manure emits fewer volatile compounds, covers increase dissolved gas concentrations. The air space under a cover is limited, so gas concentrations build up quickly to the point where more molecules stay in the manure and fewer are emitted. This increased gas concentrations in the manure needs to be managed to avoid excessive emissions during agitation, pump out and land application. As a result of decreased gas emission, covers are likely to increase the nitrogen and sulphur content in the stored manure, which will increase the manure's fertilizer value.

The gases under the cover, are highly concentrated, probably toxic, potentially explosive and capable of creating large amounts of pressure. The gases may be released as follows: into the atmosphere, pass through a gas-phase biofilter, flared or used to generate electricity. The system which will be installed, includes flaps which are required for access to agitate the manure to facilitate transfer to the manure tankers.

Concentrations of ammonia and hydrogen sulfide accumulate under the covers. These gases can volatilize quickly if the cover is removed for agitation and pumping. Whereas

the result could be the release of highly toxic gas concentrations, extreme care must be used when accessing manure under an impermeable cover.

When manure is being agitated/transferred to the manure transport/spreader, the employee will be accompanied by other personnel with immediate access to self-breathing apparatus (33).

6.4 Cumulative Environmental Effects

Concerns are often raised about the long-term changes that may occur not only as a result of a single action but the combined effects of each successive action on the environment. Cumulative Effects Assessment (CEA) is done to ensure the incremental effects resulting from the combined influences of various actions are assessed. These incremental effects may be significant even though the effects of each action, when independently assessed are considered insignificant. Cumulative effects are changes to the environment caused by an action in combination with other past, present and future human actions (110).

It has also been expressed that cumulative effects are not necessarily that much different from effects examined in an Environmental Impact Assessments; in fact, they may be the same. In the case of the proposed cattle farm, the environmental impacts on Valued Ecosystem Components, (VEC) (VEC are defined as any part of the environment that is considered important to the proponent, public, scientists and government involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern.) have been addressed in the EIS, which is one of the defined cumulative impacts which would be a focus in a CEA

Typically, CEA's are conducted over a larger (i.e., regional) area while EIS are more focussed on the foot print of a project. In the case of the Cavendish Cattle Farm, the EIS Guidelines required an analysis of impacts on the tourism industry within ten kilometres of the project. As the EIS proceeded two additional study areas were identified; one of the footprint and adjacent lands and the other of about five kilometres to assess the risk of odour event on the community/landowners.

CEAs also assess effects during the past, existing and future. In Environmental Impact Assessments, there are three possibilities for the mitigation when VEC sustainability might be compromised by future developments:

- 1) Mitigate the effects of past and present developments when possible.
- 2) Mitigate the effects of the project under assessment; and
- 3) Mitigate the effects of potential future projects.

(111)

The opinion of whatever impacts on past VEC's are done and therefore the focus of CEA should be "explicitly on the future.'

In Viking's EIS, for example there has been significant focus on odours issues with recommendations for mitigation techniques to reduce odours which have impacted property owners in the past and present. (1 and 2 above) Furthermore, the key odour mitigation actions, (intended to reduce existing odours from the existing mink farm) are proposed to also address the risk of odour issues in the future on the existing farm and from odours associated with the diversification, notably manure spreading on new pasture land located closer to recipients. Therefore, the EIS has proposed actions designed to mitigate the effects of the existing and potential future project; which is reflective of the intent and purpose of a CEA and the EIS. Specifically, cumulative effects, particularly related to farm odours has been addressed in the EIS.

As discussed in the section of environmental effects on atmosphere (odour) Independent Environmental Consultants (IEC) concluded the introduction of cattle would have a negligible impact of odour on the community. Overall, IEC concluded there would not be a cumulative increase of risk of odours on the community, however whereas the risk category would remain moderately adverse and that spreading on new pasture closer to residents could result in odours, there was a need for additional actions to mitigate the levels of odours. Viking has proceeded with two of these actions, no summer spreading on the ocean side of Route 80 and the covering of the liquid manure storages will be done in the spring of 2022.

Effects on other developments in the area

The EIS Guidelines for Cumulative Environment Effects require Viking to discuss effects where the project overlaps with other projects and activities with specific reference to the effects on other land uses and developments that may be facilitated by the project. E.g., greater access by off road vehicles.

The dominant resource use in the large-scale study area (footprint) is domestic wood cutting. Fox Farm Road and former rail line are used by domestic wood cutters to access wood supplies. Successive forest management plans for District 1, the Avalon Peninsula, have explained the challenges of ensuring a sustainable forest because of the demand for domestic cutting permits and for other uses of land, including agriculture. The 2017-2021 plan acknowledges that a suitable land base, "is the first critical element necessary for successful agriculture operation and that markets and the interest of individuals are also prime factors in the development and location of future farms." The plan also states provision must be given for the agriculture industry to expand.

Forest management District 1 (Planning Zone 1) 5-year operating plan 2017-2021 acknowledges that people want access to wood in proximity to their communities (112). While the development of farmland by Viking has provided access to fire wood for residents, the development of farm land will ultimately remove the acreage out of forestry. In the future, this will require residents to access other wooded areas, including areas designated as domestic cutting on the Provincial land use atlas. (about 6,400 hectares in the region) Viking has applied for about 14% of one domestic cutting area.

If Viking's application for lot 7 is approved, subject to the approval of Crown Lands Branch and the Forestry Branch, Viking would facilitate the construction of a forestry access trail along the boundary of lot 7 and existing Crown Land Lease 'E.' This additional 300 metre of trail would help residents' access for domestic cutting on parcel 7 and the interior.

Google earth imagery shows evidence of wood cutting throughout the interior which in part have been accessed from the former trail line and Sooleys Marsh. Consequently, regardless of Viking's proposal for land and improved access, there has been considerable cutting in the domestic cutting area.

Parcels 6 and 7 are located between Fox Farm Road and Brook Cove Brook, hence the confined nature of these lots, does not open access for other developments. Furthermore, buffers along Brook Cove Brook will protect land from any resource use. Lots 1 and 2 are located between Route 80 and the ocean which also mean these areas will not result in pressure for further resource use.

The Provincial Land Use Atlas identifies one other resource designation in the general area. A cottage planning area has been designated along Valley Ponds, with considerable cabin development along Lower Valley Pond. This cottage planning area is about four kilometres east of the closest portion of the proposed project and based on the IEC Risk Report, the likely odour effect caused by the farm is considered negligible.

In conclusion, the construction of resource trails, (Cumulatively less than half a kilometre, (300 metres along parcel 7 and 100 metres to access lot 4b.) suitable for all terrain vehicles does not represent a development which would result in significant increase in demand for resource use east of the farm. Therefore, the impact on resource uses, notably forestry and cabin development, existing and proposed is not significant. The conversion of 14% of the domestic cutting area is consistent with the policies of the Forestry Management Plan for the Avalon Peninsula.

Establishment of Spatial Boundaries.

The preparation of the EIS, which includes items which could be assessed in a Cumulative Environmental Effects, (CEA) is based on three boundaries to address impacts on various environmental component(s). In the case of the Tourism industry, the EIS Guidelines stated the Study area should be based on a radius of ten kilometres from the project, particularly in respect to the identification of tourism operations and assets. In discussing the tourism industry with operators, it was evident that tourists were drawn to the area by cultural and natural attractions beyond the ten kilometres, hence the EIS recognized these attractions in the document. This area was also used to identify uses of land throughout the ten-kilometre area, including distances and orientation to the project area. The area was also used for an overview of the communities, including economy and employment of the area.

The second area of study is the larger scale study of approximately 6 square kilometres of the foot print of the development, along with adjacent lands, including water courses which could be directly or indirectly impacted by the project. More specifically, this detailed study was used to assess the aquatic environment, including water courses and wetlands, terrestrial environment, with a focus on avifauna as prescribed in the guidelines and land and resource use which was expanded to include land use planning and zoning. The study area allowed an assessment of all the parcels of land proposed for farm expansion and the various habitats in the immediate area in respect to avifauna surveys.

The third area of the Study was in respect to the atmospheric environment and more specifically, odours. The boundaries were established during IES's preparation of the Risk Report: Qualitative Odour Risk Assessment and Mitigation Planning Report Cavendish Beef Farm. The Risk Report determined the likely odour effect on the community/residents based on history of odour complaints, sensitivity of residents/property owners to odours and results of consultations with the tourism operators. The conclusion determined the likely cumulative odour effect was considered negligible beyond four kilometres. The cumulative effect was the accumulation of the existing mink farm and the proposed project. Although the final study area was about five kilometres radius of the project area, the study, notably interviews with residents, included contacts up to eight kilometres from the project area. The Risk Study included extensive discussion and characterization of pathways which is a recommended consideration in assessing cumulative impacts. Pathways, in respect to distance, prevailing wind and topography are an important factor in the "cause and effect relationships of sources and impacts."

The modification of boundaries in the preparation of the EIS, which includes elements of a CEA, is an accepted practice in defining spatial boundaries. Furthermore, in the case of the foot print study, flexibility was used to expand boundaries in the north of the study area in the Brook Cove area as public consultations and the results of the Risk Report, showed this area was the most likely to be impacted by odours; indeed, the most sensitized residents to odours.

Temporal Boundaries

In respect to odours, a review of complaints from 2014 to 2020 was obtained from government sources. The reports did not enable the EIS to qualify odour levels and areas of sensitivity in the years covered by this information. However, comments from the Public meetings and consultations with tourism operators explained property owners between the farm and around the southern part of Hearts Delight Islington (Brook Cove Area) had experienced strong odours during the timeframe of the record of complaints.

The Risk Report reported on the length of times residents involved in the odour study experienced odours including hedonic tone of the odours. (82% of odour events were detected Hearts Delight Islington (Brook Cove) area.) The timing of odours, seasonally, weather wise and during manure spreading are the principal temporal considerations to

understand when odour effects are most prevalent and as to where they are experienced. In addition, the Risk Report addressed the qualitative sensitivity of residents to odours as experienced at the time of the surveys. This information was key to determine future approaches to mitigate the odours as best as possible.

It is important to establish future temporal boundaries in terms of ongoing monitoring and communications with the public. Predictions of odours have resulted in proposed and acted upon mitigation techniques. Monitoring, including the participation of the community, is necessary to determine effectiveness of added controls and subsequent actions to further mitigate odours.

The question as to how long to proceed with controls and monitoring will depend on the effectiveness to minimize odours. In essence, the monitoring of new administrative and physical controls would continue until there is a reasonable comfort level in respect to odours and subject to the farm operating according to acceptable farm practices pursuant to *The Farm Practices Protection Act*.

The mitigation measures and the significance of residual and cumulative effects are summed up in tables 7.1 and 8.

6.5 Effects of the Environment on the Project

As discussed in Section 4.2.1.b. Atmospheric environment and Climate Change, Viking has experienced extreme weather events in the past few years, most notably the ‘snowmageddon’ storm in January 2020 and Hurricane Larry in September 2021. Hurricane Larry resulted in the destruction of the processing building which was rebuilt in less than three months at considerable cost. The winter storm of 2020 caused a power outage which could have had a devastating impact on the farm without the quick action of Viking. These two events have resulted in administrative and physical actions to cope with the weather extremes, which as generally accepted, will continue, if not escalate. The farm has added structural improvements to the building damaged in September 2021 and opted for additional supports for the new covers to the manure tanks. Electrical backups have been improved and policies for staffing during weather events have been updated.

All farms must contend with weather variables. A wet spring, infers a delay to field operations, such as manure spreading. A cold year or a drought may result in poor growing conditions. Although pasture and forage production are not as sensitive to extremes as vegetable production, the impacts can be significant, hence one of the reasons as to why Viking wants to add to its feed security by growing more of their own forage.

The spring melt following the tremendous snow falls in 2020 did not cause any problems in the watershed of Brook Cove Brook, such as damage to the Fox Farm Road culvert. However, the former trail line carried significant runoff which would have hampered its use by residents to access lands east of Route 80. It is believed improvements to the rail

line for vehicular traffic, including a culvert will help control runoff on the rail line, thereby improving trafficability.

The storms of the last two years are a reminder to Viking and all residents of the need to prepare for more frequent extremes of weather. In particular, structural improvements and electrical backups are probably the two most critical items which must be a part of Viking's annual maintenance schedule. In the future, there may be a need to incorporate shelters to redirect winds from the buildings.

7.0 Environmental Protection

7.1 Mitigation

The EIS shall identify and discuss proposed measures that would be implemented to mitigate adverse effects and beneficial effects of the project. The Guidelines requires the proponent to discuss the following:

- a) Procedures to minimize odours
- b) Procedures to minimize flies
- c) Procedures to prevent adverse farm-related effects on tourism operators
- d) Procedures to minimize the effects on aesthetics and viewsapes
- e) Procedures to minimize erosion and surface runoff
- f) Procedures to conserve wetlands
- g) Procedures to reduce habitat disturbance on wildlife including avifauna birds.
- h) Prevention of impacts on water quality
- i) Procedures to minimize the release of greenhouse gases
- j) Measures to reduce the attraction of wildlife including avifauna to the project area.

