

Growing Knowledge



Ministry of
Agriculture

Land Use Inventory
Reference Number: 800.510-72.2012

Barnston Island Summer 2010



Photo credit: Agricultural Land Commission, 2006. http://www.alc.gov.bc.ca/application_status/Barnston_is/Blortho.htm

**Strengthening Farming Program
Ministry of Agriculture**

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Acronyms

AAC	Agricultural Advisory Committee
AAP	Agricultural Area Plan
AGRI	BC Ministry of Agriculture
ALC	Agricultural Land Commission
ALR	Agricultural Land Reserve
ALUI	Agricultural Land Use Inventory
GIS	Geographic Information Systems

Definitions

General

Agricultural Land Reserve (ALR) – A provincial zone in which agriculture is recognized as the priority use. Farming is encouraged and non-agricultural uses are controlled.

BC Assessment – The Crown corporation which produces annual, uniform property assessments that are used to calculate local and provincial taxation. The database purchased from BC Assessment contains information about property ownership, land use, and farm classification, which is useful for land use surveys.

Cadastral – The GIS layer containing parcel boundaries, i.e. legal lot lines.

Crown ownership – Crown ownership includes parcels which are owned by municipal, provincial or federal governments. Parcel ownership is determined by the Integrated Cadastral Fabric maintained by the Parcel Fabric Section of the BC Government.

Farm classification for tax assessment – Applies to parcels producing the minimum dollar amount to be classified as a farm by BC Assessment. Local governments apply a tax rate to farmland which is usually lower than for other land. To receive and maintain the farm classification, the land must generate annual income from agricultural production.

Farm Unit – An area of land used for a farm operation consisting of one or more contiguous or non-contiguous parcels, that may be owned, rented or leased, which form and are managed as a single farm.

Land Cover

Anthropogenic – The term *anthropogenic* describes an effect or object resulting from human activity. In this report, the term anthropogenic refers to land cover originating and maintained by human actions but excludes farmed land cover; cultivated field crops, farm infrastructure, and crop cover structures.

Anthropogenic – Built up - Other – Lands covered by various unused or unmaintained built objects (structures) and associated yards that are not directly used for farming.

Anthropogenic – Managed vegetation – Lands seeded or planted for landscaping, dust or soil control but not cultivated for harvest or pasture. Includes parklands, golf courses, landscaping, lawns, vegetated enclosures, remediation areas.

Anthropogenic – Non Built or Bare – Human created bare areas such as extraction or disposal sites. Includes piles, pits, fill dumps, dirt parking or storage areas.

Anthropogenic – Residential – Lands covered by built objects (structures) and their associated auxiliary buildings, yards, roads, and parking. Includes single and multifamily dwellings, and mobile homes.

Anthropogenic – Residential footprint – Includes the main residence plus its associated yard, driveway, parking and any auxiliary buildings or structures. When two residences are on a property, areas associated to both (such as shared driveways, parking or yard), are assigned to the closest residence.

Anthropogenic – Settlement – Lands covered by built objects (structures) and their associated yards, roads, and parking. Includes institutional, commercial, industrial, sports / recreation, military, non linear utility areas and storage / parking.

Anthropogenic – Transportation – Lands covered by built objects (structures). Includes roads, railways, and airports and associated buffers and yards.

Anthropogenic – Utilities – Lands covered by built objects (structures). Includes linear features such as pipelines or transmission lines.

Anthropogenic Waterbodies – Areas covered by water, snow or ice due to human construction. Includes reservoirs, canals, ditches, and artificial lakes - with or without non cultivated vegetation.

Crop cover structures – Land covered with built objects including permanent enclosed glass or poly structures (**greenhouses**) with or without climate control facilities for growing plants and vegetation under controlled environments, and barns used for growing crops such as mushrooms. Excludes non permanent structures such as hoop or tunnel covers.

Cultivated field crops - Land under cultivation for harvest or pasture. Includes crop land, fallow farmland, unused forage or pasture, un-housed container crops and crops under temporary covers. Excludes natural pasture, rangeland, greenhouses, mushroom barns and other crop houses.

Farm infrastructure – Land covered by farm related built objects (structures) and their associated yards, roads, parking. Includes barns, storage structures, paddocks, corrals, riding rings, farm equipment storage, and specialized farm buildings such as hatcheries. Excludes greenhouses, mushroom barns and other crop houses.

Natural and Semi-natural – Land cover which has not originated from human activities or is not being maintained by human actions. Includes regenerating lands, and old farm fields.

Natural and Semi-natural – Grassland – Land cover dominated by herbaceous plants with long, narrow leaves characterized by linear venation; including grasses, sedges, rushes, and other related species.

Natural and Semi-natural – Herbaceous – Land cover dominated by low, non woody plants such as ferns, grasses, horsetails, closers and dwarf woody plants. If greater than 50% cover is grass, the land is categorized as grassland.

Natural and Semi-natural – Natural bare areas – Includes bare rock areas, sands and deserts.

Natural and Semi-natural – Natural pasture – Smaller fenced areas usually on private land with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock.

Natural and Semi-natural – Rangeland – Larger fenced areas usually on crown land with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock.

Natural and Semi-natural – Shrubland – Land where less than 10% crown cover is native trees and at least 20% crown cover is multi-stemmed woody perennial plants, both evergreen and deciduous.

Natural and Semi-natural – Treed - closed – Land where between 60 and 100% of crown cover is native trees.

Natural and Semi-natural – Treed - open – Land where between 10 and 60% of crown cover is native trees.

Natural pasture or rangeland – Land with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock. This land cover is considered “Used for grazing” and “Not used for farming” although usually these areas are extensions of more intensive farming areas.

Unmaintained field crops – Land under cultivation for field crops which has not been maintained for several years and probably would not warrant harvest.

Unmaintained forage or pasture – Land under cultivation for forage or pasture which has not been cut or grazed during the current growing season and has not been maintained for several years.

Unused forage or pasture – Land under cultivation for forage or pasture which has not been cut or grazed during the current growing season.

Livestock

Animal Unit Equivalent – A standard measurement used to compare different livestock types. One animal unit equivalent is approximately equal to one adult cow or horse.

Intensive livestock – Intensive livestock have specialized structures such as barns, feedlots, or stockyards designed for confined feeding at high stocking densities.

Non intensive livestock – Non intensive livestock have the ability to graze on pasture and often utilize non intensive barns and corrals/paddocks.

Scale of livestock operations – The scale system used in this report to describe livestock operations includes 4 levels:

- **“Very Small** Approximately 1 cow or horse or bison, 3 hogs, 5 goats or deer, 10 sheep, 50 turkeys, 100 chickens (1 animal unit equivalent)
- **“Small”** LESS THAN 25 cows or horses or bison, 75 hogs, 125 goats or deer, 250 sheep, 1250 turkeys, 2500 chickens (2 - 25 animal unit equivalents)
- **“Medium”** LESS THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5,000 turkeys, 10,000 chickens (25 - 100 animal unit equivalents)
- **“Large”** MORE THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5,000 turkeys, 10,000 chickens (over 100 animal unit equivalents)

Land Cover and Farming

Actively farmed – Land cover considered **Farmed** but excludes unused / unmaintained field crops, and unmaintained greenhouses. Does not include natural pasture or rangeland.

Farmed – Land cover directly contributing to agricultural production (both actively farmed and inactively farmed). Includes land in **Cultivated field crops, Farm infrastructure and Crop cover structures** (see individual definitions). Does not include natural pasture or rangeland.

Inactively farmed. Land cover considered “Farmed” but is currently inactive. Includes unused / unmaintained forage and pasture, unmaintained field crops, and unmaintained greenhouses or crop barns. Does not include natural pasture or rangeland.

Potential for farming – Land without significant topographical, physical or operational constraints to farming such as steep terrain, land under water, or built structures. For example, land with little slope, sufficient soils and exhibiting a natural treed land cover would be considered as having potential for farming.

Land Use

No apparent use – Parcel with no apparent human use; natural areas, long term fallow land, cleared land not in production, abandoned or neglected land, abandoned or unused structures.

Water management – Areas used to actively or inactively manage water; reservoirs, dikes, ditches, managed wetland.

Land Use and Farming

Used for farming – Parcels where the majority of the parcel area is farmed OR parcels which exhibit significant intensity of farming are considered “Used for farming”. Specifically, parcels that meet at least one of the following criteria:

- medium or large scale livestock, apiculture or aquaculture operations
- at least 50% parcel area in cultivated field crops (excluding unused forage or pasture)
- at least 50% parcel area built up with farm infrastructure
- at least 25% parcel area built up with crop cover structures (excluding unmaintained structures)
- at least 40% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure and small scale livestock, apiculture or aquaculture operations
- at least 33% parcel area in cultivated field crops (excluding unused forage or pasture) and at least 55% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure
- at least 10% parcel area in crop cover structures (excluding unmaintained structures) and at least 40% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure
- at least 20% parcel area and at least 20 ha in cultivated field crops (excluding unused forage or pasture)
- at least 25% parcel area and at least 10 ha in cultivated field crops (excluding unused forage or pasture)
- at least 30% parcel area and at least 5 ha in cultivated field crops (excluding unused forage or pasture)
- at least 10% parcel area and at least 2 ha built up with crop cover structures (excluding unmaintained structures)
- at least 20% parcel area and at least 1 ha built up with crop cover structures (excluding unmaintained structures)

Not used for farming – Parcels that do not meet the “Used for farming” criteria presented above.

Used for grazing – Parcels “Not used for farming” with a significant portion of their area in natural pasture or rangeland and evidence of active grazing domestic livestock.

Unavailable for farming – “Not used for farming” parcels where future agricultural development is improbable because of a conflicting land use that utilizes the majority of the parcel area. For example, most residential parcels are considered not available for farming if the parcel size is less than 0.4 hectares (approximately 1 acre) since most of the parcel is covered by built structures, pavement and landscaping.

Available for farming – Parcels that can be used for agricultural purposes without displacing a current use. Includes all parcels that do not meet the “Unavailable for farming” criteria.

Not used for farming but available – Parcels that do not meet the “Used for farming” criteria but can be used for agricultural purposes without displacing a current use .

Executive Summary

In the summer of 2010, the BC Ministry of Agriculture (AGRI) conducted an Agricultural Land Use Inventory (ALUI) for Barnston Island. The ALUI was funded in part by Metro Vancouver, and was completed with in-kind support from the farmers on the island.

ALUIs can be used to understand which agricultural activities occur in the surveyed area. Analysis of the data can be used to determine the capacity for agricultural expansion, and the amount of land within the Agricultural Land Reserve (ALR) that is not available for agriculture. The data can also be used to develop an agricultural water demand model for the surveyed area.

The ALUI for Barnston Island was conducted using a drive-by inventory that recorded land cover and land use on a per-parcel basis, as a “snapshot in time.” Two categories of parcels were included: i) all parcels completely or partially in the ALR; and ii) parcels classified by BC Assessment as having “Farm” status for property tax assessment.

The ALR on Barnston Island consists of 618 hectares. Ninety-nine percent of this, or 614 hectares was surveyed as part of this inventory. The remaining 4 hectares was outside of parcels in foreshore.

The data on each parcel was collected in two ways: land cover (the biophysical material at the surface of the earth) and land use (how people utilize the land). A parcel could have numerous land covers, but was assigned up to two land uses. These two methods of data collection allow different forms of analysis.

In terms of land cover in the ALR, 357 hectares (58%) was farmed (both actively and inactive), 48 hectares (7%) was anthropogenically modified, and 210 hectares (34%) was in a natural or semi-natural state. As mentioned above, 4 hectares (<1%) was not surveyed, and was not available for farming. Farmed land cover types included cultivated field crops, farm buildings and structures, and greenhouses. It is important to note that some of the anthropogenically modified land covers may support farming, e.g. farm residences, vegetative buffers, and farm roads, but were not defined as “farmed” land covers for the purpose of the land cover analysis. There was no land outside of the ALR that was farmed. See Table 1, and Maps B1 and B2 for details.