The following is a summary of mitigation actions to mitigate adverse effects of the project. Additional odour controls are discussed in IEC's report. (Table 6-1)

Manure Storage Cover

Figure 22



Manure Storage covers will be installed in the spring of 2022 following the emptying of the tanks to allow installation of the covers.

7.1.a

Table 22 Mitigation
Mitigation of Odours

Principle Odour Sources	Brief Description	Odour Control/Mitigation	Discussion	Schedule
Cattle grazing	Year round grazing on pasture	<ul style="list-style-type: none"> • Low density of cattle • High natural dispersal of manure • Bi-weekly inspections of the entire pasture areas to ensure no accumulation of manure 	Beef farms/regional pastures are not known to have odour issues in the Province and other provinces. Aerobic decomposition/low odour release	Short term
Mink barns and liquid/solid manure separator	Mink rearing/feeding barns	<ul style="list-style-type: none"> • Addition of hydrated lime underneath mink cages • Prompt removal of mortalities • Compositing of manure solids from separator; collection of liquids in storage tanks. • Install shelterbelts along Route 80. • Evaluate the potential of a mechanical ventilation as compared to the existing passive ventilation. • Invest dietary options to reduce ammonia • More frequent dust control 	The farm's responsibility is to maintain dry, well ventilated mink sheds. The solid manure is an odour source which must be collected at the separator and composted or spread on fields.	Current term Current term
Manure Storage tanks	Manure from barn gutters is piped to open	<ul style="list-style-type: none"> • Emergency shut-off valves and anti-siphoning systems control accidental releases. 	Viking has purchased synthetic impermeable covers tank covers.	Longer term Short term Installation in spring 2022

	top tanks of liquid manure.		Odours from the storage will be reduced by greater than 95%. Anaerobic digester/membrane/scrubber systems shall be evaluated, however extremely expensive option.	Long term
Feed Kitchen	Receipt of feed stuffs. Preparation and storage of mink feed. (primarily chicken and fish offal.)	<ul style="list-style-type: none"> Mink feedstock is transported from trucks to stainless steel container and augured into grinders; placed in plastic containers and frozen All feed materials are frozen within 24 hours. Feathers covered /contained no more 1 truckload of feathers on site at any time. Feed kitchen washed down daily and disinfected weekly; fish pans cleaned immediate after product is removed. All waste water from washdown is dispense through a septic system following the removal of solids. 	IEC concluded additional controls are not required. Viking has decided the floor will be re-surfaced to facilitate cleaning. This action will reduce the opportunity for odours.	Short term
Carcass Composting	Carcasses are composted in windrows in the compost shed.	<ul style="list-style-type: none"> Carcasses are composted with bedding as the primary carbon source. (carcasses and bedding are layered) Shed has a roof and concrete floor. Windrow temperature and moisture are monitored and recorded to determine when the compost needs to be turned. 	<ul style="list-style-type: none"> Viking will investigate the potential to use alternatives/amendments for ammonia and odour reduction. Note: most of the composting takes place in the winter when odours are less likely to be significant. Post composting, the compost is left to mature. Viking will investigate extending the maturation period before the compost is moved or used on the farm 	Short term
Manure Spreading	Land application of liquid manure	<ul style="list-style-type: none"> Currently, Viking's manure spreader allows the manure to be spread close to the ground 	Discussions with the tourist industry, risk of odours as determined by IEC, comments from the public meeting and information session, agreed the area	

		<ul style="list-style-type: none"> • Weather forecasts, notably wind is checked to determine optimum times to spread manure. • HD-1 town is informed of manure spreading 24 hours in advance. Weekends and special event are avoided. 	<p>between Viking Farm and the southern part of Hearts Delight-Islington was the area most prone to odours.</p> <ul style="list-style-type: none"> • In 2021 Viking decided it would no longer spread manure in the summer on the oceanside of Route 80. This action would remove spreading at the time of year when temperatures and humidity are highest; when prevailing winds are in the direction of HD-1 and during the busiest time of the year for the tourist industry. • Viking will consider installing a weather station and a farm specific weather forecasting model to predict local weather forecasting. • Viking will spread manure based on its Nutrient Management Plan (NMP) which is updated every three years. (Plan is based on nutrient content in the manure and nutrient levels in the soil. Note NMP was updated in 2021 which recommended different application rates per field in response to the different nutrient levels in the fields. Viking has applied limestone on forage fields which will increase the efficiency of nutrients. Soil testing on these fields and on pasture where manure is spread will be tested on a yearly basis to fine tune manure application based on knowledge of fertility status of the soil. • Viking will continue to investigate manure injection systems, however preliminary assessments indicate new technology would not be compatible with the farm's shallow, stony soils. Injection systems reduce odour during spreading. 	<p>Implemented</p> <p>Medium term</p> <p>On-going</p> <p>Short term</p> <p>On-going</p>
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7.1 b

Mitigation of Flies

	Background	Mitigation	Discussion	Schedule
Flies	<p>In the past populations of lesser house flies were very high in the area.</p> <p>Flies like a combination of moist, organic material for their habitat.</p> <p>The proposed cattle farm is based on year-round, low density pasture which would not result in an accumulation of manure in anyone area.</p> <p>The spreading of liquid manure would not create fly habitat as it would soak into the ground.</p> <p>Research by a graduate student, based on research on Cavendish/Viking fields concluded the spreading of liquid mink manure would not result in a breeding site or an attraction to the lesser house fly.</p>	<p>The cattle would roam the pasture in search of feed; Outside of the summer pasture season, Viking would place bales of hay at random locations which would prevent the accumulation of manure and as a consequence fly habitat.</p> <p>Viking will visit the pasture on a bi-weekly basis to ensure there is not an accumulation of manure and to bury any carcasses which would also be fly habitat.</p> <p>Viking will also maintain drainage systems around the barns; ensure leaky water systems are promptly repaired and hydrated limestone is spread in the barns.</p>	<p>Consultations with other jurisdictions indicate beef farms in a pasture system have not been a source of nuisance flies.</p> <p>Monitoring of pasture on a bi-weekly basis has been implemented. (To identify accumulation of manure and mortalities).</p>	Short term

Mitigation of impacts on Tourism

7.1 c

Protection of Tourism (and community)	Background	Mitigation	Discussion	Schedule
	<p>The tourism industry is an important economic financial to the study area and to the Trinity Bay Region. A variety of accommodations, golf course, marina, walking trails, the communities, the outdoors and proximity to the Northeast Region makes it a popular destination.</p> <p>Direct consultation with operators in 2020 revealed the greatest concerns in respect to the farm were odours for the two accommodations located north of the farm.</p> <p>The Odour Risk Study and comments at the Public meetings also highlighted odours north of the farm in the southern part of Hearts Delight-Islington.</p> <p>Historically flies were a very large concern to tourism and the community. Some stakeholders have stated flies continue to be an issue; however, it has also been expressed the lesser house fly is not at nuisance levels as in previous years. As discussed in section 7.1.b the addition of cattle, based on farm practice and experience with other beef farms /pastures in the province and in other jurisdictions indicates flies will not be a problem. The mink farm must continue to ensure</p>	<p>Discontinuation of summer spreading mink manure on the ocean side of Route 80 removes an odour source upwind of summer prevailing winds when warm temperatures and high humidity can contribute to odour strength.</p> <p>The manure tanks are a source of odours, particularly when the manure ferments in the summer producing odours.</p>	<p>In 2020 direct consultations with the tourism industry as required by the EIS Guidelines included discussions of flies, odours and the relationship with the farm. During these discussions, which took place after a very warm, humid summer, with strong odours and high numbers of flies north of the farm, an operator recommended odours not be spread in the summer. This recommendation, which is also included in IEC's Risk Report, was implemented by Viking in 2021. In 2021 the tourism operators (north of the farm) indicated there were improvements with fewer odours, especially as compared to 2020.</p> <p>The input of the Tourist industry demonstrates the need for on-going consultation and engagement with the community. Community engagement is necessary to assess the effectiveness of the elimination of manure spreading in the summer and the installation of manure storage covers in 2022. Depending on the results, next steps/alternatives can be developed in respect to the outcomes of the mitigative efforts. (This process would apply to the development and implementation of any mitigative techniques).</p>	<p>Implemented</p> <p>Short term</p>

	potential habitat for fly breeding are not established.		This conclusion is reflective of IOC's recommendation for Viking to prepare an Odour Management and Control Plan, which requires community involvement.	
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7.1 f

Minimize the effects of the Project on Aesthetics and Viewscapes

Minimize the effects of the project on viewscapes and aesthetics.	Background	Mitigation	Discussion	Schedule
	In recent years many of the trees between Route 80 and the farm buildings have died.	In 2021 Viking planted trees in front of the entrance to the farm. Viking proposes to plant more trees in a southerly direction.	It will take many years for the trees to form a significant screen to the buildings, however it is recognized as a worthwhile project.	Initiated, however long-term project.
	Land from the boundary of the Waste transfer station north towards the farm buildings is not aesthetically pleasing.	Viking will establish a cover crop which will, in a short period provide a pastoral scene from the perspective of the highway drivers.		
Changing landscape	In the past ten years pastureland and hay land has been developed on both sides of Route 80, much of which is visible from the highway.	A significant portion of the proposed land clearing on the ocean side of the highway would be located down slope; from the highway; beyond 300-500 metres of forested land. Therefore, much of the pasture would not be seen from the highway. On the interior side of the highway, much of the proposed land clearing would be near existing fields, located	It is recognized the change from boreal forest to a mix of boreal forest and farm land represents a significant change to residents. Landscape is more than the physical surroundings; it encompasses experiences; a sense of identity and represents a cultural activity where people have lived. For some a more varied landscape along Route 80 may be of interest. Whether or not these	

		on undulating up slope lands, hence some of the new lands would be visible from the highway.	landscapes are offensive or pleasing will vary amongst individuals.	
		Viking will improve the 'look' of the land located from the access to the waste transfer station towards the farm buildings.		

Protection of Wetlands Water Quality, runoff from fields during construction.

7.1 e, f and h.

Potential water impacts	Background	Mitigation	Discussion	Short term; on-going
Land clearing	Land clearing includes the removal of brush, non-merchantable wood, rocks and boulders. Land clearing would not proceed until post winter, spring runoff. The drier the soils, the easier to clear the land, less rutting, less soil/organic matter is pushed off the land into windrows. It is important to retain as much of the material as possible. It is the best interest of the to establish a plant cover as soon as possible; seeding must be completed before mid-September to establish the grass crop before winter. Furthermore, the faster a cover crop of grass can be established there is less a chance of sediment runoff.	To minimize surface run-off, erosion and exposed ground during land clearing, Viking will require contractors to prepare no more than 5 acres at a time for cultivation. This will reduce the amount of time the soil is exposed. In most cases a windrow of materials moved from the land will be pushed to the lower elevation of the field. This feature would also limit the movement of any soil towards a watercourse.	Once a cover crop of grass is established, Viking does not have plans to renovate the fields, a normal farm practice, by cultivation and reseeding. The plan would be to scarify the fields to provide soil contact for the seed. Consequently, this process would reduce the risk of sediment runoff as the soil will not be exposed. (once the cover crop is established the land will not be left in a 'bare' state).	

Protection of wetlands and watercourses	The portion of farm expansion on the interior side of Route 80 takes place in the Brook Cove Brook watershed, including a tributary which drains from Sooleys and Highland marshes, south of Fox Farm Road.	The following are the key procedures to protecting wetlands and water courses: <ul style="list-style-type: none"> • Wetlands will not be developed. • A 50-metre buffer will be maintained along all wetlands and water courses. NB lots 3, 4b. • A 90-metre buffer between lot 7 and Brook Cove Brook. Lot 6 will also be at least 90 metres from Brook Cove Brook. • Deletion of lot 4a from the project proposal. This decision will remove the need for any stream crossings • Any culverts would be designed and installed as per the requirements of the Province. • The closest point of Lot 5 to the tributary of Brook Cove Brook is 100 metres. (where Fox Farm Road crosses over the brook). 	The buffers would be identified by cutlines and/or tapes. Viking would walk the lines with the contractor hired to clear the land to identify the location of the buffers. As per section 7.2.1 Viking would follow its commitment to its Environmental Emergency Contingency Plan and if approved would prepare an Environmental Protection Plan.	On-going as the land is developed.
	The two marshes are organic wetlands/peatlands, typically referred to as bogs. The conservation of these wetlands and the riparian area along the watercourses is the most important means of protecting water quality and biodiversity of the watershed.		30 metre buffers have been a condition of most agricultural proposals registered pursuant to the Environmental Assessment process since the registration of Vikings proposal, including two dairy registrations which would spread manure. Furthermore, most Crown land Leases for agriculture include a 15-metre reservation along water courses. (section 7 Lands Act) The decision to proceed with a minimum of 50 metres along water courses and wetlands exceeds buffer widths which are normally required for farm developments.	

Mitigation of Habitat Disturbance

7.1.g

Disturbance of wildlife including Avifauna	Background	Mitigation	Discussion	Schedule
	<p>Land clearing will result in a change of habitat. Although nesting sites will be lost, song birds establish new nests each year and therefore will be able to relocate to areas not impacted by farm land development</p> <p>During the avifauna survey a requirement of the EIS, 38 species were identified, however no 'endangered' birds.</p> <p>Raptors and Northern flickers were identified; hence it is possible raptor nests and snag trees (potential nesting site for flickers) may exist on the lands proposed for farm development.</p>	<p>Viking will through its letters to residents permitting them to cut wood, on its Crown Land Leases will encourage them to not cut during the nesting season of April 15th to August 15th. Traditionally, people cut fire wood in the fall and winter, hence it is highly likely the nesting season will be avoided.</p> <p>It is required that all merchantable wood be removed before land clearing is initiated. Consequently, if land clearing proceeds in the nesting season it is likely most song birds will have relocated.</p> <p>If raptor nests or occupied snag trees are identified before land clearing, Provincial Wildlife officials will be informed and vegetated buffers around the trees would be identified around the trees. (200-800 metres)</p>	<p>The Avifauna survey has alerted Viking to be aware of species that are not common to the area. This peaked interest will increase the likelihood of identifying the presence of rare/endangered birds.</p>	<p>Viking and the contractor will visit sites before land clearing to identify the presence of raptor nests and /or potential nests in snag trees.</p>
Gulls	The existing mink farm, manufactures feed for the animals from chicken and fish by-	Viking will investigate various tactics to control the gulls. Viking	Viking will conduct an audit of the farm to determine bird	Short term

	products. This activity attracts gulls. During the avifauna survey, over 500 gulls were counted in three days.	will consider the adoption of exclusionary techniques such as mechanical means, notably spikes to deter gulls on buildings, mylar strips to prevent access to the compost shed. No matter what the deterrent, it is understood gulls will habituate to the system so options or a combination of options would have to be considered.	access points and farm practices which might be amended to reduce the opportunity for the gulls to access food.	
Waterfowl	Small watering holes < 250 ft ² will be established for cattle.	These watering holes may attract waterfowl. This will be encouraged and would be a beneficial outcome of the project.	Depending on the avian flu outbreak in St. John's, establishment of any ponds would be done in consultation with Provincial Government veterinarians.	
Wildlife	During the preparation of the EIS, there was evidence of moose in the area.	Land clearing for this project would take place over a six-year period, hence impact on wildlife, notably on moose, would change location from year to year. If the animals become aggressive, Provincial Wildlife will be informed to seek guidance as to how to proceed. The area is outside of caribou range. There are no Pine Martin populations on the Avalon Peninsula.	If there are moose on the site, the contractor will cease operation until the moose leave the area.	Yearly

7.2 Emergency Response Plan (Overview)

Purpose

The purpose of this emergency response plan is to provide clear direction and information to management and employees to provide immediate response to an emergency situation. We have established policies so all employees are familiar with and understand what the company's emergency procedures are and how to implement them should the need arise.

Responsibilities

The responsibility is on the company to provide information and details of their emergency plan to all employees. This can be done through verbal communication and/or written. It is the company's responsibility to ensure all employees are aware of the procedures and that the plan has been reviewed with them. Any changes to the plan must be communicated to employees.

Management:

- Responsible to ensure that employees are aware of where emergency equipment is located on the farm, muster locations and any first aid supplies.
- Communication of the plan and all procedures to follow to employees.
- Provide assistance to employees and anyone on site in the event an emergency occurs during work hours and assist in evacuation if required
- Complete a head count of all employees during an emergency to ensure everyone is accounted for.
- Ensure there is ample supply of emergency supplies and adequate restocking of any supplies as required.

Emergency Response Persons:

- This will consist of the owners, office as well as department managers (Mink Manager & Feed Kitchen)
- Provide immediate assistance to all employees during an emergency
- Assist employees and supervise evacuation if required
- Contact Emergency Contacts/Agencies as required

Employees:

- Follow the emergency procedures in place
- Make sure they are aware of where muster stations and emergency equipment and first aid supplies are located
- Notify Supervisors, Emergency Response Persons of any items or equipment that was used or need to be replaced
- Have understanding of evacuation routes, lay out of any buildings and exits.

Emergency Numbers:

The following are a list of contact numbers which are posted in various locations around the farm and anywhere employees are working.

Emergency Contacts	Number
Police, Fire Department and RCMP	911
Hospital/Ambulance ~ Cavendish	709-588-2224
Fire Department ~ Cavendish	709-588-2006
RCMP	1-800-563-2172
Newfoundland Power (24 Hr Emergency Line)	1-800-474-5711
Environmental Emergencies	1-800-563-2444
Telephone Company (Call before you Dig)	611
OH&S- Accident Report Line	1-709-729-4444
OH&S- Service NL	1-709-729-2706
Health Canada, Hazardous Products (Product Safety)	1-709-772-4050
Viking Fur Office	709-588-2820

Emergency Procedures

Fire Evacuation

If an alarm sounds for a fire:

- Leave work station immediately and go to the safest and closest exit
- Walk quickly, don't run
- Close all doors if inside a building
- If it is safe to leave your area, no smoke, door knob not hot, proceed to muster station as quickly as possible
- Do not leave this area until told by a supervisor to do so, do not re-enter any building or area until it is deemed safe

If a fire is discovered by an employee: what to do

- Sound fire alarm
- Advise a supervisor of the fire location if safe
- If fire can be contained and dealt with immediately use fire extinguisher
- If fire can not be safely dealt with, leave area immediately and close all doors
- Evacuate the area via using closest safe exit available
- Call fire department, providing the name and address of the building/company, and any other information requested.
- If an evacuation occurs ALL employees must leave the area and an accurate count must be taken as soon as possible

- No buildings, barns or property are to be re-entered until fire department or manager provides direction to do so.

Muster Points and Taking Count of Employees

Should an evacuation occur all employees must move quickly to one of the designated muster locations. It is then the responsibility of identified Emergency Response Personnel (Managers and/or owners) to do a head count of all employees on the premises. If anyone is unaccounted for and possibly inside a building, the information is immediately given to the Responding Agency.

Muster Stations for the company are as follows:

Work Area	Muster Location
Farm (All locations on the farm)	Farm Parking Lot
Main Office	Office Parking Lot (by garbage box)
The Club	Office Parking Lot (by garbage box)

Following an Emergency

If an emergency occurs, several things must be addressed.

- Assess damage
- Investigate the cause or source of the incident
- Repair or clean up the damage
- Restock any emergency supplies used or needing replenishing

Assessment of damage should be done by managers, owners and OH&S committee to ensure all aspects are appropriately covered. An estimate of damage must be compiled and submitted to the office.

An investigation into the incident will be completed by OH&S committee as well as management following the company's accident and incident investigation procedures.

Release of Livestock

Should there be a release of livestock, the following procedure is followed:

- Contact Area Manager (Karsten) immediately
- Area manager would notify Emergency Response Team
- Employees would be called to secure area immediately
- Perform a count of livestock and determine loss
- Collect up any mink in traps and put back in pens
- Complete escapee report and submit to Department of Agriculture (submitted by office employee)
- Secure cattle and return to pasture

Manure Spill or Malfunction of Equipment

Should there be a spill or breakdown of the liquid manure spreader and/or tractor, employee must do the following:

- Contact Area Manager (Gert), Area Manager notifies the Emergency Response team
- Act immediately to secure the area and ensure it is safe and no injuries
- Contain the spill if possible
- Assess the extent of the spill and if any damage has occurred
- Follow procedures in Contingency Response Plan for specific steps
- Emergency Response Team must contact appropriate agencies to notify of the spill
- Clean up spill and make repairs as needed
- Prepare and submit a report to summarize situation.

7.2.1 Environmental Emergency Contingency Plan (EECP)

Policy Statement

Viking is committed to operating in a fashion which will minimize the likelihood of an environmental emergency while identifying and preparing to respond to an environmental event.

Viking is committed to:

- The health and safety of employees and the public
- The protection of the environment
- In the event of an environmental event (spill), the company's priorities are as follows:
 - Safety of employees at the site and members of the community
 - Protection of the environment
- Peter Noer, President or Eric Dalsager Vice President will lead the response to the event. In their absence, the Supervisor responsible for general operations will be in charge. The authority vested in the supervisor to respond to an emergency, including the expenditures, is confirmed through Viking's Environmental Emergency Contingency Plan.
- Viking will plan and test the company's response to an environmental emergency.
- The effectiveness of the response will be discussed and recorded with recommendations for improvements and include a date for the next test.
- Management is responsible for media and public consultations. In their absence the authority will be vested to a designated employee of the company.

Purpose and Scope of the EECP

The EECP is to identify potential hazards, develop systems to prevent hazards, provide appropriate mechanisms for minimizing risk, loss and environmental damage. A plan also needs to provide a management structure to guide a response and to ensure there is an

evaluation of the response with the aim of improving the response in anticipation of future events.

The identification of possible environmental emergencies:

Liquid Manure spill

- In the barns e.g., gutter break down/overflow
- Overflow at the SWEA separator
- Spill while filling the manure tanker/spreader
- Damage to the tanker enroute to fields or while spreading manure on fields.

Fuel spill

- Damage to equipment or during refueling
- Farm equipment during general farm operations. (equipment damage or while refueling, accident causing a leak)

Feed related spills.

- from delivery truck to refrigeration

Loss of electrical power

- Feed production and water for the animals

High ammonia levels

- Barns; Manure Storage

Risk Analysis

a) *Manure spill*. Manure is removed from the barns (via the gutters) every one to three days, hence a breakdown of the gutter system would be identified before the gutters overflowed. Viking has the equipment and knowledge to repair the gutters before overflow. Risk is considered low from a health or environmental perspective. If there was a spill from a gutter, the manure would be scraped up and pressure washed as required. The effluent would be collected and applied to the fields.

An overflow of dry manure at the separator would be removed with a farm tractor and spread on fields or added to the compost pile; both of which are located close by. (within 100 metres) The separator is located close to the farm buildings which allows the system to be closely monitored. Whereas the manure is dry, a spill would be easy to contain and remove. Therefore, the environmental risk is considered low.

Failure at a manure storage tank causing a spill would require cleanup with farm equipment and hay as an absorbent. The system is manually operated, hence if there was a spill it would be detected immediately which would facilitate containment of the manure. The storage tanks include a system to prevent a siphoning of the manure from the tanks. Risk of a significant spill is concluded to be low.

Filling the manure tanker is done and monitored by an employee. If there was a spill, the filling would be stopped to minimize spillage. Any surface accumulation would be collected and spread on a field. Risk of a significant spill is considered to be low.

The manure tanker carries about 10,000 litres of manure from the storage tanks to the fields where the tanker spreads the manure. The tanker accesses Fox Farm Road which includes less than ½ a kilometre of driving on Route 80. If the project is approved, the tanker would, at most travel, about three kilometres to spread manure on fields.

The closest water course is the tributary of Brook Cove Brook which drains from Highland and Sooleys marshes through a culvert under Fox Farm Road. A portion of the tributary flows next to the former rail line for about 100 metres. The rail line which is used as an access road to lots B2 and proposed lot 4b.

An accidental spill next to the brook or to drainage towards the brook, particularly during a time of saturated ground conditions represents the worst-case scenario in the case of a spill. Whereas there is no transfer of manure between farm equipment the risk of a spill is unlikely and if did happen, there is a significant buffer between the fields and the water courses. Whereas the tanker travels at low speed and the referenced resource roads are straight, with minimum slope, the chance of a spill is considered low, however a spill response must be considered and established.

b) *Fuel spill.* During land clearing and farm development, heavy equipment would be refuelled where the development is taking place. If the entire fuel capacity of a piece of equipment was spilled, the amount could be as much as 300 litres. A spill in excess of 70 litres shall be reported to the Department of Digital Government and Service NL. Viking will abate the leak and cleanup the site to the satisfaction of Government. Any spillage into a watercourse shall be reported to the 'spill line, (722-2083) During normal farm operations, farm equipment will be refuelled on the existing farm where the fuel storage is located on a concrete pad. In the case of a spill, the concrete pad would facilitate cleanup and prevent percolation into the ground.

c) *Feed Spill* Feed related spills are unlikely, however if they do occur, they are limited to individual truck deliveries of solid materials which could be scraped up off the paved surface by readily available farm equipment. Due to the ability to respond quickly and that there is an impervious surface, the risk of contamination from a spill is considered low.

d) *Loss of Power* The loss of power with potential impact on all aspects of the farm including water for the animals. As a result, the farm has generators for back-up power which substantially reduces the risk to the health of the animals. The feed storage does not have back up power, however the storages are well insulated and the raw products for the feed would remain frozen for a few days.

e) *Ammonia* The farm shall assess ammonia levels in barns and in vicinity of the manure storages according to the requirements of the Occupational Health and Safety Division. Adequate ventilation has been effective in maintaining levels within acceptable ranges; hence the risk is considered low.