In terms of land use, the entire parcel was examined and a “Used for farming” definition was applied based on the percentage and/or scale of the parcel in cultivated crops, farm infrastructure, and/or certain scales of livestock production. For a more detailed definition of “Used for farming” see the Definitions section. In terms of land use in the ALR, 407 hectares (66%) was defined as “Used for farming,” 57 hectares (9%) was “Used for grazing”, and 151 hectares (24%) was “Not used for farming.” In this analysis, farm residential uses and farm roads were included in the “Used for farming” subtotal. As before, 4 hectares (<1%) was not surveyed, and was not considered to be available for farming. See Table 2, and Maps B3 and B4.

The inventory provided insight into the amount of ALR land available and with potential for farming by looking at land cover, land use, and physical site limitations. Land may be unavailable for farming because of existing land cover (e.g. houses, roads), or may have limited potential for farming because of physical limitations (e.g. steep slopes).

Of the 618 hectares in Barnston Island's ALR, 348 hectares (56%) was actively farmed. Another 22 hectares (4%) supports farming (e.g. houses, farm roads, farm buildings, etc). There are 20 hectares (3%) that are unavailable for farming due to land cover (e.g. non-farm residences), and 25 hectares (5%) with limited potential for farming due to flooding limitations. Four hectares were not surveyed and are not considered to be available for farming. That leaves 196 hectares (32%) of the ALR that is available and has potential to be farmed. Of the 196 available hectares, 35 hectares occur on parcels that are already "Used for farming" and 161 hectares occur on parcels "Not used for farming." See Table 4, Figure 6, and Maps B5 and B6.

On parcels "Used for farming" the largest gains for bringing more land into active agricultural production would come from clearing parcels with natural and semi-natural vegetation (27 hectares). See Figure 7 for details.

On parcels "Not used for farming" the largest gains for bringing more land into active agricultural production would come from clearing land with natural and semi-natural vegetation (100 hectares), followed by bringing land used for natural pasture into production (52 hectares). See Figure 8 for details. As two "Not used for farming" parcels have been purchased by Metro Vancouver as park land, a choice would need to be made as to whether agriculture or conservation would be the primary use of those parcels.

In terms of farming activities, two of the land covers were examined in detail: cultivated field crops and greenhouses. The top three field crops were forage and pasture (263 hectares), cranberries (86 hectares), and mixed vegetables (less than 1 hectare). One property contained a poly greenhouse (for herb production) which covered less than 1 hectare.

Irrigation use was captured by crop type and irrigation system type, to aid in developing a water demand model for agriculture in Metro Vancouver. All 86 hectares of cranberries were irrigation by sprinkler system. Most other crops relied on unmanaged sub-surface water.

Livestock activities were also recorded, but are very difficult to measure using a windshield survey method. Livestock may be in barns, may be mobile, and may utilize more than one parcel. The inventory data does not identify animal movement between parcels that make up a farm unit, but reports livestock at the parcel where the animals or related structures were observed. The Barnston Island inventory results showed that equines were the most common type of livestock activity (with 5 out of 18 activities), followed by beef (with 4 out of 18 activities). There was one intensive dairy operation. No actual livestock numbers were obtainable through the survey, so the results were reported as a range in terms of animal unit equivalents for each parcel. See the Definitions section for more information.

On-farm value-added activities were only observed on one parcel with a seasonal farm stand.

In terms of condition of ALR lands, further analysis was conducted on all 52 parcels. This additional analysis found that while Barnston Island has many small parcels, most of its ALR area is in larger parcels (i.e. 71% of the ALR is on parcels greater than 16 hectares). Over half (58%) of the parcels "Not used for farming" are less than four hectares in size.

Residential uses occurred on 27 parcels, and 11 of those parcels (41%) were "Not used for farming." There were no large or estate houses (e.g. greater than 5,000 square feet) on Barnston Island.

Agrologist Comments

Barnston Island has been in agricultural production for over a century. Its fertile soils and relatively flat topography are conducive to agricultural production. Historically, the island was home to several dairy farms.

Access to the island is provided by a free tugboat ferry. Load restrictions on the ferry ramps mean the ferry cannot accommodate large transport trucks, but it can accommodate milk trucks and smaller trucks. The island's relative isolation means that farms are less susceptible to trespass, theft and vandalism.

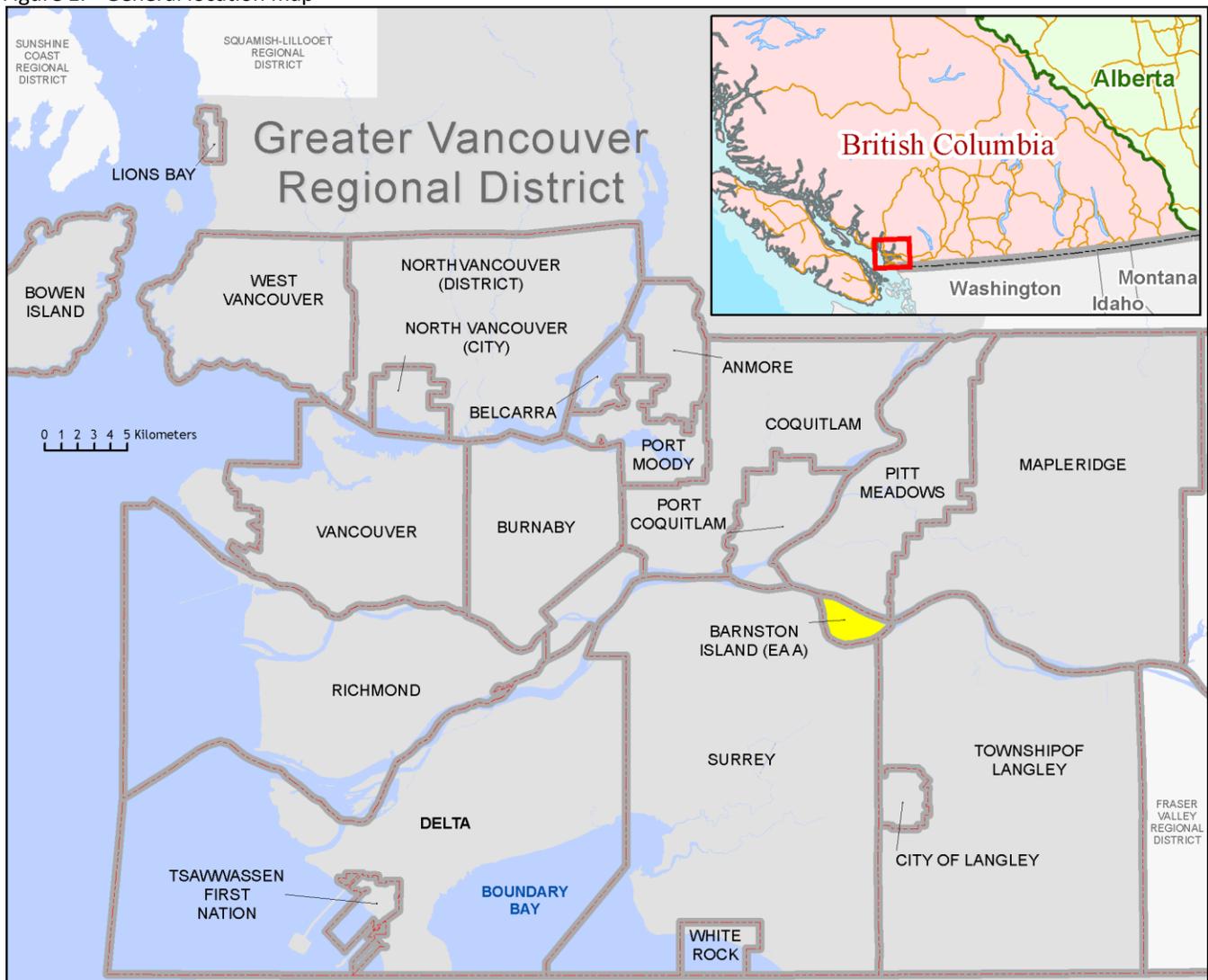
A perimeter dike fully encircles the island, and also serves as the main road on the island. The dike is defined as a "non-standard dike" which means the island is at potential flood risk during high river flow events like a spring "Freshet."

In 2006 there was an ALR application to exclude 37 parcels (totaling 441 hectares) for industrial purposes. The Agricultural Land Commission denied the application on the grounds that the lands have agricultural capability and are appropriately designated as ALR.

General Community Information

Barnston Island is located in the Fraser River between Surrey and Pitt Meadows in the Greater Vancouver metropolitan area of British Columbia. The island has a total area (including water) of 840.6 hectares¹ with most of its area within the Greater Vancouver Electoral Area A and the remainder within Barnston Island Indian Reserve No. 3. Although the island is unincorporated and not officially part of any municipality, mailing addresses on the island use Surrey as the city name. The island is accessed through the Barnston Island Ferry which is a short 5-minute ferry route from Surrey on 104 Avenue across Parson's Channel.

Figure 1. General location map



¹ Government of British Columbia; Ministry of Community, Sport & Cultural Development, Local Government Statistics
http://www.cscd.gov.bc.ca/lgd/infra/library/regional_stats11_summary.pdf

AGRICULTURAL LAND RESERVE

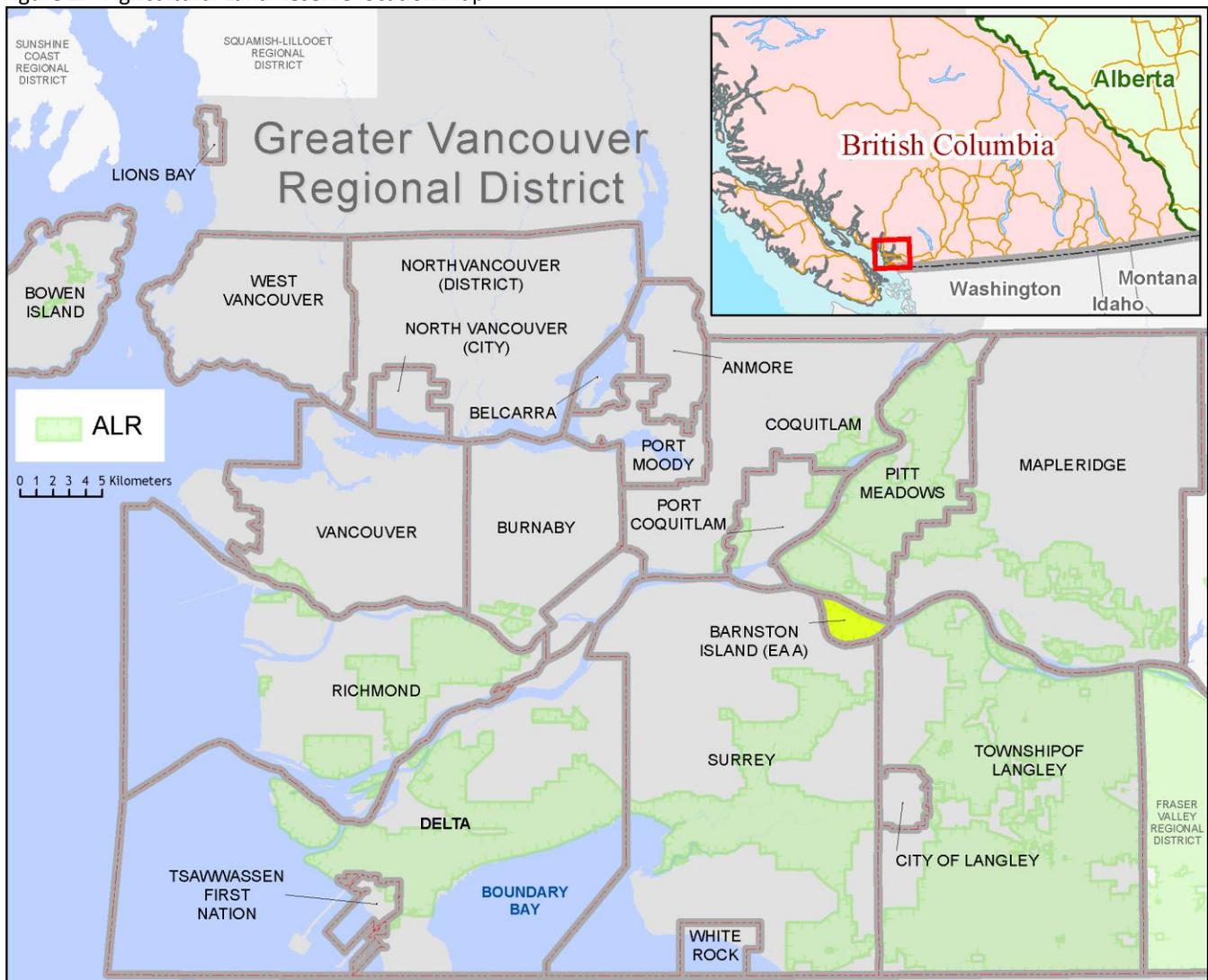
The Agricultural Land Reserve (ALR) is a provincial land use zone that was designated in 1973 in which agriculture is recognized as the priority use. Within the ALR, farming is encouraged and non-agricultural uses are controlled.