Emergency Response

Viking's environmental emergency response plan depends on the level of emergency.

Level 1: minor spills requiring an on-site worker to respond and take necessary corrective actions. This level of spill would be easily contained and cleaned up by the on-site worker, who would report the incident and response to his/her immediate supervisor or Peter Noer/ Eric Dalsager.

Level 2: intermediate spill requiring a response by on-site staff or off-site staff but posing no danger to the public or contamination to a water course. The appropriate response and mitigation of the project would be confirmed by management, including the determination of the need for off-farm assistance to mitigate the results of the incident.

Level 3: A major incident such as direct or distinctly possible contamination of a water course or wetland which is beyond the ability of the farm (on or off-site staff) to completely remediate. The spillage of petroleum products of greater than 70 litres is considered as a level 3 incident. The identification of the scope of the incident, immediate actions and planning for further and on-going actions shall be prepared and communicated by the Peter Noer, Eric Dalsager or to the person to whom they have delegated to lead/coordinate the response to the incident to the relevant Government agency

As per Viking's Environmental Certificate of Approval, (Certificate) Section 42 the following incidents shall be reported. (Service NL (934-3112)

- a) Non-conformance of any condition within the Certificate
- b) Spillage or leakage of a regulated substance, e.g. petroleum products;
- c) Whenever discharge criteria is, or is suspected to be exceeded; or
- d) Verbal/written complaint of an environmental nature from the public is received.

The conditions of the Certificate also require a written report including a detailed description of the incident, summary of contributing factors and an action plan to prevent future incidents of a similar nature shall be submitted to the Regional Director. (Service NL) The action plan shall include a description of actions already taken and future actions to be implemented and shall be submitted within 30 days of the date of the initial incident.

Response Action, Containment and cleanup

The following checklist would be used following the determination of an incident:

- Identify the nature/extent of the of the incident and the potential of escalation; are their health/safety or environmental threats?
- Inform Viking management.
- Report the incident to: 1-800-563-2444; 722-2083
- Mobilize the appropriate resources and personnel to contain the ‘spill’ or to identify off farm personnel/equipment to respond to the incident
- Obtain remediation/containment materials from the storage barn;
 - Petroleum products spill kit including absorbent pads and booms
 - Hay bales to contain petroleum or liquid manure spills
 - Identify equipment and contact personnel for the clean-up.
- Determine the need for off farm expertise and/or equipment to clean-up a spill. E.g., vacuum truck services
- Prepare estimates of the spill and possible implications, such as water/soil contamination and odour releases.
- Determine disposal methods and storage of contaminated materials.

The degree of restoration and remediation for level 2 or 3 events would usually be determined through consultation between the farm and Service NL and/or the Federal Department of Fisheries and Oceans and the Department of Environment and Climate Change. The reporting of the incident as explained above would alert the applicable departments and agencies.

Restoration of manure and petroleum products is expected to start with the physical removal of the substance. Liquid manure, if pooled and accessible would be absorbed by hay and placed in an area greater than 50 metres, assuming the slope of the land can be described as gentle, from a water course. Petroleum products and contaminated soil would be contained and removed to an acceptable disposal site.

Post Incident Evaluation

The evaluation of Viking’s response to an incident (level 3) will include the following:

- Suitability of the organization structure, equipment and communication
- Adequacy of: training, communication, spill containment, procedures and monitoring

A written report shall include:

- General description of the incident
- Source and cause of the incident
- Description of the response
- Quantity/percent of spill recovered
- Cleanup costs
- Recommendations for preventative and mitigative measures
- Plans for upgrading incident response preparedness and response plans.

Training and Practice drills

Viking recognizes competency is vital in operating Viking's business, including its response to environmental incidents. Comprehensive training is imperative so staff understand their roles and duties in responding to a 'spill.' Initial training must be followed up with on-going training as a reminder and to ensure new staff are capable to respond to the type of incident for which they have been trained to address.

Practice drills will help develop employee skills and evaluate Viking's ability to respond to a mock exercise. The drills will evaluate the following:

- Practicality of the response plan
- Adequacy of communications
- Equipment effectiveness
- Overall development of skills and confidence to respond to an environmental incident quickly and efficiently

7.3 Personnel Emergency Response Plan

Personnel (Medical) Emergency Response Plan

Call medical emergency phone number):

Emergency Contacts	Number
Police, Fire Department and RCMP	911
Hospital/Ambulance ~ Cavendish	709-588-2224
Fire Department ~ Cavendish	709-588-2006

Provide the following information:

- a. Nature of medical emergency,
 - b. Location of the emergency (address, building, room number), and
 - c. Your name and phone number from which you are calling.
- Do not move victim unless absolutely necessary.
 - Call the following personnel trained in CPR and First Aid to provide the required assistance prior to the arrival of the professional medical help:

Name:

Phone: _____

Name: _____ Phone: _____

- If personnel trained in First Aid are not available, as a minimum, attempt to provide the following assistance:
 1. Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood or other bodily fluids).
 2. Clear the air passages using the Heimlich Maneuver in case of choking.
- In case of rendering assistance to personnel exposed to hazardous materials, consult the Material Safety Data Sheet (MSDS) and wear the appropriate personal protective equipment. Attempt first aid ONLY if trained and qualified.

Date ___/___/___

7.4 Environmental Effects Monitoring Plans (EEMP) and follow up program.
(The proponent shall prepare and submit the EEMP subsequent to the completion of the EIS, but before the initiation of project construction.)

Table 23
8.0 Residual Effects and Determination of Significance

Odours

Principal Impact on tourism/residents	Brief Description	Mitigation Construction and Operations	Residual Adverse Effects	
<p>Manure spreading</p>	<p>Manure spreading, particularly during the summer (warm temperatures and prevailing southwesterly winds) represents a significant risk of odour to property owners, including tourism, in the Brook Cove and Long Point area. (southern portion of Hearts-Delight Islington.)</p> <p>Concerns of existing odour have been expressed by a family located south of proposed Parcel 1.</p>	<p>As of 2021 the farm will no longer spread manure in the summer on the oceanside side of Route 80.</p> <p>Continue to analyse weather forecasts to determine when to spread. NB wind direction, humidity.</p> <p>Where possible retain windbreaks or shelterbelts around existing and proposed pasture and forage areas.</p> <p>Avoid spreading near weekends, holidays and community events.</p> <p>Evaluate the need for a weather station to track wind speed, direction, temperature, humidity along with a farm specific weather forecasting model to determine if it would provide more detailed/reliable weather forecasting to guide the timing of manure spreading.</p>	<p>The decision not to spread manure in the summer will reduce the risk of odour events in the ‘Brook Cove’ area; the most sensitive location in the area in respect to farm odours.</p> <p>Discussion with tourist operators down wind of the farm in the fall of 2021 revealed a reduction of farm odours as compared to 2020. The decision not to spread in the summer most likely contributed to these observations.</p> <p>Spreading in the spring and fall will be outside of the busiest part of the tourist season, during colder temperatures when odours are not as strong. Manure would not be spread on new pasture on the oceanside of Route 80. Spring and fall applications of mink manure would take place on the new pastureland. This would result in manure spreading closer to Cavendish and Brook</p>	<p>Tourism and Odour component studies. 6.2.1.2 4.2.1 a 4.2.1 d 6.2.2.2 6.2.4.2</p> <p>2.3.3.c Odour Study</p>

Manure storage	Liquid manure is stored in open tanks on the farm. During the warm temperatures fermenting of the manure results in strong farm odours	The farm will (spring 2022) install tent like structure over the tanks to capture the odours. The storages are upwind (prevailing winds) of two tourism facilities. Literature states such a cover can reduce odours by 95% and higher.	The covers were ordered by Viking in late 2021 are made of synthetic material which are very effective in controlling the release of odours.	6.2.1.2 4.2.1. d
Land requirements for mink manure	Alternate spreading systems	Viking's current manure spreading system drops the manure on the grass surface as opposed to the common practice of discharging above the spreader. Equipment to inject manure into the soil are effective in reducing odour, however NL soils are too stony and shallow for the use of a manure injection system. However, Viking will continue its investigation to determine if new technology would enable injection in shallow, stony soils.	Cove. This may contribute to odour in the spring and fall. The same amount of mink manure needs to be spread. The larger land base would allow the farm to spread at lower rates which should decrease farm odours. Farm odours are a function of farming, however every effort to minimize would be a benefit to the community. Odours from manure spreading usually last a few days. A larger land base will allow the farm to apply manure for optimum plant growth and reduce the opportunity for runoff of nutrients. The total elimination of farm odours is not possible; however, Viking will continue to investigate alternatives to reduce odours. Community engagement will be used to assess the effectiveness of odour controls which will help determine to continuation of controls or adjustments with the aim of reducing odour.	3.1 2.3.3.c 6.3 7. 9
		Investigate whether alternative spreaders e.g., injection systems could be used to minimize contact with surface areas of the ground. The mink farm requires more land for the spreading of mink manure as some fields have excess of nutrients. Viking's current manure spreading system drops the manure on the grass surface as opposed to the common practice of discharging above the spreader. Equipment to inject manure into the soil are effective in reducing odour, however NL soils are too stony and shallow for the use of a manure injection system. However, Viking will continue its investigation to determine if new technology would enable injection in shallow, stony soils.		2.3.3.c

		<p>Consider the evaluation of an anaerobic digester/membrane filtration system equipped with a bio filter to treat emissions. (NB It is anticipated the effectiveness of tent covers will reduce the need to consider expensive digester evaluation/investment).</p>	<p>The reduction of odours during the heat of the summer will reduce residual odours associated with manure storage.</p> <p>The accumulation of gases under the storage cover will require the implementation of safety protocols to protect staff from accumulated gases. The farm will open up \ about 5% of the cover to agitate the manure before removal. The farm will determine alternatives to minimize the release of the gases.</p> <p>Anaerobic digesters are very expensive and considered a longer-term option. Whereas the system can reduce greenhouse gas emissions, subsidies may be available to reduce expenses to the farm. (Very expensive technology)</p> <p>As above, Viking will investigate ways to reduce odours from the various activities of the farm where odours are produced.</p>	<p>6.3</p>
<p>Mink Barns</p>	<p>Mink barns are sources of odour, notably manure/urine.</p>	<p>Maintain good ventilation.</p> <p>Evaluate the potential of using mechanical ventilation and if a bio-filter scrubber would be beneficial.</p> <p>Investigate the potential for dietary changes to reduce ammonia formation.</p> <p>Ensure bedding is changed/refurbished as much as possible to reduce ammonia volatilization by trapping organic materials.</p>	<p>The barns are well ventilated; however, Viking will investigate this suggestion by IEC. Whereas this would require extensive re-construction, the cost would likely be prohibitive. (basically, a re-construction of the barns to include mechanical ventilation)</p> <p>Viking will investigate dietary changes; however, the understanding is these are unlikely options for the farm which acquires all its raw products for feed from local suppliers.</p> <p>New bedding is added as the kits remove it from the next boxes. Once the kits are</p>	<p>Odour Component Study/ recommendations by IEC. 4.2.1 d 6.2.12 7.1</p>

		<p>Employ dust control methods to reduce odour absorption.</p> <p>Continue to apply hydrated lime underneath cages.</p>	<p>removed all bedding is removed from the barns.</p> <p>The adjustments are not expected to significantly reduce odours from the barns in the short term. The use of a bio-scrubber would require a very large capital expenditure in terms ventilation of a closed barn.</p> <p>The farm will increase the frequency of dust control.</p>	<p>4.2.1c</p>
Composting sheds	Mink carcasses are composted with bedding in a compost shed with turner	<p>Investigate the potential to use additives/amendments for ammonia and odour reduction at the source.</p> <p>Extend the maturation time period for compost.</p> <p>Ensure the 0.6 metre cap is established following each turn of the compost pile.</p> <p>Maintain a ready source of carbon to cover exposed carcasses; random mortalities and carcasses produced during smaller periods of pelting.</p>	<p>Fine tuning the compost processes would reduce odour risks.</p> <p>Most of the compost is not used on the farm, however extending the maturing stage (following composting) would reduce odours, especially where the compost is used.</p> <p>The residual odours are best reduced through an extended maturation period.</p>	<p>4.2.1d 8</p> <p>Odour Study</p>

			Record the thickness of the cap over the compost pile to ensure it is at least 60 cm thick. It will be re-established following each turning.	
Communication	Community engagement	Effective communication with the community Issues be reported in a timely fashion to facilitate an investigation of an odour event.	The town of Hearts Delight-Islington is informed of pending manure spreading. The effectiveness of new mitigation actions requires the involvement of the community to determine the effectiveness of the odour controls. Depending on the outcome of such an assessment Viking could enhance, adjust or discontinue the technique. The details, which would include community engagement, would be determined in the development of an Odour Management Control Plan as proposed by IEC	Odour Component Study
Cattle	The cattle would be grazed throughout the pasture	Develop a preventive maintenance and audit program to ensure no accumulation of manure. The low density of animals; high degree of manure dispersal with decomposition in aerobic conditions would result in minimal odours related to the pasturing of cattle.	The residual odour impacts would be low. Existing beef farms and regional pastures provide assurance of the low odour potential.	6.2.1.2

Conservation of Wetlands and Watercourses

Potential Water Impacts	Brief Description	Mitigation Construction and Operations	Residual Adverse Effects	Section
<p>Farmland development could result in:</p> <p>Water pollution, nutrients and sediments</p> <p>Shoreline erosion</p> <p>Faster, increased runoff</p> <p>Reduction of biodiversity</p>	<p>Land clearing for hay land and pasture resulting in the conversion of forested land to permanent cover pasture and forage farmland.</p> <p>Manure would be spread on newly developed farmland.</p>	<p>Minimum 50 metre undisturbed buffer between farmland and organic wetlands/water courses. 50 metre would be applied to lot 4b. Lot 4a was deleted which removes the need for a stream crossing.</p> <p>Lot 3 would have a 50 metre buffer.</p> <p>90 metre buffer along Outside Island Cove Pond and downstream (Brook Cove Brook). (Lot 7)</p>	<p>Residual adverse effects are not anticipated due to the width of the buffers between farmland and water courses/wetlands.</p> <p>In addition, the establishment of a crop cover will reduce the opportunity for sediment runoff. It is unlikely the new farmland will be cultivated once a cover (grass) crop is established.</p> <p>Whereas there are no stream crossings, culverts will not be required thereby reducing the risk to of contamination to water resources. (Note small culverts in ditches to facilitate access road construction may be required.)</p> <p>The farm's manure management plan includes manure application rates designed for productive crop growth and to avoid over supply of nutrients to the soil, thereby reducing the opportunity for runoff.</p>	<p>Land Parcels; Component Study. 2.3.2 b, d,f,g. 2.3.2.d 2.3.3 4.2.2.a/b 4.2.3.b 4.2.4.c 6.2.2.1 6.2.2.2</p>
		<p>Culverts would be designed and installed as per the requirements of the Department of Environment and Climate Change.</p> <p>The amended project does not include stream crossings. The only watercourse on 1:50,000 topographical map is Brook Cove Brook. The proposed does not include land expansion which would require a crossing of Brook Cove Brook.</p> <p>Manure application rates as per proponent's Nutrient Management Plan (not to exceed nutrient requirements of the forage/pasture land)</p>		<p>6.2.2 6.2.2.1 6.2.2.2 6.2.5 2.3.3.c A vifauna Component Study (habitats)</p>

		Land development and farm activity will avoid wet soil conditions to reduce soil rutting and channelization.		
Wetland (Bog/peatland) Usage	Organic wetlands/bog/peatlands would not be developed for farm use. A mineral wetland on the ocean side of Route 80 may be developed	Mineral wetlands are saucer like depressions with shallow peat depths (< 40 cm.) which may be developed for pasture land.	The mineral wetlands (one area on the ocean side of the highway) may be drained/filled in to facilitate conversion to pasture land. (Oceanside of Route 80) Wetlands (bogs) will not be developed on the interior side of the highway; notably the wetlands within the Highlands Marsh and Sooleys Marsh area, with additional protection through the implementation of a 50-metre buffer.	2.3.2.c 4.2.2 4.2.3. b Figures 12 and 13
Erosion, surface runoff and exposed soil during construction	Heavy equipment will place rock and vegetation in windrows. Exposed soil will be rock picked leveled, fertilized and seeded.	Whereas soils are shallow, land clearing must be done to conserve as much soil as possible. Specialized equipment will minimize soil removal, wet conditions are avoided to minimize ruts in the soil which would cause water to collect. When surface runoff encounters windrows, soil is deposited and available for collection and spreading on fields. It is in the best interest of the farm to establish a grass crop as soon as possible to obtain a return on their investment. This ensures newly cleared land is seeded as quickly as possible. The shallow depth of topsoil and coarse textures type of soil limits the amount of soil subject to surface runoff.	Whereas the fields are well fertilized and seeded, grass growth will be vigorous, the sod will become thicker with improved ability to absorb precipitation and thereby reducing the risk of runoff and the opportunity for erosion and leaching of nutrients.	Land Parcels; Component Study 6.2.2.1

Conservation of Avifauna

Potential Avifauna Impacts	Brief Description	Mitigation Construction and Operations	Residual Adverse Effects	Section
Tree cutting during the nesting season	The main nesting season for song birds is Mid-April to mid-August	The traditional time for domestic wood cutting is in the fall and winter. Viking would encourage, through letters of approval, residents to avoid the nesting season from April 15 to August 15 when cutting wood.	There will be a loss of nests. The loss of the previous year's nests should not prevent birds from building new nests in similar environments in the area.	2.3.3.c 6.2.3.1 6.2.5
	Cavity nests (snag trees)	Before any trees are cut the proponent would determine if there are any 'snag' trees with active nests. A buffer would be placed around the tree at a setback distance acceptable to the Provincial Wildlife Branch and/or the Canadian Wildlife Service.	Exposed snag tress following the development of the farm would have less protection to high winds. Following land development, farm related noises during the nesting season will be limited to manure spreading and forage harvesting. (less than a half days activity in any one area five times a field season.)	Avifauna Component Study 4.2.3.c 6.2.3.1
	Osprey and Bald Eagle nests Other raptor nests E.g., Owls, Northern Goshawk, Sharp shinned hawk, Merlin, American Kestrel	No vegetation clearing within 800 metres during the nesting season (March 15- July 31) No vegetation clearing within 200 metres during the nesting season (March 15- July 31)	A requirement of the Provincial Wildlife Division which should protect the nesting sites for future years.	Avifauna Component Study. Buffer widths were selected from conditions in the release of farm proposals under the EA Regulations.
		NB Viking will assess parcels before spring vegetation removal to determine the presence of any raptor nests. The Wildlife Branch will be informed of any siting's.		

Attraction of gulls to the farm	Gulls are attracted to the mink farm by the manufacture and distribution of mink feed.	The farm will implement exclusion techniques to reduce access to the compost shed and perching of farm buildings near the feed distribution areas. An audit of farm practice, including the handling of mink feed, and an evaluation of all buildings will be done to identify access points and attractions to the birds.	The proposed farm pasturing of cattle and spreading of liquid mink manure would not attract gulls. Birds tend to acclimatize to exclusionary techniques. Gulls will remain attracted to the production and delivery of feed to the barns. Like fish plants and other food processing facilities, gulls will remain attracted to the farm.	Avifauna Component Study 4.2.3.c
Attraction of waterfowl	Small reservoirs will be maintained/established for the beef to access drinking water.	The reservoirs would be small, less than 250 square feet. The attraction of waterfowl to small 'ponds' is not uncommon and would provide productive habitat for the birds.	The ponds will likely provide greater diversity of avifauna.	Avifauna Component Study

Aesthetics and Land/Viewscales

Potential Impact on landscapes/view-scapes	Brief Description	Mitigation Construction and Operations	Residual Adverse Effects	Section
Expansion of hay land and pasture	It is proposed to convert approximately 165 acres of forested Crown land to farm land and 20 acres freehold. About 55 acres are located on the down slope of land towards the ocean side of Route 80 and	The proponent proposes to seed the cleared land in the same field season. In recent years, there has been a significant loss of trees along the	The pattern of forested land and hay/pasture land will be similar to current viewscales of the forage and pastureland and not dissimilar to a recent farm development along the Trans-Canada Highway east of Whitbourne.	4.2.4. e

	combined with retained forest land most land would not be seen from Route 80. It is estimated 15 acres will not be developed because of buffers and another 20 acres might not be developed because of soil limitations and the establishment of windrows. A portion of the land clearing inland of Route 80 will be visible, as the elevation rises in an in an undulating fashion. Lots 3 and 4 will be obscured by a hill along the highway.	west side of the highway next to Viking Fur's farm buildings. Viking will plant trees along this stretch of road to re-establish a tree screen. Viking will continue to remediate land from north of the access to the waste transfer station to the farm buildings. The result would provide a pastoral view from Route 80.	Pasture development will be extensively screened by a combination of forested land down slope towards the ocean.	
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Flies

Potential Fly Impacts	Brief Description	Mitigation Construction and Operations	Residual Adverse Effects	Section
<i>Cattle Production</i>				
Grazing	The cattle would graze/roam the pasture throughout the year. They would not be housed or kept in a confinement type stockyard.	The pasturing of animals will minimize the opportunity for fly habitat. (no concentration of manure) Outside of the 'summer' grazing season which lasts about 4 months, the animals would be fed hay at different locations to ensure the animals move around the pasture so they remain active and do not produce a concentration of manure. Dead animals would provide a breeding ground for flies. Mortalities would be buried and covered with lime.	It is not anticipated there will be residual effects. However, the entire pasture will be visited not less than every two weeks to ensure potential fly sources, such as an accumulation of manure or beef carcasses are removed.	2.8.3 a 4.2.1 e 6.2.4.1

		and soils. Sequestration of greenhouse gases.	
Composting			
	Composting is an aerobic process which can reduce greenhouse gases, nitrous oxide and methane	Viking currently composts mink carcasses, bedding and some solid manure. Viking will compost all solid manures which are extracted from the manure unless they are spread on the fields.	Although the composting of all solid manures produced by the mink farm will not result in a significant reduction in greenhouse gas it is worth pursuing to reduce the odour potential of manure.
			4.2.1 c and d

Resource Access

Domestic Wood Cutting	Brief Description	Mitigation Construction and Operations	Residual Adverse Effects	
Access to forestry resources	Access to domestic cutting areas	In consultation with the Forestry Branch access to forest resources would be planned before Crown Land leases were issued	Although the proposal will convert forested land to agriculture, Forestry policy requires all merchantable wood to be harvested before land clearing. Residents may have to travel an additional one to three kilometres to access wood if the expansion plans proceed.	2.3.3 c and d. 4.2.4 a 6.2.3.1 6.4

9.0 Assessment Summary and Conclusions

The EIS shall summarize the overall findings of the environmental assessment with emphasis on the key environmental issues identified.

The preparation of the Environmental Impact Statement (IES) for the Cavendish Beef Farm resulted in a comprehensive review of the proposed establishment and integration of a cattle farm with the existing mink business. The EIS focussed on key issues as identified in the EIS Guidelines for the preparation of this document, notably: 1) effects of the project on the quality of life of residents, visitors and the tourism activities; 2) the effects of the project on water and; 3) the effects on the tourist industry. Furthermore, standalone component studies, related to Odour, Tourism, land and avifauna required the review of the effects of the existing Viking Fur Farm on the social and physical environment.

The EIS has made several recommendations for actions to reduce strong farm odours from the existing mink farm. The recommendations were developed through the results of the Odour Component Study which was based on the report: Qualitative Odour Risk Assessment and Mitigation Planning Report, Cavendish Beef Farm (The Report) prepared by Independent Environmental Consultants (IEC), contracted by Viking.

The Report included the results of diaries of odour events and weather conditions maintained by residents located north and south of the existing farm and proposed expansion. This public involvement was an essential part of understanding and determining when and to the extent residents were impacted by odours. The evaluation of odour producing activities on the farm and how, when and where residents were impacted, was used to identify a series of controls (mitigative actions) to reduce odours.

The consultant's report, stated the proposed cattle would have a negligible increase in odour based on the pasturing of the animals over a wide acreage, as opposed to confining the animals to one location with a manure storage. IEC explained the manure spreading on an expanded land base on the oceanside of Route 80, north of the existing pasture, could result in odour effects on the community. Overall, IEC concluded the proposal for the cattle operation would not increase the level of risk on the community.

IEC states additional odour controls are required for the existing mink farm. Furthermore, IEC explained there was a need for comprehensive community engagement and monitoring program to establish an open line of communications to address complaints and to evaluate the effectiveness of controls, such as the recommendation, implemented by Viking in 2021, to not spread liquid mink manure on the oceanside of Route 80 in the summer. The elimination of summer manure spreading directly up wind of the southern part of Hearts Delight-Islington, during hot humid weather when the risk of odour effects is highest, (also requested by an operator of a tourism operation), appears to have contributed to fewer odours in 2021 as compared to 2020, however it is

recognized on-going engagement with the community is needed to further assess the effectiveness of this control. This control would also apply to the proposed expanded land base north of the existing pasture.

In 2022 Viking will proceed with a project to place covers on the liquid mink manure storage tanks; an action which will reduce odours from the tanks by 95%. This action combined with ceasing summer manure spreading on the ocean side of the highway are physical actions which will reduce odour effects on the community. These actions are clear, effective initiatives, which will facilitate the community engagement envisioned in the EIS, including the preparation of Odour Management and Control Plan, as recommended by Viking's consultants, IEC.