There are 60,554 hectares² of ALR land within the Greater Vancouver Regional District; 618 hectares³ or 1% is on Barnston Island.

The land area of Barnston Island is 622 hectares³. With 618 hectares⁴ in the ALR, over 99% of the land area of the island is in the ALR. This area includes:

- 614 hectares in surveyed parcels
- 4 hectares outside surveyed parcels in foreshore

Figure 2. Agricultural Land Reserve location map



² Provincial Agricultural Land Commission (ALC) Annual Report 2009/10 & 2010/11. http://www.alc.gov.bc.ca/publications/Annual_Report_2009-10_and_2010-11.pdf.

³ Calculated in GIS.

⁴ Agricultural Land Commission, ALR mapping, Land and Resource Data Warehouse, 2010-01-31 (area calculated in GIS).

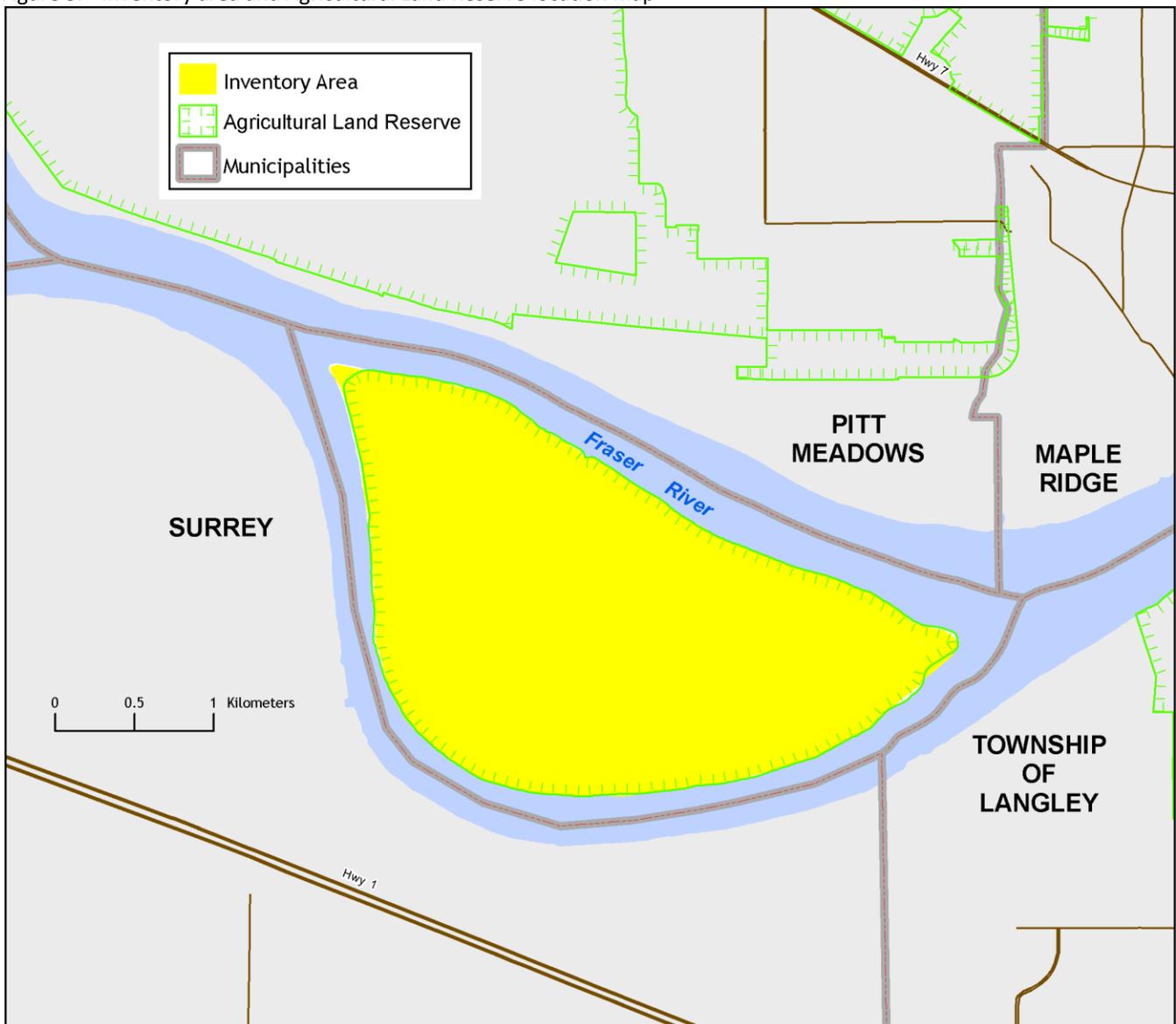
INVENTORY AREA

The total inventory area encompasses 52 parcels with a combined area of 614 hectares or over 99% of the land area of the Island. Included are all parcels

- completely or partially within the Agricultural Land Reserve (ALR)
- classified by BC Assessment as having “Farm” status for property tax assessment.

The amount of ALR land included in the inventory area is 614 hectares located on 52 parcels. This area is over 99% of the ALR on the Island. The remaining < 1% of the ALR was excluded from the inventory as it is in foreshore.

Figure 3. Inventory area and Agricultural Land Reserve location map



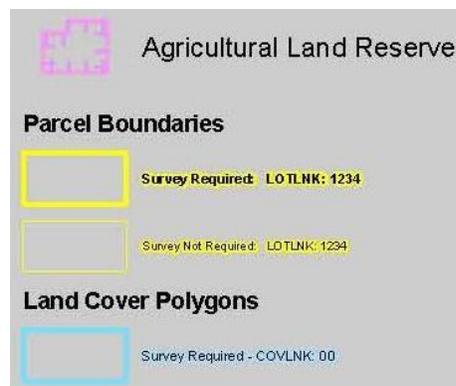
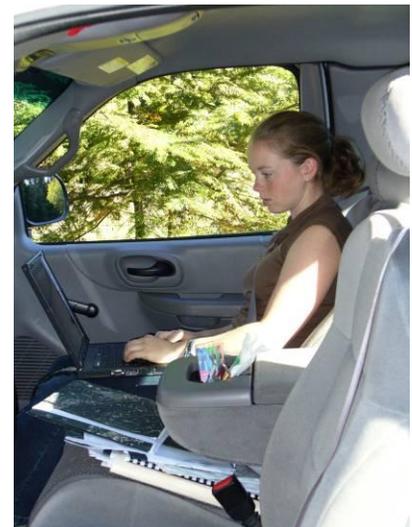
Agricultural Land Use Inventory

INVENTORY METHODOLOGY

AgFocus is an Agricultural Land Use Inventory System developed by BC Ministry of Agriculture's Strengthening Farming Program. AgFocus employs a "windshield" survey method designed to capture a snapshot in time of land use and land cover on legal parcels. For more information on AgFocus, please refer to these documents available from the Strengthening Farming Program:

- AgFocus – A Surveyor's Guide to Conducting an Agricultural Land Use Inventory
- AgFocus – Field Guide to Conducting an Agricultural Land Use Inventory
- AgFocus – A GIS Analyst's Guide to Agricultural Land Use Inventory Data

The Barnston Island land use inventory was conducted in the summer of 2010 by a BC Ministry of Agriculture Regional Agrologist assisted by a GIS Technician. The survey crew visited each property and observed land use, land cover, and agriculture activity from the road. Where visibility was limited, data was interpreted from aerial photography in combination with local knowledge. The technician entered the survey data into a database on a laptop computer.



Field survey maps provided the basis for the survey and included:

- The legal parcel boundaries (cadastre)⁵
- Unique identifier for each legal parcel
- The preliminary land cover polygon boundaries (digitized prior to field survey using aerial photography)
- Unique identifier for each preliminary land cover polygon
- The boundary of the Agricultural Land Reserve (ALR)
- Base features such as streets, street names, watercourses and contours
- Aerial photography (2009)



⁵Cadastre mapping (2010) was provided by Metro Vancouver Regional District.

DESCRIPTION OF THE DATA

For each property in the study area, data was collected on general land use and land cover. For properties with agriculture present, data was collected on agricultural practices, irrigation, crop production methods, livestock, agricultural support (storage, compost, waste), and activities which add value to raw agricultural products.

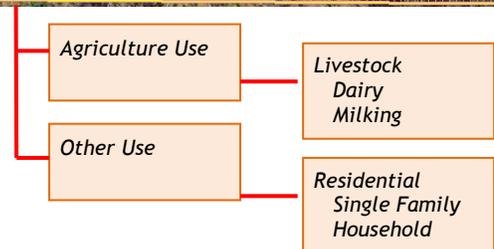
Once acquired through the survey, the data was brought into a Geographic Information System (GIS) to facilitate analysis and mapping. Digital data, in the form of a tabular database and GIS spatial layers (for maps), may be available with certain restrictions through a terms of use agreement.

General land use:

Up to two general land uses (e.g. residential, commercial) were recorded for each property based on an assessment of overall economic importance, the property's tax status, and/or the extent of the land use. The survey for general land use focuses solely on human use and considers:

- The actual human use of land and related structures and modifications to the landscape
- Use-related land cover (where land cover implies a use or is important to interpreting patterns of use)
- Declared interests in the land (which may limit use) such as parks.

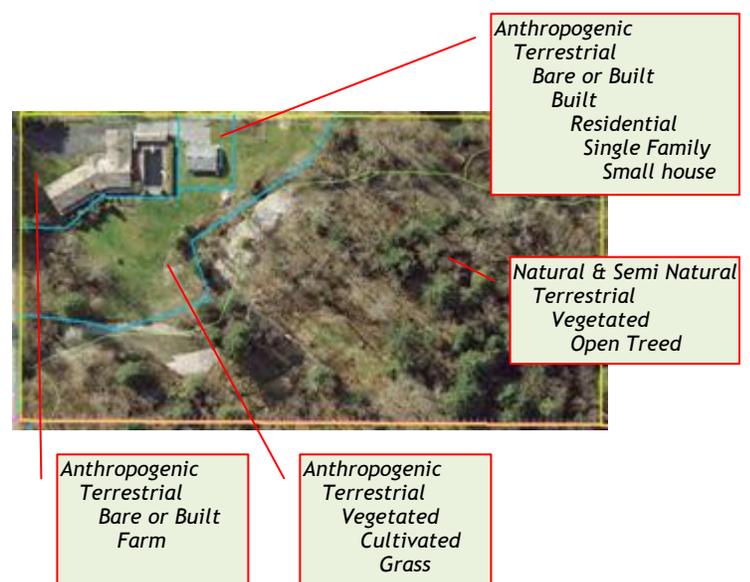
In addition, the availability of non-farm use properties for future farming was assessed based on the amount of potential land for farming on the property and the compatibility of existing non-farm use with future farming activities.



Land cover:

Land cover refers to the biophysical features of the land (eg. crops, buildings, forested areas, woodlots, streams). Land cover was surveyed by separating the parcel into homogeneous components and assigning each a description. Prior to field survey, polygons were delineated in the office using orthophotography. Further delineation occurred during the field survey until one of the following was achieved:

- Minimum polygon size (500 sq m ~5400 sq ft) or minimum polygon width (10 m ~33 ft)
- Polygon is homogeneous in physical cover and homogeneous in irrigation method
- Maximum level of detail required was reached



In most cases, more than one land cover was recorded for each parcel surveyed.

Agricultural practices: Surveyors recorded agricultural practices associated with crops or livestock activities. For example, if a forage crop was being harvested for hay, it was recorded. Irrigation was also recorded, including the type of system used.

Agricultural crop production: Crop production and crop protection methods observed on the parcel were recorded such as wildlife scare devices, temperature or light control, or organic production. Organic production is not always visible and may have been recorded based on local knowledge or farmer interviews.

Livestock: Livestock operations and confinement methods along with the scale of the activity were estimated and recorded. Livestock not visible at the time of survey may have been inferred based on grazed pastures, manure storage, size of barn and other evidence.

Agricultural support: Ancillary agricultural activities, such as storage, compost or waste, supporting the production of a raw commodity on a farm unit were recorded.

Agricultural value added: Activities that add value to a raw commodity where at least 50% of the raw commodity is produced on the farm unit were recorded. This value-added activity included processing, direct sales and agri-tourism activities.

PRESENTATION OF THE DATA

The data is presented in the form of summarized tables and charts. Absolute data values are preserved throughout the summarization process to maintain precision. In the final formatting of the summarized tables and charts, data values are rounded to the nearest whole number. As a result, data presented in the summarized tables and charts may not appear to add up correctly.

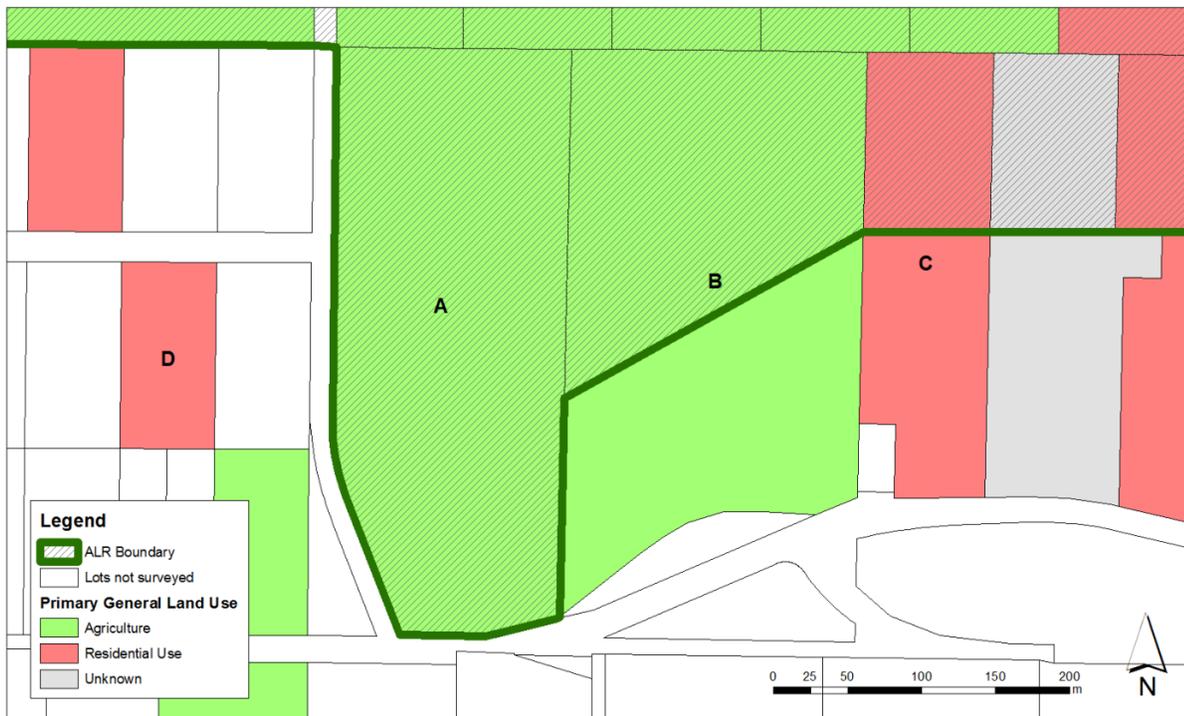
DETERMINATION OF PARCELS WITHIN THE ALR

Since much of the following analysis is parcel based, it is important to note that the ALR boundaries do not always coincide with parcel boundaries. As a result, many parcels have only a portion of their area in the ALR.

Figure 4 illustrates the frequent misalignment between parcel boundaries and the ALR boundary. Given that the dark green line represents the ALR boundary, Lot A is completely in the ALR and Lots B and C have a portion of their area in the ALR. Lot D is completely outside the ALR.

Many of the results presented in this report include 3 separate totals: the total parcel area, the portion of the parcel inside the ALR, and the portion of the parcel outside the ALR.

Figure 4. Parcel inclusion in the ALR



1. Land Cover and Farmed Area

Land cover describes the biophysical material at the surface of the earth and is distinct from land use which describes how people utilize the land.

Land use is surveyed by assigning the parcel up to two land uses. Some examples of land use are Residential, Commercial and Industrial. Refer to Section 2 of this report for more information on land use.

Land cover is surveyed by separating the parcel into homogeneous components and assigning each a description such as landscape lawn, natural open treed, anthropogenic wetland, blueberries, road, or small single family house. Most surveyed parcels have numerous different land cover types with each describing a different area of the parcel. Land cover more closely approximates the actual area of land in agricultural production or “Farmed” than land use.

Four land cover types are considered “Farmed”:

- Cultivated Field Crops: vegetation under cultivation for harvest or pasture including land temporarily set aside from farming
- Farm Infrastructure: built structures associated with farming such as barns, stables, corrals, riding rings, and their associated yards
- Greenhouses: permanent enclosed glass or poly structures with or without climate control facilities for growing plants and vegetation under controlled environments
- Crop barns: permanent enclosed structures with non-translucent walls for growing crops such as mushrooms or bean sprouts

Perennial crops that were not harvested or grazed in the current growing season (i.e. unused) and unmaintained greenhouses are still considered “Farmed” but are described as inactive.

Natural pasture and rangeland are fenced areas with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock. These areas are considered “Natural and Semi-natural” and not “Farmed” although these areas are usually extensions of more intensive farming areas.

Land cover types which may support farming, such as farm residences, vegetative buffers and farm road access, are not considered “Farmed”.

Table 1. Land cover and farmed area⁶

Land cover		ALR		Outside ALR (ha)	Total area (ha)	% of inventory area
		In ALR (ha)	% of ALR			
Actively farmed	Cultivated field crops	342	55%	-	342	55%
	Farm Infrastructure	6	1%	-	6	1%
	Greenhouses	<1	< 1%	-	<1	< 1%
Inactively farmed	Unused forage or pasture	8	1%	-	8	1%
FARMED SUBTOTAL		357	58%	-	357	58%
Anthropogenic (not farmed)	Managed vegetation	3	< 1%	<1	3	< 1%
	Non Built or Bare	4	< 1%	<1	4	< 1%
	Residential footprint	14	2%	<1	14	2%
	Settlement	1	< 1%	<1	2	< 1%
	Transportation	15	2%	-	15	2%
	Utilities	2	< 1%	-	2	< 1%
	Built up - Other	2	< 1%	-	2	< 1%
	Waterbodies	7	1%	-	7	1%
SUBTOTAL		48	8%	<1	48	8%
Natural and Semi-natural	Natural pasture	54	9%	<1	54	9%
	Vegetated	152	25%	4	156	25%
	Wetlands	3	< 1%	-	3	< 1%
SUBTOTAL		210	34%	4	214	35%
TOTAL		614	99%	4	619	100%
Not surveyed	Foreshore	4	< 1%			
TOTAL		618	100%			

Table 1 shows the extent of different land cover types across the entire inventory area.

On Barnston Island, 357 hectares of land is in "Farmed" land cover although 8 of these hectares are "Inactively farmed" in unused forage or pasture.

Refer to Maps B1 and B2 in Appendix B for more information.

⁶ Actively farmed. Land cover directly contributing to agricultural production. Includes cultivated field crops, greenhouses and farm infrastructure.

Excludes unused forage, unused pasture and unmaintained greenhouses.

Inactively farmed. Land cover considered "Farmed" but is currently inactive. Includes unused forage, unused pasture and unmaintained greenhouses.

Anthropogenic. Land cover originating and maintained by human actions but not farmed.

Cultivated Field Crops. Land under cultivation for harvest or pasture. Includes crop land, fallow farmland, un-housed container crops, crops under temporary covers. Excludes greenhouses and mushroom barns.

Farm Infrastructure. Lands covered by built objects associated with farming. Includes farm buildings, barns, stables, corrals, riding rings, and associated yards.

Managed vegetation. Lands seeded or planted for landscaping, dust or soil control but not cultivated for harvest or pasture. Includes parklands, golf courses, landscaping, lawns, vegetated enclosures, remediation areas.

Non Built or Bare. Human created bare areas such as extraction or disposal sites. Includes piles, pits, fill dumps, dirt parking or storage areas.

Residential. Lands covered by built objects (structures). Includes single and multi family dwellings, mobile homes and associated auxiliary buildings, parking and yards.

Settlement. Lands covered by built objects (structures). Includes institutional, commercial, industrial, sports / recreation, military, non linear utility areas and storage / parking.

Transportation. Lands covered by built objects (structures). Includes roads, railways, and airports and associated buffers and yards.

Utilities. Lands covered by built objects (structures). Includes linear features such as pipelines or transmission lines.

Built up - Other. Lands covered by built objects (structures) and associated yards that are not directly used for farming.

Anthropogenic Waterbodies. Areas covered by water, snow or ice due to human construction. Includes reservoirs, canals, ditches, and artificial lakes - with or without non cultivated vegetation.