Viking consulted directly with the tourism industry to identify the effects of the current mink farm and the potential impacts of diversification to cattle farming. These discussions revealed the primary concerns were the implications of strong farm odours for those businesses located north of Viking Fur Farm, particularly during the summer, which is the busiest time of the year for tourism. These conclusions were consistent with the odour and weather diaries maintained by residents as part of IEC's study and comments received during the Public Meetings/Information Sessions.

The Guidelines also required Viking to identify wetlands and water courses and to discuss the potential for impacts of an expanded agricultural land base, including manure spreading. This requirement is typical for any such studies; however, it was apparent this concern had been expressed by the public to Government during the preparation of the EIS Guidelines. Furthermore, concerns were stated at the Public Meeting/information session and by individuals during the preparation of the EIS. The proposed farm land expansion in the area of Sooleys Marsh and Highland Marsh was considered very carefully and in the spirit of the precautionary principle, buffers (setbacks) were expanded to 50 metres between wetlands/water course and proposed farm development. These buffers exceed Government policy for farm development near water courses and wetlands. Buffers were also expanded along Brook Cove Brook to match buffers stated in the municipal plan of Hearts Delight -Islington. Of particular note, the wetlands in the area of Sooleys Marsh and Highland Marsh would not be developed for farm use.

Viking Fur Inc. is required to expand its land base for the spreading of current production of liquid mink manure. This was a recommendation of the Farm Practices Review Board, pursuant to the *Farm Practices Protection Act* in 2015 and more recently as required in the farm's nutrient management plan as prepared by the Department of Fisheries, Forestry and Agriculture in 2021 which states the existing farm requires approximately 150 more acres of land to manage the current production of mink manure. At present, manure spreading exceeds the nutrient requirements of forage/grass production and it has been determined that some fields have excessive levels of nutrients in the soil. If this trend continues, it would increase the likelihood for contamination of surface or ground water. The expanded land base would allow the farm to comply with agronomic and environmental requirements while increasing forage production. The availability of low-cost forage provides the opportunity for the farm to diversify into beef. This would allow

the farm to contribute to the Province's aim of enhancing food security through increased production of locally grown food.

Viking has deleted portions of lots 1, 2, 4, 5 and 7 totalling 45 acres for physical and social environmental reasons. The amendment to lot 1 was to provide a buffer between the former waste disposal site and to remove land which was not suitable for farm development. A portion of lot 2 was reduced to provide more buffer between the farm and private land ownership. A significant portion of lot 4 was deleted because it involved a stream crossing and an area of wetlands. As a result of this decision there are not any stream crossings associated with the project. The wetlands of Sooleys Marsh and Highland Marsh will not be developed for farm use. Combined with the extended width of the buffers, the protection of water quality has been assured. The buffers, include about 16 acres along lots 4b and 3 would not be available for the proposed expansion of pasture/forage land. Consequently, buffers and deletions have reduced the acreage requested by Viking by about 60 acres.

Viking has concluded, from an agronomic, environmental and economic perspective, farm diversification into cattle can only be accomplished by consolidating the farm at the Cavendish location. The cost, inefficiencies of multiple locations, combined with the lack of alternative sites is the basis for this conclusion.

In addition to the refinements identified in this conclusion, there are other mitigative measures stated and discussed in section 7.1 of the EIS. Furthermore, Viking is required or has agreed to the following commitments:

- An Emergency Contingency Plan is included in the EIS. If the project was approved
- Environmental Effects Monitoring Plan/follow up plan and an Environmental Protection Plan
- Environmental Protection Plan
- An Odour Management Control Plan; including community engagement.

As a result of the proposed Cattle farm, the EIS has resulted in multiple commitments and actions in respect to the existing mink farm.

Viking's proposal represents a sustainable business, where by-products of the local food and marine industry are used as a food source for the farm's production of mink, which are marketed outside the Country. The manure provides the nutrients for the production of forage which would be fed to beef, producing a product which keeps money on the Province. The expanded pasture and forage land are necessary to meet provincial requirements for manure management and the permanent cover of forage/grass will absorb carbon, reducing the release of greenhouse gases. The existing project and proposal represent an excellent example of a circular, independent economy based on the use of locally sourced materials to produce agricultural products.

The Province of Newfoundland and Labrador policy has been to encourage and expand the production of locally grown agricultural products, including beef to improved food security. In 2021/2022 the inflation of the cost of food has been a frequent news item. As recently as January 29, 2022, researchers at Dalhousie University concluded climate change in western Canada, specifically drought conditions resulted in the reduction of herds due to lack of feed availability. The reduction of supply will contribute to increase costs of beef. This is an example which supports the Province's efforts in respect to food security; Viking is prepared to respond to the challenge.

In order to be sustainable, the farm operation must meet the needs of the present without compromising the ability of future generations to meet their own needs. Concurrently, farm must operate in a manner which does not compromise the needs and aspirations of the community, of which Viking is a part and has contributed to in terms of employment and the purchase of goods and services. The proposed cattle farm has resulted in thorough scrutiny of the existing mink farm which has resulted in mitigation actions in regards to odour.

The EIS concludes the cattle farm would not increase odour effects on the community; that controls on the existing mink farm and proposed manure spreading on new land outside of the summer, would reduce odour impacts on stakeholders. The comprehensive evaluation of the EIS, has resulted in the reduction of the acreage of proposed land parcels, including wider buffers to protect water quality. The evaluation of other controls and the handling of complaints would require the future engagement of the community, which would be developed in the Odour Management Control Plan.

10.0 Public Participation

The Environmental Assessment process, for the preparation of an EIS included a comprehensive public consultation, including:

- Public registration of the initial proposal (description of the project proposal)
- Public review of the Guidelines for the preparation of the EIS
- Public Meeting and Information Session
- Direct consultation with the Tourism industry
- Community based engagement as part of the Odour Component Study.

This section consists of the meeting notes from the Public Meeting/Information Session which was held at the Cavendish Community Centre on May 19, 2021 at 1pm and 6pm. The other public consultations have been previously discussed in the EIS.

Promotion:

Promotion of meeting was completed via Telegram post (criteria of posting based on EIS guidelines) May 1st, May 15, May 17 and May 18th, 2021

Advertisement for meeting sent to the Town of Whiteway, Town of Hearts Delight-Islington and Local Service District of Cavendish with request to share on their community Facebook page, community events page and/or website. 8.5x11” poster in all local retail stores as well as Post offices in same communities. Facebook sharing of meeting ads also by local residents.

Meeting #1 (1:00pm-4:00pm)

Attendance

Participants: Peter Noer Erik Dalsager Paul Kirby IEC
Hazen Scarth Renee Gilbert

On Door: Kathy Warren

Attendees: Dwight Snow (DFFA) Sabrina Morris (DFFA)
Ray Walker (DFFA) Chris Nolan (Public Health, EIS Committee Rep)
Laura Lynn Berry Ken Hogan
Bev Bryant (Canning) Harold Burgess
James Chislett Claire Paige-Shiner
Yvonne Legge Anthony Legge
Clayton Branton Marie Jackson
Barry M Sooley

Meeting #2 (6:00 pm)

Attendance

Participants: Peter Noer Erik Dalsager
Hazen Scarth Renee Gilbert

On Door: Veronica Madsen

Attendees: Dwight Snow (DFFA) Sabrina Morris (DFFA)
Dennis Brown Mo Jackson
Joanne Sweeny (DECC) Jerry Byrne
Emily Fouchard Michelle Warren

Department of Fisheries Food and Agriculture (DFFA)
Department of Environment and Climate Change (DECC)

Peter Noer, President of Viking Fur Inc. welcomed people to the meetings
Renee Gilbert chaired the meetings

Hazen Scarth presented, with a Power Point, an overview of:

- The Environmental Assessment Process
- Description of the proposed beef farm

- Over view of three of four component studies: Evaluation of land parcels, Avifauna Control and Management and Tourism and Potential Impacts on Tourism Operators.
- Action Items (mitigation)

Paul Kirby, Independent Environmental Consultants, provided a virtual presentation with the aid of a power point of the Odour Component Study with a focus on the Community study, results and recommendations to manage odours.

Meeting Notes:

Power point presentations were used in both sessions. The following is an overview of questions and opinions presented by those in attendance. It was asked if the public could have a copy of the presentations.

Response: Whereas the presentations were made in the public, the public could have a copy.

Why was the meeting not streamed on Facebook?

Response: There was a concern if the Facebook feed would be strong/reliable enough to ensure the quality was sufficient for communicating the presentations.

Odours

Concerns of odours were expressed, notably from residents north of the farm in the area of Brook Cove. Some residents/property owners stated the manure should be referred to as sewage.

Response: Paul Kirby's presentation discussed odours in respect to the existing farm, manure spreading and cattle. He also presented the results of the Community Odour Study along with action items to reduce odours on the farm. The Study concluded odours are most likely north of the farm during prevailing summer south west winds. He explained manure spreading produces strong odours, which are most likely to impact the Brook Cove Area during the summer. It was noted that typically, strong, odours from manure spreading are limited to a few days two to three times a year. Kirby stated the cattle are not expected to produce significant odours. The proposed covering of the manure storage tanks and decision not to spread manure on the land on the Oceanside of Route 80 in the summer of 2021 are short term (immediate) actions which will reduce odours.

Flies:

Concerns of flies was expressed by a few people, particularly in the Brook Cove area.

Response: The cattle would not be confined in a barn or stockyard and furthermore the animals would be encouraged to move around the pasture by placing baled forage at different locations throughout the pasture for the health of the animals and to avoid over use of the pasture while avoiding the accumulation of manure. It was explained discussions with Environmental Protection officers in NL, industry/government representatives in the Maritimes and Ontario explained fly problems have not been a problem associated with cattle farms. In addition, a research project conducted by a graduate student at Memorial University, following two years of studies on land owned by Viking Farm, concluded the spreading liquid manure on forage lands would not be conducive to the propagation of the lesser house fly.

Liquid Manure:

It was asked why were there so many loads of manure being shipped to Alfred Bishop's land. It was stated Viking has not tried to reduce loads. There was a question as to the recent land clearing and subsequent manure spreading on a former fur farm Agricultural Crown land lease on the north side of Fox Farm Road.

Response: It was explained Viking informs the Town of Hearts Delight-Islington before manure is spread and that manure is not spread on Bishops property in the summer. Viking stated the amount of manure spread in the spring of 2021 was the same as in previous years.

In regards to the new land cleared on the north side of Fox Farm Road, Viking explained the land was a Crown Land Lease issued for fur farming which had been purchased by Viking. Viking stated it has no more land available for land clearing.

Traditional Use

Concerns were expressed about the loss of traditional access to the area for firewood, berry picking and, their perspective of the alienation of a large amount of land for the benefit of the owners with the benefit of very few jobs. An opinion was expressed the Viking ownership was 'greedy.'

Response: It was explained Viking would be required to provide access either through right of ways surveyed out of the Crown land lease(s) or suitable alternative routes to areas where domestic wood cutting is permitted.

Compared to the average individual's requirement for land, agriculture does need a relatively large land base. In this Province farm land is leased as an Agricultural Crown Land Lease with no provision for a freehold grant. The land can only be used for agriculture. The land must be used for farm use; if development clauses are not met the lease can be cancelled.

The cattle proposal will result in one or two jobs on the farm and additional worker (s) at the slaughter facilities. The Province has concluded there is a need to increase local food production including encouraging farms to increase beef production. The assertion of Viking ownership being greedy is difficult to respond to, however such development takes hard work, risk and investment in terms of time and financial resources.

Cattle:

A resident explained cattle have roamed off the farm property; that 'wondering cattle had left cow droppings. It was asked how long cow paddies take to break down.

Response: In regards to cow paddies, a specific time was not stated, however break down depends on the weather and time of the year. It was explained the farm must adequately fence the animals. Fences must be maintained to contain the cattle.

St. Davids (West Coast) Strong odours

One attendee expressed concern about the odour implications of a beef farm with references to odour issues on a farm in St. Davids on the west coast.

Response: Before a response could be provided, other issues were discussed. The farm on the west coast is a very large dairy farm which milks 1000 to 1200 cattle and uses a manure processing system which also treats other products, including marine sourced materials. The cattle are confined to a barn.

Farm Numbers: Current and Proposed:

It was also asked how many cattle were on the farm and how many does the farm propose to keep on the farm. It was expressed if the cows have one offspring a year, the numbers will quickly increase in a few years. There were questions as to whom would inspect the farm.

Response: Viking explained there were 27 cattle on the farm and that they would like to expand to 100 cows and yearly offspring which would add up to 200 cattle. (Note: the numbers would be 100 cattle and about 80 calves). Inspection would be the primary responsibility of Service NL and the Department responsible for agriculture.

It was asked if the farm had permits for this number of cattle.