Figure 5. Land cover and farmed area in the ALR⁷

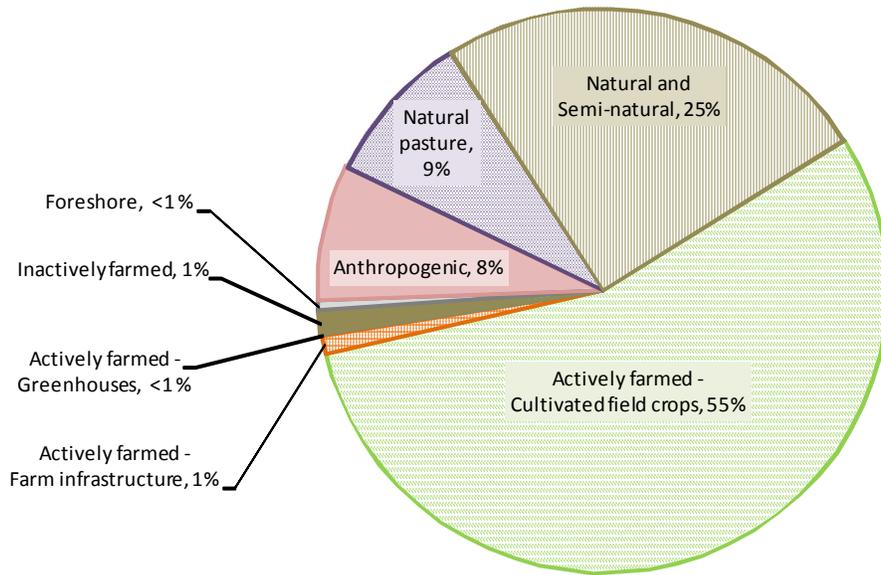


Figure 5 shows the proportions of the different land cover types across the ALR on Barnston Island.

Of the ALR land on Barnston Island, approximately 57% is “Actively Farmed” and 9% is in natural pasture.

Land used in support of farming such as farm residences, vegetative buffers or roadways is not included as “Farmed”.

⁷ Actively farmed - Cultivated field crops. Land under cultivation for harvest or pasture. Includes crop land, fallow farmland, un-housed container crops, crops under temporary covers. Excludes unused forage or pasture.
 Actively farmed - Farm Infrastructure. Land covered by built objects associated with farming. Includes farm buildings, barns, stables, corrals, riding rings, and associated yards.
 Inactively farmed. Land covered by unused forage or pasture and unmaintained greenhouses.
 Anthropogenic. Land cover originating and maintained by human actions. Excludes lands in agricultural production.
 Natural and Semi-natural. Land cover not originating from human activities or not being maintained by human actions. Includes regenerating lands and old farm fields.
 Natural pasture or rangeland. Fenced natural or semi natural vegetated areas that are used for grazing.

2. Land Use and Farm Use

Land use focuses solely on human use and describes the economic function or type of establishment using the parcel. A parcel can have a variety of activities on the land, yet serve a single use. For example, two parcels are said to be “Used for farming”, even if one is a dairy farm and the other is in blueberries. If one parcel is a hotel and the other is a retail store, they are both considered as “Commercial” land use.

Up to two general land uses (e.g. residential, commercial) are recorded for each parcel with each considered an equally important function of the parcel. Evaluation of land uses are based on overall economic or societal importance, the property’s tax status, and/or the extent of the land use.

Parcels where the majority of the parcel area is utilized for agriculture or parcels which exhibit significant evidence of intensive agriculture are considered “Used for farming”. For a complete definition of “Used for farming”, refer to the Definitions section of this report.

Parcels considered “Not used for farming” with a significant portion of their area in natural pasture or rangeland and evidence of active grazing domestic livestock are considered “Used for grazing”.

Many parcels “Used for farming” or “Used for grazing” are also used for other purposes such as “Residential” or “Industrial”. This report does not attempt to determine which use is primary.

Table 2. Land use and farming use by parcel

Parcel land use	ALR		Outside ALR (ha)	Total area (ha)	% of inventory area	Number of parcels	% of parcels	Average parcel size (ha)	
	In ALR (ha)	% of ALR area							
Used only for farming - No other use	159	26 %	< 1	159	26 %	12	23 %	13	
Used for farming - Mixed use residential	248	40 %	1	249	40 %	16	31 %	16	
USED FOR FARMING SUBTOTAL	407	66 %	1	408	66 %	28	54 %		
Used for grazing	No apparent use	40	6 %	< 1	40	6 %	2	4 %	20
	Recreation & leisure	11	2 %	2	13	2 %	1	2 %	13
	Residential	5	<1 %	< 1	5	<1 %	1	2 %	5
USED FOR GRAZING SUBTOTAL	57	9 %	2	58	9 %	4	8 %		
Not used for farming or grazing	Residential	60	10 %	1	61	10 %	9	17 %	7
	First Nations	56	9 %	< 1	56	9 %	1	2 %	56
	No apparent use	35	6 %	< 1	35	6 %	10	19 %	4
NOT USED FOR FARMING SUBTOTAL	151	24 %	2	152	25 %	20	38 %		
TOTAL	614	99 %	4	619	100 %	52	100 %		
Not surveyed	Foreshore	4	<1 %						
SUBTOTAL	4	<1 %							
TOTAL	618	100 %							

* See "Land Use" in the Definition section for terms used in this table.

Table 2 shows that 407 hectares or 66% of Barnston Island’s ALR is on parcels “Used for farming”. Another 57 hectares or 9% of the ALR is on parcels “Used for grazing”.

Most “Used for farming” parcels are also used for residential purposes with only 12 parcels or 26% of the ALR area exclusively “Used for farming”.

Refer to Map B3 and B4 in Appendix B for more information.

Most parcels “Used for farming” do not have 100% of their area in farmed land cover as they are also used for other purposes in addition to farming. Conversely, some parcels “Not used for farming” have farmed land cover but the extent or intensity is insufficient for the parcel to be considered “Used for farming”.

Table 3. Parcel use and land cover in the ALR

Parcel Land Use	Land Cover Category						Total	
	Farmed		Anthropogenic (not farmed)		Natural & Semi - natural		In ALR (ha)	% of ALR area
	In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area		
Used only for farming - no other use	129	21 %	10	2 %	20	3 %	159	26 %
Used for farming & residential	207	33 %	17	3 %	24	4 %	248	40 %
* USED FOR FARMING SUBTOTAL	336	54 %	27	4 %	43	7 %	407	66 %
Not used for farming	20	3 %	20	3 %	166	27 %	207	34 %
TOTAL ALR SURVEYED	357	57 %	48	8 %	209	34 %	614	99 %
Not surveyed	Foreshore						4	<1 %
TOTAL ALR							618	100 %

* Some parcels that are "Not used for farming" have "Farmed" land cover, however, the extent or intensity is insufficient for the parcel to be considered "Used for farming". For a complete definition of "Used for farming", refer to the Definitions section.

Table 3 combines land use and land cover on ALR land on Barnston Island. For example, parcels with the mixed use “Used for farming & residential” have a total of 207 hectares in “Farmed” land cover, 17 hectares in “Anthropogenic” (not farmed) land cover, and 24 hectares in “Natural & Semi-natural” land cover.

Although 407 hectares or 66% of the ALR on Barnston Island is on parcels “Used for farming” (refer to Table 2 above), only 336 hectares or 54% of the ALR is actually in “Farmed” land cover as many “Used for farming” parcels are also used for other purposes. In fact, the majority of the “Farmed” land cover is on parcels also used for “Residential” purposes.

There are also 20 hectares or 3% of the “Farmed” land cover on parcels considered “Not used for farming”. Included is Barnston Island Herbs, a small greenhouse and mixed vegetable operation which utilizes only 10% of its parcel area for farming.

3. Availability of Land for Farming

The demand for locally grown agricultural products is anticipated to grow as the population grows⁸. This demand along with a number of other factors, such as commodity types and farm management requirements (nutrient management, bio-security), will influence agricultural land needs in the future. Lands suitable for agricultural development may not be available and agricultural sectors that require large land bases, such as dairy or berry, may find it difficult to access sufficient land. Future agriculture growth may come from new commodity types and intensifying land use rather than finding new land for development.

The analysis of the availability of land for farming examines how much land is available for farming, has the potential to be farmed, and the characteristics of this land.

Properties currently “Used for farming” or with some agriculture present are considered available for farming regardless of any existing non-farm use. In addition, properties with an existing use compatible with agriculture, such as residential, are considered available for farming since the existing land use can be maintained.

Properties not currently farmed with an established non-farm use that is incompatible with agriculture are considered unavailable for farming. These properties tend to have very high land values making it more difficult for a farmer to acquire and convert this land to farmland.

On Barnston Island, properties in the ALR and “Used for farming” have an average assessed value of \$23,309 / hectare while properties in the ALR “Not used for farming” but available have an average assessed value of \$85,990 / hectare.

(Calculated using 2011 BC Assessment database – total property value)

Land is further assessed for its farming potential based on physical and environmental characteristics. Only areas in natural and semi-natural vegetation, areas in managed vegetation (managed for landscaping, dust or soil control), and non-built or bare areas are considered to have potential for farming. Areas covered with built structures, steep slopes or rocky soils and areas with operational constraints such as a very small size, are considered not to have potential for farming. For this analysis, it is assumed that removing built structures and fill piles, filling in water bodies or remediating slopes to create land with potential for farming would likely not occur.

⁸ In BC, the regulated marketing system requires that over 95% of our milk, eggs, chicken and turkey be produced in BC. The need to produce these products increases in direct proportion to population growth.

Table 4. Status of the land base with respect to farming

Land status		ALR		Outside ALR (ha)	Total area (ha)	% inventory area
		In ALR (ha)	% ALR Area			
Farmed	Cultivated field crops	342	55 %	-	342	55 %
	Farm Infrastructure *	6	1 %	-	6	1 %
	Greenhouses	< 1	<1 %	-	< 1	<1 %
ACTIVELY FARMED		348	56 %	-	348	56 %
Areas supporting farming	Transportation	9	2 %	-	9	2 %
	Artificial Waterbodies	5	<1 %	-	5	<1 %
	Residential footprint	5	<1 %	< 1	5	<1 %
	Built up - Other ++	3	<1 %	< 1	3	<1 %
SUPPORTING FARMING		22	4 %	< 1	22	4 %
Unavailable for farming due to land cover	Residential footprint	10	2 %	< 1	10	2 %
	Transportation	5	<1 %	-	5	<1 %
	Built up - Other ++	3	<1 %	-	3	<1 %
	Waterbodies	2	<1 %	-	2	<1 %
UNAVAILABLE FOR FARMING		20	3 %	< 1	20	3 %
Site limitations	Flooding	28	5 %	4	32	5 %
	Drainage	< 1	<1 %	-	< 1	<1 %
LIMITED POTENTIAL FOR FARMING		28	5 %	4	33	5 %
Available & with potential for farming	Natural & Semi-natural - Vegetation	127	21 %	-	127	21 %
	Natural pasture or rangeland	52	8 %	-	52	8 %
	Unused forage or pasture	8	1 %	-	8	1 %
	Natural & Semi-natural - Vegetated wetlands	3	<1 %	-	3	<1 %
	Anthropogenic - Non Built or Bare **	3	<1 %	-	3	<1 %
	Anthropogenic - Managed vegetation +	2	<1 %	< 1	2	<1 %
AVAILABLE & WITH POTENTIAL FOR FARMING		196	32 %	< 1	196	32 %
TOTAL		614	99 %	4	619	100 %
Not surveyed	Foreshore	4	<1 %			
TOTAL		618	100 %			

* **Farm Infrastructure** . Lands covered by built objects associated with farming.

** **Anthropogenic - Non Built or Bare** . Human created bare areas such as extraction or disposal sites.

+ **Anthropogenic - Managed vegetation** . Lands seeded or planted for landscaping, dust or soil control.

++ **Built up - Other** . Lands covered by built objects (structures) and associated yards that are not directly used for farming.

Table 4 shows that 348 hectares or 56% of the ALR is actively farmed, 4% is used in support of farming (farm residences, roads, etc), 3 is unavailable for farming, 5% has limited potential for farming due to flooding, and 32% is available and has potential for farming.

Refer to Map B5 in Appendix B for more information.

Figure 6. Availability and potential of ALR lands for farming

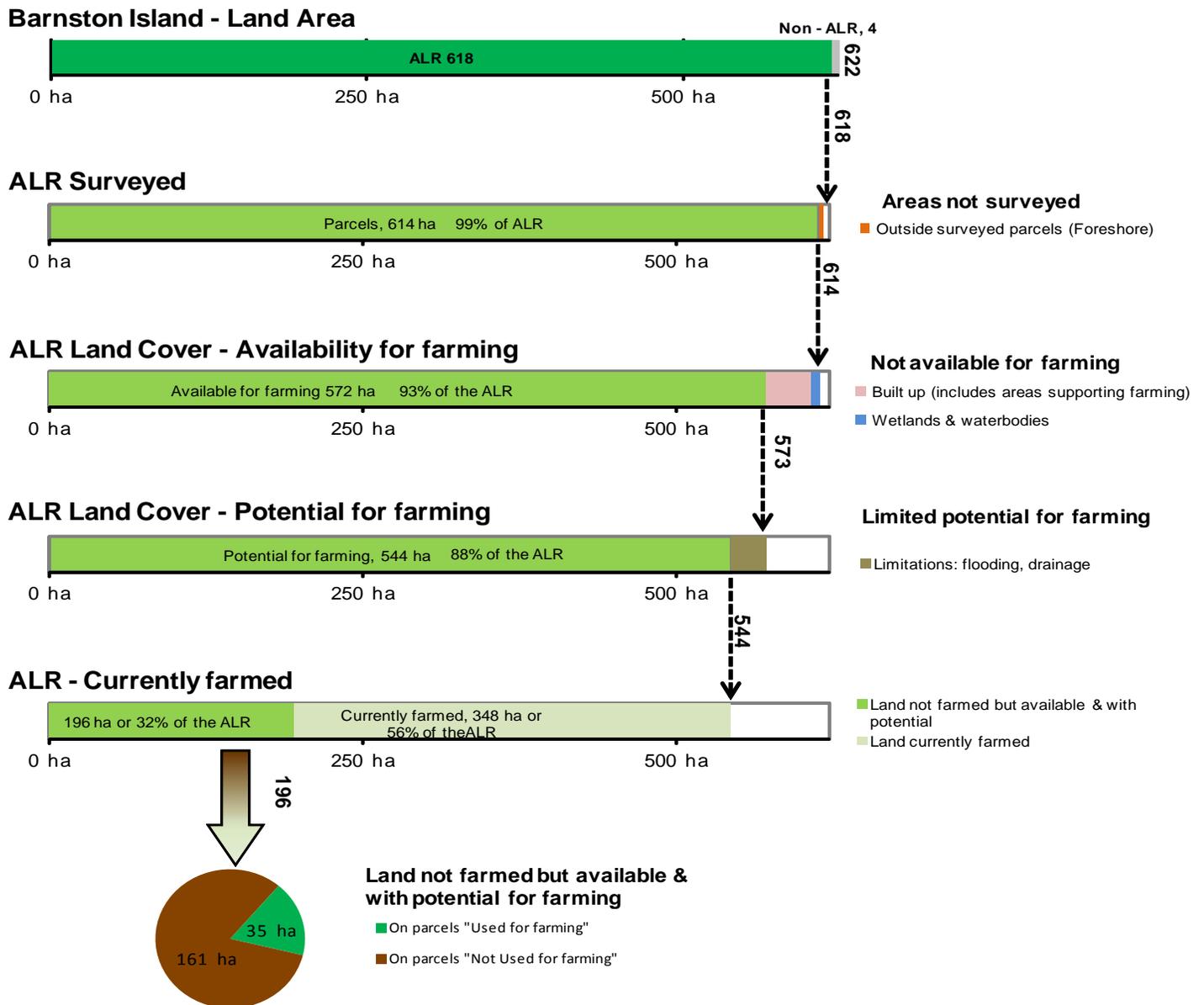


Figure 6 demonstrates that 544 hectares or 88% of Barnston Island's ALR is currently available for farming once built up areas such as roads and residential footprints are taken into account. Of those 544 hectares, 348 are actively farmed and 196 hectares are available and have potential for farming.

Refer to Map B6 in Appendix B for more information.

CHARACTERISTICS OF NOT FARMED BUT AVAILABLE ALR LANDS

The potential for future agriculture expansion is affected by the size of the area available. Small areas can effectively be used for some intensive agricultural operations such as mushrooms, floriculture, greenhouses, poultry, and container nurseries. Small areas are also suitable for start-up farmers, horse enthusiasts, farmers testing new technologies, or established farmers wanting to expand through leases. Despite these opportunities, small areas provide fewer farming choices than large lots. They specifically exclude dairy, hogs, and vegetable greenhouses. For example, a dairy cow produces sufficient manure per year to fertilize 0.4 hectares of forage production which means a dairy operation consisting of 50 cows would require access to 20 hectares of land. Without sufficient land area to utilize the manure as a fertilizer, the dairy operation would have to find other, more expensive, methods to handle the manure produced on the farm.

On Parcels “Used for Farming”

Table 5. Land use and cover on parcels “Used for farming” with land available for farming but not farmed

Mixed land use on "Used for farming" parcels	Number of parcels	Land not farmed but with potential for farming			Land currently farmed			% potential increase in farmed land area
		In ALR (ha)	Outside ALR (ha)	Total area (ha)	In ALR (ha)	Outside ALR (ha)	Total area (ha)	
Residential	9	21	< 1	21	102	-	102	6 %
Used for farming only	5	14	-	14	81	-	81	4 %
TOTAL	14	35	<0.1	35	183	-	183	10 %

Table 5 demonstrates that the largest potential increase in farmed land on parcels that are already “Used for farming” could come from properties that currently have residential use or are used exclusively for farming.

Figure 7. Land cover available for farming but not farmed on parcels “Used for farming”

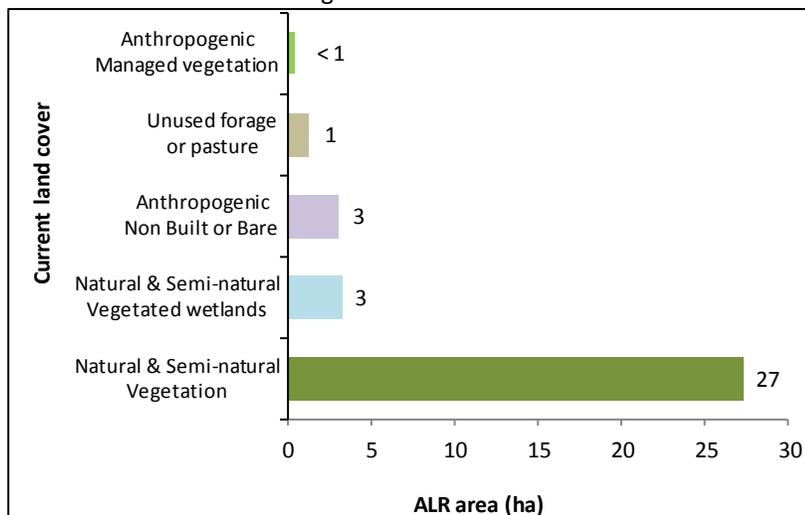


Figure 7 indicates that land covered with natural & semi-natural vegetation would offer the greatest gains in farmed land on parcels that are already “Used for farming”.

On Parcels “Not Used for Farming”

Table 6. Land use and cover on parcels “Not used for farming” with land available for farming

Parcel Land use	Number of parcels	Land not farmed but with potential for farming			% potential increase in farmed land area
		In ALR (ha)	Outside ALR (ha)	Total area (ha)	
No apparent use	8	62	-	62	18 %
First Nations	1	48	-	48	14 %
Residential	9	42	-	42	12 %
Recreation & leisure	1	9	-	9	3 %
TOTAL	19	161	-	161	47 %

Table 6 illustrates that for parcels currently “Not used for farming”, the greatest potential for increasing actively farmed land would come from parcels with no apparent use, First Nation’s land, and parcels with residential use.

Figure 8. Land cover available for farming but not farmed on parcels “Not used for farming”

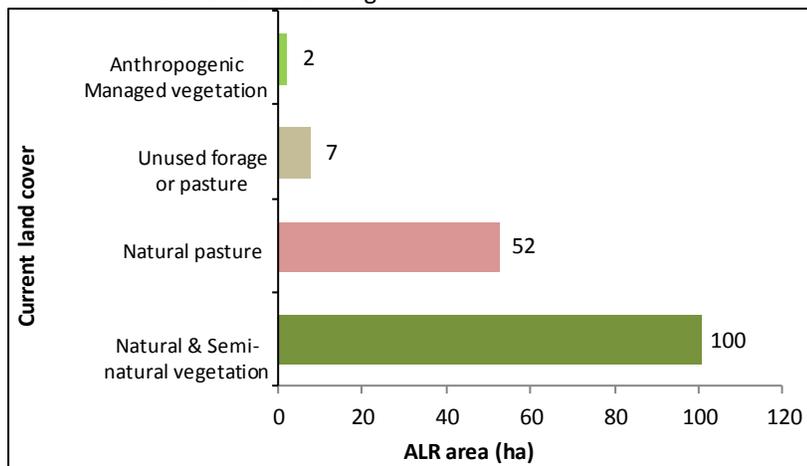


Figure 8 indicates that clearing land covered with natural and semi-natural vegetation would provide the greatest gains in farmed land on parcels currently “Not used for farming”, followed by bringing land used for natural pasture into production.

Figure 9. Size of areas available for farming but not farmed on parcels “Not used for farming”

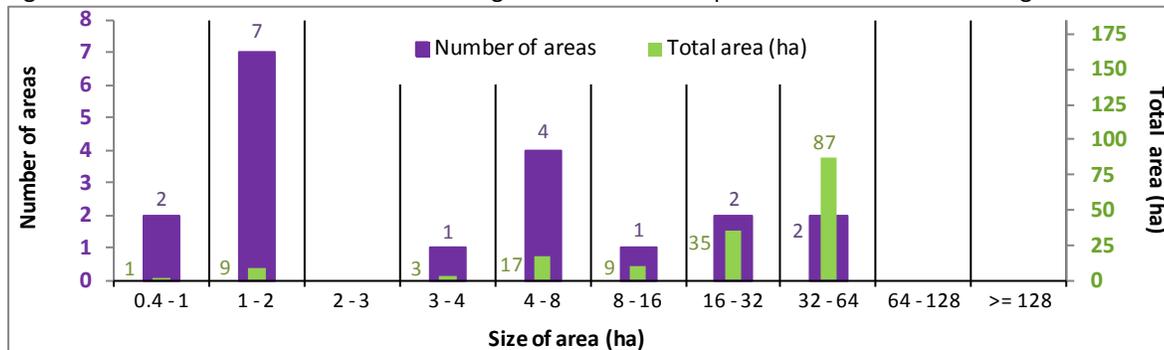


Figure 9 demonstrates that many of the areas available for farming (10 of 19) are less than 4 hectares in size. These small areas have fewer options available to efficiently farm. In general, areas should be 4 hectares or larger to provide the widest range of farming options.

There are 9 areas greater than 4 hectares that are available and have potential for farming on Barnston Island. These area have a total of 148 hectares or 92% of the 161 hectares available (refer to Table 6).

4. Farming Activities

CULTIVATED FIELD CROPS

Cultivated field crops are captured in a geographical information system at the field or land cover polygon level by crop type (vegetables, forage or pasture, berries, etc.). Each crop type is then summarized to total land area and evaluated for field size characteristics.

Included with cultivated field crops is fallow farm land, inactively farmed land (i.e. unused forage or pasture crops which have not been harvested or grazed this season) and land temporarily set aside for wildlife or other purposes. Also included is bare cultivated land or land under preparation for planting as it is assumed these lands will be planted in the survey season. Excluded are crops grown in crop cover structures such as greenhouses or mushroom barns.