Response: Director of Environmental Assessment, Joanne Sweeney stated the proponent would have to explain how many animals the farm proposes to place on the farm. It is this number on which the EIS would be assessed.

Overview of Cattle/livestock odours.

Response:

Throughout the two sessions there was discussion about odours which people have experienced from Viking Farm, manure spreading in the Mount Pearl area and odours associated with beef cattle farms, where cattle are pastured. Overall, there appeared to be an acceptance that beef pasturing does not produce significant odours; the spreading of liquid and dairy liquid manure produces seasonal odours and lastly, the mink farm itself

produces odours which are strongest during prevailing South west winds in the warm, still days of summer; particularly during periods of high humidity.

Real estate values:

A resident gave an example of a house which was valued at a discounted value and despite the listing of the discounted value, the house had not been sold after ~ a year on the market. This concern was voiced by another individual.

Response: Viking asked if the odours are so strong why have new houses been constructed with specific reference to a new subdivision. One attendee suggested the building lots were probably purchased ‘unseen.’

Divided Community:

It was explained the community was divided; those with jobs and with those who have been negatively impacted by flies and odours. It was stated the farm is too big for the area and any other expansion should be located at another location. It was expressed the community was established well before the farm unlike the Goulds where the farms community was established before residential expansion into the farming area.

Response: It was acknowledged that urban expansion of the Mount Pearl/Goulds area encroached upon the farm community; whereas Viking was established in recent years, however the former Development Association operated a fur farm in the area for several years, albeit at a much smaller scale. It is noted that dairy farms converted to liquid manure systems in the St. John’s area and combined with farmland expansion and urban expansion farm odours can be experienced throughout the Northeast Avalon when manure is spread. Farm expansion has taken place throughout NL, including Roaches Line and the Trans-Canada Highway, near Ocean Pond. Generally, residents recognize farm odours are associated with normal farm practice. However, Viking acknowledges farms must do whatever is reasonable minimize impact on neighbours.

Mink Manure of Forage/Suitability for cattle:

It was questioned if it was suitable for cows to feed on forage grown on land upon which manure has been spread. Specifically, a reference was made to antibiotics.

Response: At the meeting, Director Joanne Sweeney, Environmental Assessment Division, suggested the question about antibiotics and forage feeding could be addressed by the Canadian Food Inspection Agency. (CFIA) In another response the proponent explained manure spreading on pasture had been discussed and the possibility of sampling of bacteria on hay samples was being investigated. (laboratory in another province)

Since the meeting, CFIA stated: *“There are no restrictions in place for spreading manure from animals that have been treated with antibiotics. There are small amounts that possibly excreted, and this would be diluted out even further when spread and exposed to rain. In addition, the compounds present would not be considered stable when exposed to the elements for any amount of time.*

A restriction would be in place if the mink were fed prohibitive material, such as SRM – this manure would not be allowed to be spread on grass used for grazing cattle.” (SRM refers to ‘specified risk material.’

Furey, Karla, Veterinarian, Canadian Food Inspection Agency. May21,2021

The Chief Veterinary Officer, Director of the Animal Health Division, Dr. Beverley Dawe, explained there are no restrictions on manure spreading from antibiotic treated animals. It is common practice to use poultry and cattle manure as a fertilizer and manure from these species would also at times contain some antibiotic residues. Dr. Dawe further stated, veterinary prescriptions are required for all antibiotic use in animals including mink and this oversight helps with judicious use of antibiotics with the aim of reducing antibiotic resistance and residues. Dr. Dawe stated mink feeds should not include and specified risk materials. (SRM) SRM must be disposed in compliance with federal legislation. Viking Fur Inc. does not include SRM in the mink feed, all mink feed is produced on the farm.

Dawe, Beverly. Director of Animal Health Division. Government of Newfoundland and Labrador June 25, 2021.

Separation Distances:

A resident with family located south of the farm, with reference to a 1400 metre ‘sensitive area’ stated the proposal would be too close to his son’s residence located about 350 metres from the land proposed for pasture. (south) He explained his son’s family has had concerns of odours for several years and the removal of the wood proposed for clearing would increase odour levels. (manure spreading would take place closer to his son’s resident and the tree screen (buffer) would be reduced.

Response:

The concerns of the individual were further discussed after the meeting with the use of maps provided by Viking.

Ecological Damage

An attendee expressed her opinion the land clearing would result in extensive ecological damage to the area. Concerns were expressed of deforestation and clearcutting.

Response: At the meeting concerns of the impact for ecological damage was expressed a few times, although specific concerns were not stated, the conversion of forested land to hay land was the basis of concerns.

It was explained the proposal would result in the establishment of approximately 200 acres of additional farmland. In view the detailed study area includes approximately 3000 acres, the additional land clearing amounts to approximately 12% of the area. It was explained the expansion would not result in extensive areas of land clearing to create a landscape similar to established extensive farm areas in other jurisdictions. Furthermore, not all the land on Crown Land Leases would be cleared for the following reasons:

- some land will not be suitable for clearing.
- buffers will be maintained along watercourses and boglands
- windrows will be left in or alongside fields

Action items in the presentation included buffers along watercourses and boglands was discussed as an effective means of protecting water quality. Furthermore, one significant lot (4 south) was deleted, in part because a major tributary of Brook Cove Brook would have to be forded, by a bridge or large culvert. Furthermore, the bird study indicated the highest songbird numbers were along borders of different habitats.

It was explained that much of the land under application has been cut for firewood. Furthermore, the farm will facilitate access to allow ongoing wood cutting. A map illustrating the forage suitability of land in the detailed planning area, showed most of the land beyond the proposed lots is not suitable for forage land expansion. It was explained there was little additional potential in the area for further expansion.

Mapping:

An attendee explained a parcel of land recently acquired by the farm was not included on the maps used in the presentation. (Mason Walsh)

Response: It was agreed any such properties used by the farm (or proposed) must be identified. It was explained there was a reference in the slide show that a portion of the referenced property was used by the proponent to pasture cattle. It was also explained it was only recent the farm initiated a discussion to purchase of the property. All properties used by the proponent will be mapped.

Land identified as ‘unsuitable’

It was asked why areas on the forage suitability mapping labelled ‘unsuitable’ were wanted by Viking

Response: The Forage suitability map includes areas as ‘unsuitable’ for *forage*. On the interior side of Highway, proposed for forage, there are very few areas ranked as unsuitable for forage which are under application to the Crown Lands Branch. On the oceanside, there are areas ranked as unsuitable for forage within the parcels under

application. However, whereas it is proposed to develop these lands for pasture, the land can be of poorer quality and be suitable for pasture. After the second meeting this was explained to one person who asked about the unsuitable ratings with the help of a pasture suitability map which showed more land which was suitable for the proposed use, pasture development. (e.g., shallower, stonier more rugged land can be developed for pasture than for forage land.)

Brook Cove Brook; Potential for Impacts from manure spreading.

An attendee expressed concern about manure spreading on land south of Brook Cove Brook. He stated the land slopes towards the brook and stated his concern the manure could damage water quality in the brook which flows to a swimming hole near Route 80.

Response: In the Action Items it has been explained the boundary of lot 7 had been amended to create a 90 metre buffer between the proposed farm development and Brook Cove Brook. This buffer is consistent with the environmental protection land use designation in the Hearts Delight-Islington Municipal Plan for that portion of the Brook located between Outside Island Cove Pond and the Ocean. The 90-metre buffer exceeds provincial requirements and is much wider than buffers in other jurisdictions which will be discussed in the EIS.

Communication:

It was expressed there is little communication between the farm and residents, especially if there is a fly or odour issue. One attendee suggested the farm could provide updates on a website administered by the farm. Other suggestions including the use of other social media used by local municipalities.

Response: It was recognized there is a need for improved communication which will in part be addressed through the requirement of the EIS Guidelines for the preparation of the EIS. Specifically, the completion of the following will facilitate communications:

- Environmental Emergency Contingency Plan
- Personnel Emergency Response Plan
- Environmental Effects Monitoring plan and follow up plan
- Emergency Protection Plan

Viking explained the Company had to close their Web site because it attracted threatening comments towards the farm and their families.

Alternate location:

It was stated the expansion should not take place as proposed. It was stated the additional land should be located in the interior of the Peninsula. It was explained by the attendee he was not aware of suitable options, however concluded considering the size of the peninsula, there should be sufficient, suitable land. It was also explained there was an

appreciation/acceptance of the concept of expanding into beef cattle, to consume forage which is grown on hay land by the farm as a result of typical farm practice where manure is used to grow hay, however the attendee said the location is too close to the community and therefore unacceptable.

Response:

The proposal would allow the farm to consolidate its operations in proximity to the existing farm. The establishment of a farm business at another location infers capital costs for equipment to transfer liquid manure, flatbeds to ship forage, access road construction, along with operational costs related to the transportation of hay and manure. If cattle were also kept at other distances, it would be more challenging to manage the animals, provide security and possibly ship the animals to the home farm.

The Trinity Bay/Conception Bay Peninsula includes very little land suitable for farm development, particularly forage land. Furthermore, as illustrated in the Provincial Land Use Atlas, much of the area has been designated/zoned for uses other than agriculture, notably protected water supplies, municipal designations, electrical reservoirs, cabin development areas, municipal, forestry etc. Furthermore, access would require the construction of resource access roads with specifications suitable for trucks and equipment which must be suitable for highways and farmland which infers a significant expense.

Covering of the Manure Tanks:

In response to an odour control measure, whereby the manure tanks would be covered, there was a question as to how would the gas be released. (safety concerns; odour impact if suddenly released)

Response: It was explained, tank covers are made of different types of materials and in the case of the proponent the proposal would be to use organic sources used on the farm, likely bedding and hay. The effectiveness of tank covers ranges from about 40% to 85%. It was explained odours/gases would combine with the liquid. In addition, the cover would minimize the release to gases thereby limiting the opportunity for significant levels of odours to be released during weather conditions which would result in the highest opportunity for odours, such as a combination of hot, muggy still days. It would also lessen the impacts of variable wind speeds. The proponent is committed to covering the tanks; the type of cover to be determined.

Community Odour Study:

Paul Kirby, Independent Environmental Consultants, (IEC) described the aim of the community odour study was to obtain community perspectives of odour, intensity, frequency, type in respect to wind directions over a 40-day period from August to September.

Some attendees questioned as to who completed the surveys and whether or not they were farm workers.

Response: It was explained the aim was to obtain an even distribution of participants north and south of the farm. From the beginning, participants were informed their participation would be kept private. Several people declined to participate in the study through the maintenance of daily diary. An attendee explained when he determined the study was being paid for by the Proponent he refused to participate as he felt the study would be biased. The completion of the diary required a considerable effort whereby odour and weather were recorded for 30 days. People perceive odours differently. The Study was designed to record people's perceptions on odour and meteorological observations to best understand what the community was experiencing in late summer of 2020. This information was used to fully understand the relationship of odours and wind and how residents perceive them. This information is then used to plan future farm activities such as the mitigation action items proposed by IEC.

Tourism:

It was asked if Hazen Scarth 'actually' talked to the tourism industry about the proponent's project.

Response: Yes, nine operators were contacted via telephone in the fall of 2020.

Results of the Public Information Session:

It was asked if the public session was recorded and would their concerns be recorded. The public meeting process was questioned and it was suggested the "discussion would fall on deaf ears."

Response: It was stated the sessions were recorded. During the proponent's presentation it was explained the results/discussion of the session would be included in the Environmental Impact Statement which would be made public, with an opportunity for the public to further comment before Government's final review.

Government Funding of the Farm employment:

There were questions/comments about Government funding of employment on the farm with specific reference to the Foreign Workers Program. Concerns were expressed the proponent was hiring workers with Government financial assistance. How much of the payroll was being funded by Government?

Response: Viking explained they participated in the foreign workers program as the Company was not able to obtain enough workers from the region. Viking pays the salaries of the farm workers.

11.0 Environmental Protection Plan Outline (EPP)

As required in the EIS Guidelines, Viking Fur Inc. would prepare an EPP for the construction and operation of the Cavendish Beef Farm Project for approval by the Minister of Environment and Climate Change subsequent to the completion of the EIS, prior to the initiation of the project. The following is an overview of the Table of Contents for an EPP.