Table 7. Main field crop types by area

Type	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Forage, pasture	263	43%	-	263	75%
Cranberries	86	14%	-	86	24%
Cultivated land *	1	< 1%	-	1	< 1%
Mixed vegetables	< 1	< 1%	-	< 1	< 1%
TOTAL	350	57%	-	350	100%

* Cultivated land refers to an area that has been prepared for planting but the crop is not yet visible.

Table 7 shows the main crop types produced on the 350 hectares of cultivated land on Barnston Island.

Forage and pasture is the most common type of cultivated crop accounting for 75% of all cultivated land and 43% of the ALR.

Cranberries are the second most common cultivated crop type, accounting for 24% of all cultivated land and 14% of the ALR.

Refer to Map B7 in Appendix B for more information.

Figure 10. Main crop types by percentage⁹

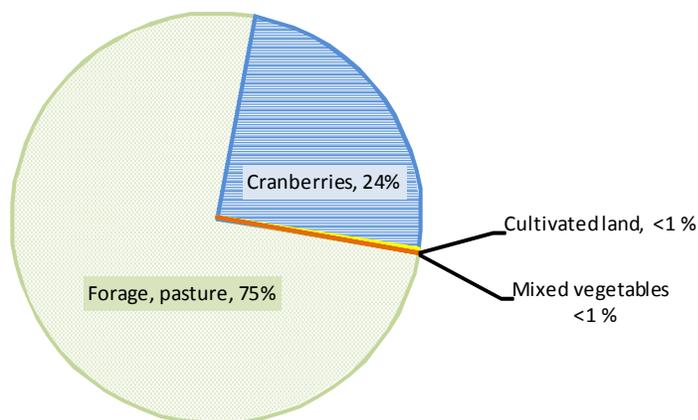


Figure 10 shows the proportion of main crop types across Barnston Island's cultivated land.

"Forage, pasture" combined with "Cranberries" comprise 99% of all cultivated land in Barnston Island.

⁹ Cultivated land refers to an area that has been prepared for planting but the crop is not yet visible.

Figure 11. All cultivated crop field by size¹⁰

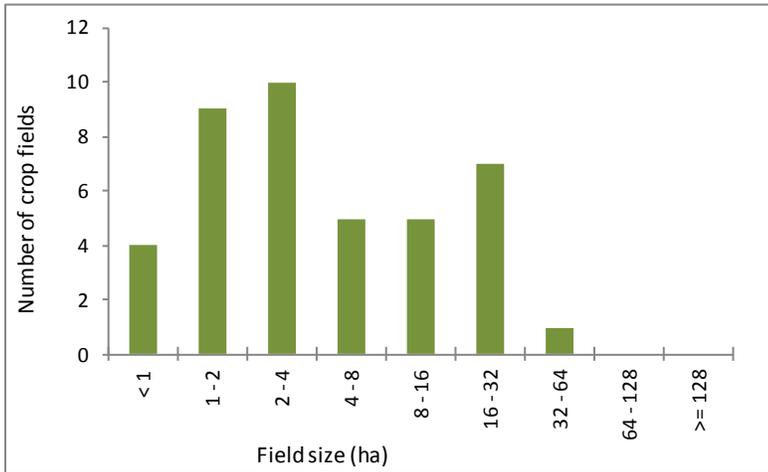


Figure 11 illustrates the number and size distribution of fields used for cultivated crops.

On Barnston Island, cultivated fields are most likely to be 2 to 4 hectares in size.

There are 41 individual crop fields with an average area of 9 hectares and median area of 3 hectares.

The average size of parcels where field crops occur is 13 hectares.

Refer to Table A1 in Appendix A for more information.

Figure 12. Forage, pasture, berries, and cultivated land fields by size

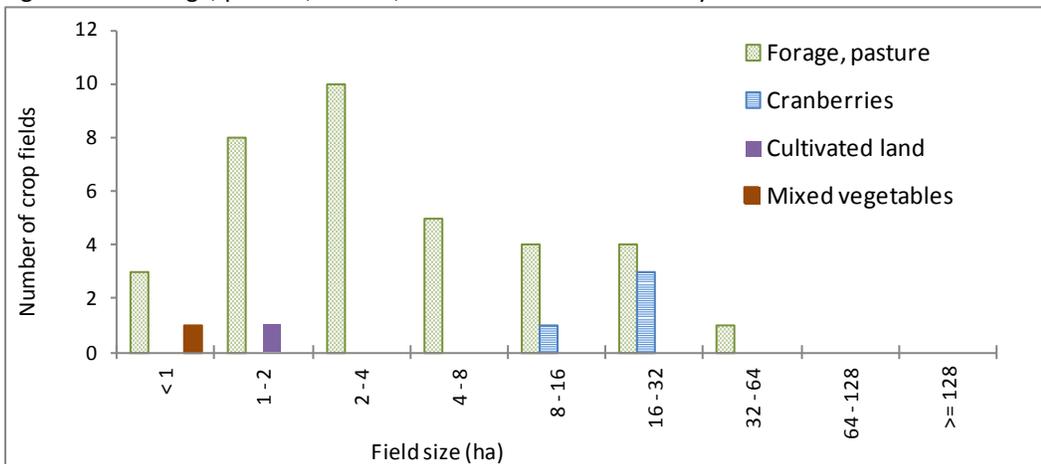


Figure 12 compares all crop types by field sizes.

“Forage, pasture” fields are variable in size occurring on all parcel sizes with field crops, while cranberries only occur on larger fields.

Refer to Table A1 in Appendix A for more information.

¹⁰ Includes forage, pasture, berries, and cultivated land.

Forage & pasture crops

Table 8. Forage and pasture crops by area

Forage and pasture crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of ALR			
Forage (managed)	Grass	210	34%	-	210	60%
Subtotal		210	34%	-	210	60%
Pasture (managed)	Grass	31	5%	-	31	9%
Pasture (unmanaged)	Grass	14	2%	-	14	4%
Subtotal		45	7%	-	45	13%
Unused	Grass	8	1%	-	8	2%
Subtotal		8	1%	-	8	2%
TOTAL		263	43%	-	263	75%

* Unused refers to forage or pasture which has not been cut or grazed during the current growing season.

Table 8 shows there is significantly more forage than pasture on Barnston Island. Refer to Map B8 in Appendix B for more information.

Figure 13. Forage and pasture fields by size

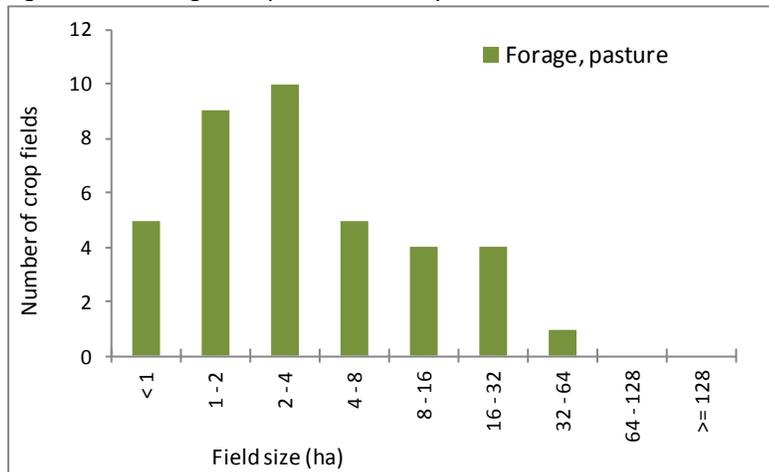


Figure 13 shows that “Forage, pasture” fields are most likely to be less than 4 hectares in size.

On Barnston Island, there are 38 individual “Forage, pasture” fields with an average area of 7 hectares and median area of 3 hectares.

The average size of parcels where “Forage, pasture” occurs is 13 hectares.

Refer to Table A2 in Appendix A for more information.

Figure 14. Forage, pasture and unused forage or pasture fields by size¹¹

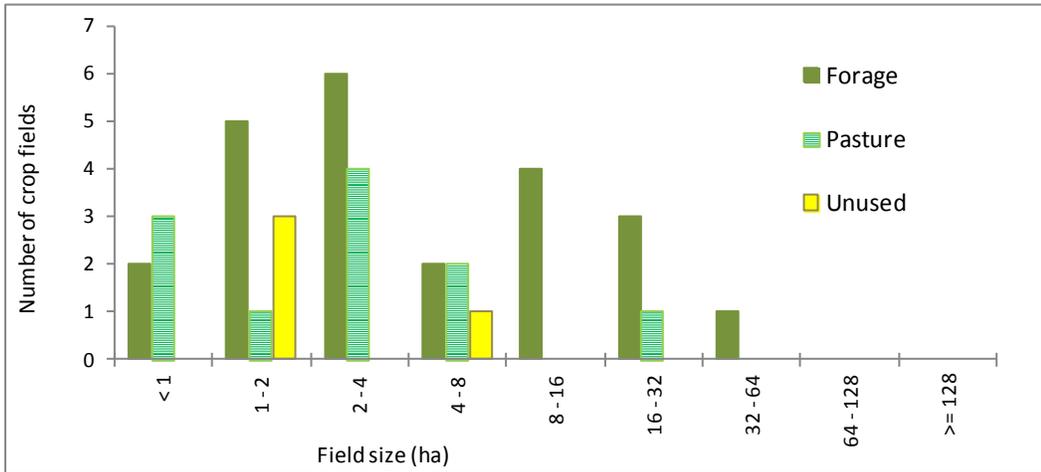


Figure 14 illustrates the variation in field sizes between pasture, forage and unused forage or pasture.

Forage fields are generally larger than pasture fields mainly due to harvesting equipment requirements and fencing costs.

Refer to Table A2 in Appendix A for more information.

Berry crops

Table 9. Berries by area

Berry crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of ALR			
Cranberries	Mature	79	13%	-	79	22.6%
Cranberries	Young	7	1%	-	7	1.9%
TOTAL		86	14%	-	86	24%

Table 9 shows that Barnston Island has a total of 86 hectares in cranberry fields, of which most are mature.

Refer to Map B9 in Appendix B for more information.

Figure 15. Cranberry fields by size

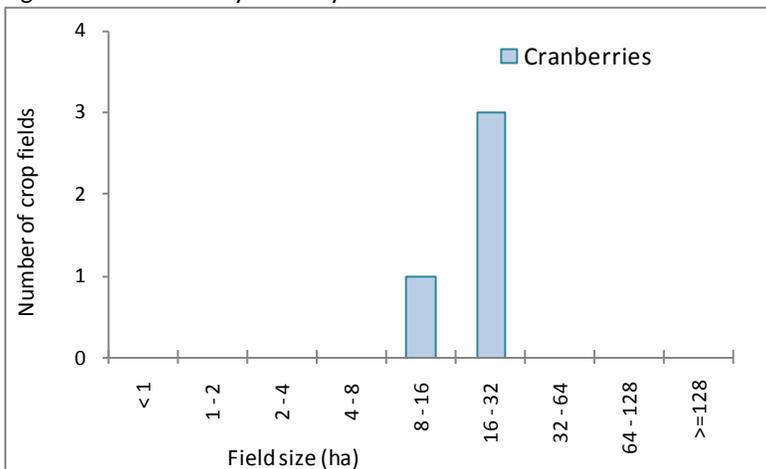


Figure 15 shows that 3 of the 4 cranberry fields are 16 to 32 hectares in size.

On Barnston Island, cranberry fields have an average area of 21 hectares and a median area of 22 hectares.

The average size of parcels where cranberries occur is 27 hectares.

Refer to Table A3 in Appendix A for more information.

¹¹ Unused refers to forage or pasture which has not been cut or grazed during the current growing season.