1.0 Introduction

1.1 Viking's Environmental Policies: *Describes the management responsibility and accountability for the implementation of Viking's environmental policy.*

1.2 Purpose of the EPP: *Describes the EPP as a stand-alone document targeting staff with responsibilities for occupational health and safety and environment during the construction and operation of the proposed cattle farm and the ongoing operation of the mink farm component of the farm. The EPP will also target government surveillance staff.*

1.3 Organization of the EPP. The EPP will include the following:

- *Proponents environmental policies*
- *Permit application and approval planning*
- *Statutory/regulatory requirements*
- *Environmental protection measures*
- *Mitigation measures*
- *Environmental compliance monitoring*
- *Contingency planning for accidental and unplanned events*
- *Revision procedures and contact lists*

1.4 Environmental Orientation: *Describes the environmental orientation to staff based on the responsibilities to staff in regards to their work on the farm.*

1.5 Project Description: *Provides a brief description of the scope of the proposed project and of the major components of the existing mink farm*

2.0 Environmental Concerns:

2.10.1 Construction (farmland development and cattle farm) Environmental concerns. *Lists the potential for unplanned events which could produce negative environmental events.*

2.10.2 Operation and Maintenance Environmental Concerns. *Lists the environmental interactions during the operation of a cattle farm, including the use of land for grazing, manure spreading and harvesting. Lists the potential for unplanned events that could produce negative environmental effects.*

2.10.3 Operation and Maintenance Environmental Concerns: *Lists the environmental interactions with the ongoing operation of the mink farm and the potential for unplanned events which could cause environmental impacts.*

3.0 Environmental Protection Procedures

3.1 Introduction: *Describes the procedures which will be included in documents based on field, cattle and land development activities.*

- 3.2 Storage, transportation, handling and disposal of fuel and other hazardous substances.
- 3.3 Storage and handling of mink mortalities and carcasses
- 3.4 Storage and handling of cattle mortalities
- 3.5 Manufacturing, storage and distribution of mink feed.
- 3.6 Protection of water quality
- 3.7 Farm equipment maintenance
- 3.8 Storage and transportation of mink manure
- 3.9 Spreading of mink manure
- 3.10 Odour Control
- 3.11 Pasture management
- 3.12 Farm land development, domestic cutting, land clearing
- 3.13 Protection of Migratory birds
- 3.14 Management of gulls
- 4.0 Contingency Plans
 - 4.1 Introduction: *Identifies plans applicable to unplanned events including locations of potential sites of such events.*
 - 4.2 Fuel or Hazardous Material Spills: *Includes Spill Response Plan and Emergency Plan*
 - 4.3 Liquid Manure Spill: *Spill Response Plan*
 - 4.4 Wildlife Encounters: *provides guidance as to appropriate response and available resources.*
 - 4.5 Extreme Weather events (wind, flooding)
 - 4.6 Power Outages
 - 4.7 Fires and Explosions
- 5.0 Legislation, Permits and Authorizations: *Lists relevant 'requirements.' Including copies of all permits, authorizations, compliance records.*
- 6.0 Contact List; *Emergency numbers, contractors, regulators, advisors*
- 7.0 Resource Material: *Guidelines, resource material, equipment relevant to environmental protection measures.*

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13.0 Personnel

Annamarie Buchheit

Avifauna Survey. Identification of Avifauna during three days of surveys in 2020 in respect to the Component Study: Avifauna Control and Management.

Education

BSc. Environmental Science, (Biology) Memorial University of Newfoundland, 2006.
Advanced Diploma, Geographic Information Systems, British Columbia Institute of Technology, Burnaby BC, 2009.

Related Experience

Avifauna Filed Program for Nalcor's Muskrat Falls Hydro Dam: Supervised teams of 5 conduction ground nesting bird surveys. NL, 2013, 2014.

- Vessel -based marine birds surveys at a proposed LNG site in Saguenay (QC, 2014)
- Contributed to EIS pertaining to rare birds on proposed rifle range expansion. Performed filed surveys. (NL 2015)

Hazen Scarth

Education: Memorial University of Newfoundland, BA (Honours) Physical Geography

Work Experience:

- 1990 to 2001, Director, Soils and Land Management Division, Provincial Agrifoods Branch (Land use, Soil survey, Soil, Plant and Feed Laboratory, Electrical/Access Roads Program)
- 2001 to 2005, Manager of Operations, Service NL (Public Health, Environmental Investigations and permitting, Electrical permitting, Slaughter facilities)
- 2005 to 2013, Manager of Environmental and Land Use Services, Agrifoods Branch, Department of Natural Resources.

14.0 Commitments made in the EIS

Environmental Commitments and Monitoring
Section 14

Table 24

Commitment	Section	Description	Monitoring
Water/wetland protection	6.2.5 8.0	Naturally vegetated buffers between farmland and watercourses/organic wetlands. (50 metres) Note: No stream crossings hence no need for culverts or bridges. No organic wetlands will be developed.	Buffers would be described and identified in the field with the land clearing contractor.
	2.3.3	Cleared farmland would be cultivated and seeded as soon as possible (same growing season) to establish a cover crop to minimize the likelihood of sediment movement.	Land clearing, cultivation and seeding will be assessed by the Agrifoods Development Branch to determine adherence to best management practices for land development.
	2.3.1 2.3.2.d	Lot 4a is deleted from the proposal 90 metre buffer along Brook Cove Brook	Lot 4a would be excluded from any applications to the Crown and would not be included in a legal land survey. The buffer would be described and identified in the field with the land clearing contractor.
Protection of avifauna	6.2.3.1	Viking would encourage residents, through approval letters, to cut firewood in the fall and winter outside of the breeding season.	Sample letters to residents would be provided to the Provincial department responsible for wildlife and forestry the and EA Division.
	2.3.3	Snag trees and raptor nests will be protected with a buffer suitable to the Provincial Wildlife Branch.	Provincial Wildlife will be informed of the location of the nests.
	6.2.3.1	Species of risk or any birds which are not familiar will be reported to the Provincial Wildlife Branch.	Monitoring will be done by reporting the presence of protected or 'non typical' birds.
Gull management	Avifauna Component Study 4.2.3c	Gulls are attracted to the milk farm by the manufacture and distribution of milk feed.	The farm will implement exclusion techniques. An audit will be done to identify access points and feed handling practices to determine alternatives to reduce gulls on the farm. A report will be available.
Flies	6.2.4.1	Cattle will move around the pasture to avail of feed. Whereas the cattle will not be confined to one area	The entire pasture will be visited at least every two weeks to identify potential fly sources such as an accumulation of manure or beef carcasses.

		there will not be an accumulation of manure and the subsequent creation of fly habitat.	
	6.2.4.1	The proposal is to spread liquid milk manure over the expanded forage and pasture farmland. Research by a graduate student at Memorial University concluded: "Liquid milk manure will be safe for field application neither will be an issue in breeding or attracting <i>F. canicularis</i> or any other group of flies."	It is proposed to monitor fly populations in consultation and engagement with the community. It is concluded this could be integrated with the odour engagement.
Odours	6.2.1.2; odour component study 6.2.4 6.2.4.2	Mitigative controls to reduce odour are listed in section 7.1 and 8	The implementation of controls will include consultation and engagement of the community to determine the effectiveness of controls. Odour management Control Plan would include the details as to the participation of the public.
No summer spreading of liquid milk manure on the oceanside of Route 80	2.3.3 6.2.1.2 7.1 8.0	Consultations with the tourism operators, input at the public sessions and the results of community consultation related to the odour component study, identified the most sensitive area in respect to odours was between the southern part of Hearts Delight -Islington towards the farm.	The implementation of this and other controls would include consultation and engagement of the community to determine the effectiveness of the removal of summer spreading on the oceanside of Route 80.
Spreading of liquid manure Current administrative controls	7.1 8.0	Plan timing of manure spreading on favourable weather forecasts; notably wind direction, wind speed, high humidity. Evaluate other technologies, including on farm forecasting, to improve forecasting. Avoid weekends, community events etc. Inform the municipality before spreading	Consultation and engagement of the community to determine the effectiveness of spreading based on favourable weather forecasts.
Manure Storage (cover)	Odour component 6.2.4	Viking will cover the two liquid manure storages with a 'tent like' synthetic cover. Reports indicate a cover could reduce odours by up to 95%.	Viking will inform DECC once the cover is placed on the tanks
Manure Storage - Review anaerobic digester alternatives.	Odour component	Consider the evaluation of an anaerobic digester/membrane filtration system equipped with a bio filter to treat emissions.	Viking will monitor the effectiveness of the covered tank which will help to assess the digester, which would be a very expensive alternative.

<p>Mink barns</p> <ul style="list-style-type: none"> - Review options to reduce odour 	<p>Odour component</p>	<p>Other than maintain the barns as neat and dry as possible, without substantial reconstruction to a 'closed' system with scrubbers, there are not any adjustments which would make a significant change to odour from the barns.</p>	<p>Viking will assess the possibilities of bio-filter scrubbers and the potential of dietary changes. The farm will increase the frequency of dust removal. These actions will be reported to DOECC within a time period determined by Viking and DOECC.</p>
<p>Composting (fine tuning)</p> <ul style="list-style-type: none"> -Investigate the use of additives to reduce ammonia and odour - extend the maturation period - monitor the compost to ensure 0.6 metre cap; all compost ingredients are cover with a carbon source. 	<p>4.2.1 d 7.1 8.0</p>	<p>Most of the carcasses are composted in the winter; combined with effective mixtures of bedding (carbon) and carcasses (nitrogen) the risk of odour is minimized. With experience the 'art' of composting combined with the 'science' will improve the effectiveness of the compost process</p>	<p>Viking will maintain records of all steps of the composting process. Service NL will conduct visits at least twice a year. It is recommended that one of the visits be completed early in the composting process when the opportunity for odour is at the highest.</p>
<p>Investigate new technologies related to manure injection systems</p>	<p>3.1. f 7.1</p>	<p>Manure injection systems reduce odours when spreading manure. They are not suitable for Newfoundland conditions, hence are not used in the Province. Equipment build by Scandinavian companies has some promise, however initial investigations indicate they are used in conditions where the soils are deeper and less rocky as compared to Cavendish.</p>	<p>Viking will investigate the potential of manure injection systems.</p>
<p>Climate Change</p>	<p>4.2.1. b</p>	<p>More frequent storms; higher winds and precipitation will impact farm operations</p>	<p>Viking has improved structural integrity of one building and will monitor the condition of all buildings and fences to ensure they can withstand the weather events. The covering of the manure storage tanks will enhance storage capability by excluding rainfall from the tanks. Viking has improved back up electrical power systems in the event of grid power outages.</p>
<p>Noise</p>	<p>6.2.1.1</p>	<p>Noise associated with land clearing. (chainsaws and heavy equipment)</p>	<p>The noise levels should not impact residents, due to the location at distance to the community. Whereas, the land clearing would take place over 6 years, the Farm would have capacity to conduct land clearing on the north end of Parcel 2 and the south end of</p>

			parcel one outside of the summer season when outdoor activities would have the greatest chance of hearing noise related to the land clearing.
Forestry access; control cutting off and on leases.	2.3.3 6.2.3.1	Residents would be directed to specified cutting areas on leases outside of buffers. Access to cutting areas would be maintained.	If cutting took place outside of the Agriculture lease, Viking would advise the residents of the requirements for permits from the Crown. Access would be agreed upon with Forestry before lease were issued. Viking will identify cutting areas in the field. (ribbons) Issue letters for cutting on leases

<ul style="list-style-type: none"> Environmental Protection Plan (EPP); The EPP would be prepared and submitted for approval subsequent to the completion of the EIS, and prior to the initiation of project construction. (EIS requirement) 			The onus would be on Viking to submit the EPP as land development could not proceed until the EPP is approved by the Department of Environment and Climate Change. (DECC) Overview has been included in the EIS. (7.3)
<ul style="list-style-type: none"> Environmental Effects Monitoring Plan (EEMP) and Follow-up Program. Plan would be submitted subsequent to the completion of the EIS but prior to the initiation of project construction. (EIS Requirement) 			The onus would be on Viking to submit the EEMP as land development could not proceed until the EEMP was received by the Department of Environment and Climate Change. (DECC) Overview has been included in the EIS. (7.4)
<ul style="list-style-type: none"> If released, Viking would inform the Environment Assessment Division of the status of the project, including a copy of all permits, licences, certificates, approvals and other authorizations required for the project, one year from the date of the release letter and updates. 			This would be a requirement of an approval by the Minister of DFAA) If not received within the year, it is possible the approval could be withdrawn by DECC.
<ul style="list-style-type: none"> All activities associated with the project will be conducted in accordance with the Occupational Health and Safety Act and its regulations. This includes the responsibility for ensuring contractors comply with this legislation. 			The Department responsible for Occupational Health and Safety make regular visits to the farm.
<ul style="list-style-type: none"> Develop an Odour Management and Control Plan for the entire operation. Operational management system which would address how odours will be managed and controlled so as to minimize community impacts. It would cover normal operations and foreseeable accidents and incidents. 			This an integral component of ongoing mitigation efforts which would have a significant community component to determine effectiveness of controls (notably in respect to odour) and to encourage productive communications.

15 Copies of Reports

Printed and electronic must be submitted to the Department of Environment and Climate Change as follows:

- 12 electronic copies (USB Drives)
- 12 paper copies.

In addition, copies of the stand-alone studies, notably the Component Studies, must be provided in the manner as specified above. Furthermore, Viking is required to provide a printed copy of the EIS and the stand-alone studies at a public viewing centre in the project vicinity and in any additional communities to be designated by the Department of Environment and Climate Change.