Top Individual Crops

Table 10. Top crop types by area

Cultivated field crop	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Forage (managed)	210	< 1%	-	210	60%
Cranberries	86	< 1%	-	86	24%
Pasture (managed)	31	< 1%	-	31	9%
Pasture (unmanaged)	14	< 1%	-	14	4%
Unused forage/pasture *	8	< 1%	-	8	2%
Cultivated land **	1	< 1%	-	1	< 1%
Mixed vegetables	< 1	< 1%	-	< 1	< 1%
TOTAL	350	< 1%	-	350	100%

* Unused forage/pasture refers to forage or pasture which has not been cut or grazed during the current growing season.

** Cultivated land refers to an area that has been prepared for planting but the crop is not yet visible.

Table 10 shows that there are only 7 different individual crop types on Barnston Island.

Figure 16. Top crop types by area

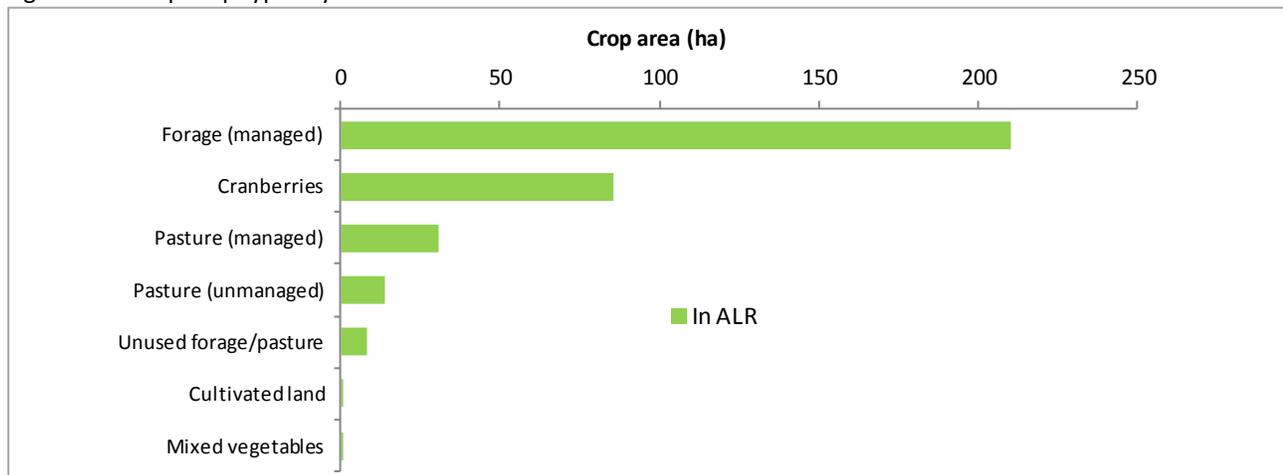


Figure 16 shows that managed forage is the most extensive crop type at 210 hectares while cranberries are second with 86 hectares.

NATURAL PASTURE

Natural pastures are fenced areas with uncultivated (not sown) natural or semi-natural herbs or grasses used for grazing livestock or equines.

Natural pastures are usually on land unsuited for cultivation due to poor soils (stoniness), seasonal flooding, slope or the lack of irrigation. Although some of these natural areas could be used for hay, most are grazed since the quality of hay is usually not worth the harvesting costs. In some cases natural pastures are on Crown land or leased private land where agricultural activities may be subject to restrictions.

Most natural pastures are influenced by humans to some degree. Fire may be used to control woody plants and remove over mature herbage. Introduction of livestock or equines has a great effect on natural vegetation and can lead to changes in vegetation composition. Bush-clearing, fencing, drainage, application of fertilizers and trace elements are more intensive methods which influence natural vegetation as pasture. The introduction of grasses and legumes, without cultivation, is yet a further stage in influencing a natural area.

Natural pastures are captured in a geographical information system at the field or land cover polygon level by the natural vegetation type that dominates the upper canopy (grassland, open treed, etc.). Each vegetation type is then summarized to total land area and evaluated for field size characteristics.

Table 11. Natural pasture vegetation types by area

Natural pasture		ALR		Outside ALR (ha)	Total area (ha)	% of suveyed area	% of rangeland and natural pasture
		In ALR (ha)	% of ALR				
Pasture (natural)	Shrubland	39	6%	-	39	6%	72%
	Grassland	9	2%	-	9	2%	17%
	Herbaceous	4	< 1%	-	4	< 1%	7%
	Treed - open	2	< 1%	< 1	2	< 1%	4%
TOTAL		54	9%	< 1	54	9%	100%

Table 11 shows that natural pasture takes several forms on Barnston Island.

Shrubland is the most common type of natural pasture accounting for 72% of all natural pasture and 6% of Barnston Island's ALR.

Refer to Map B10 in Appendix B for more information.

Figure 17. Natural pasture areas by size

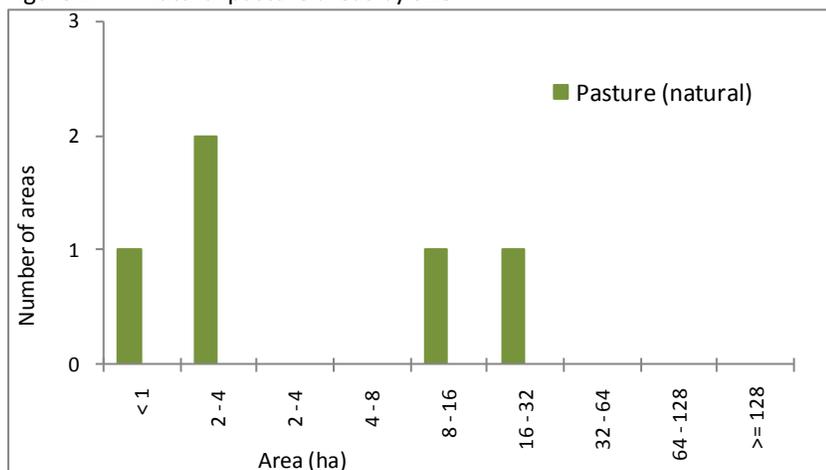


Figure 17 shows the size distribution of natural pastures.

On Barnston Island, there are 5 individual natural pastures with an average area of 11 hectares and median area of 4 hectares.

The average size of parcels where natural pasture occurs is 16 hectares.

Refer to Table A4 in Appendix A for more information.

GREENHOUSES

Greenhouses are structures covered with translucent material and of sufficient size for a person to work inside¹². They are permanent enclosed glass or polyethylene (poly) structures with or without climate control facilities for growing plants under controlled environments. Non permanent structures such as hoop covers are considered an agricultural practice and are not included here.

Table 12. Greenhouses by area¹³

Greenhouses		ALR		Outside ALR (ha)	Total area (ha)	% of greenhouse area
		In ALR (ha)	% of ALR			
Poly greenhouse	Herbs	0.1	< 1%	-	0.1	100%
Subtotal		0.1	< 1%	-	0.1	100%
TOTAL		0.1	< 1%	-	0.1	100%

Table 12 shows that there is 0.1 hectares in poly greenhouses on Barnston Island (Barnston Island Herbs).

Only one poly greenhouse was reported on Barnston Island.

¹² Source: *Guide for Bylaw Development*, 1998 Issue (Working Copy) by Ministry of Agriculture and Food.

¹³ The areas reported in this table exclude external greenhouse yards, parking, warehouses and other infrastructure related to the greenhouse operation. Poly refers to polyethylene.

IRRIGATION

Irrigation is the artificial or active application of water to the land or soil and may be used to assist in the growing of agricultural crops, maintenance of managed vegetation, and control of soil erosion or dust. The potential to irrigate is often limited by the quality and quantity of available irrigation water. High salinity or microbial contamination renders water unsuitable for irrigation. Insufficient water sources or water delivery infrastructure limits the potential to increase agricultural production through irrigation.

Irrigation is captured at the field or land cover level by system type (sub-surface, sprinkler, giant gun, trickle) and then summarized by crop type to the total land area under irrigation. Irrigated land includes all irrigated field crops and may also include irrigated fallow farm land, land set temporarily set aside for wildlife or other purposes, and land under preparation for planting. Also included are crops grown in greenhouses. In addition, cultivated field crops are evaluated for percent of crop area under irrigation.

Table 13. Main field crop types and managed irrigation systems

Cultivated field crop	Irrigation system in use	
	Sprinkler	% crop area irrigated
Forage (managed)	-	-
Cranberries	86	100%
Pasture (managed)	-	-
Pasture (unmanaged)	-	-
Unused forage/pasture	-	-
Cultivated land *	1	100%
Mixed vegetables	-	-
TOTAL	87	25%

Table 13 illustrates that all cranberry crops are actively irrigated by sprinkler. Other crop types are not actively irrigated.

Refer to Map B11 in Appendix B for more information.

* Cultivated land refers to an area that has been prepared for planting but the crop is not yet visible.

In some areas, the water table is naturally maintained by rainfall, high groundwater and/ or seepage from nearby water sources. Channels and ditches may be present but pumps are not used to artificially raise water levels. In these areas, farmers often rely exclusively on this unmanaged subsurface water for crop growth.

Table 14. Main field crop types and unmanaged subsurface water

Cultivated field crop	Unmanaged subsurface water	% crop area
Forage (managed)	202	96%
Cranberries	-	-
Pasture (managed)	31	100%
Pasture (unmanaged)	14	97%
Unused forage/pasture	8	100%
Cultivated land *	-	-
Mixed vegetables	< 1	100%
TOTAL	254	73%

On Barnston Island, the floodgates for the drainage ditch system are closed in the summer to prevent the water from draining into the Fraser River as a means of keeping the water table high.

Table 14 illustrates that most crops except for cranberries (73% of all cultivated land) are relying exclusively on this unmanaged subsurface water.

Refer to Map B11 in Appendix B for more information.

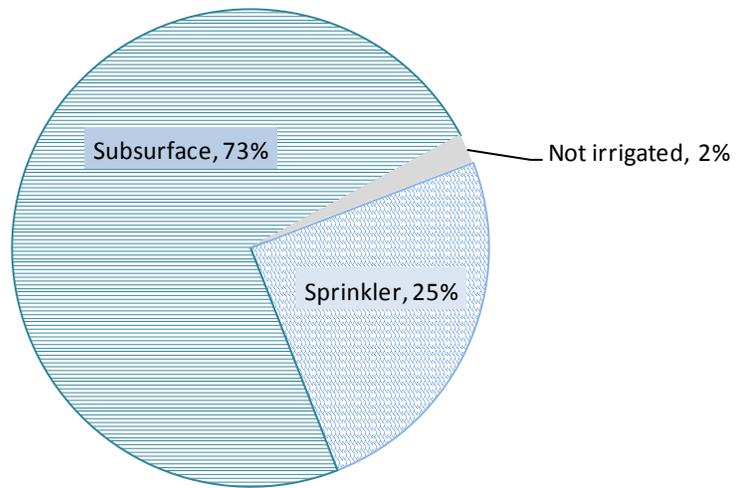
* Cultivated land refers to an area that has been prepared for planting but the crop is not yet visible.

Figure 18. Methods of irrigation by percentage of cultivated land

Figure 18 shows that only 25% of cultivated land on Barnston Island is being actively irrigated.

73% of cultivated land is relying on unmanaged subsurface water.

2% of cultivated land does not appear to be actively irrigated or have access to unmanaged subsurface water.



LIVESTOCK

Livestock activities are very difficult to measure using a windshield survey method. Livestock are often confined to structures making it difficult for the surveyor to see the animals. Local knowledge and other indicators such as animal confinement type (barn type), feeder system type, manure handling system type, and other visible elements may be used to infer the type of livestock and scale of activity that exist on a parcel. In addition, livestock are mobile and may utilize more than one land parcel. Livestock visible on a certain parcel one day may be visible on a different parcel the next day. This inventory does not attempt to identify animal movement between parcels that make up a farm unit but reports livestock at the parcel where the animals or related structures were observed.

"**Main Type**" and "**Secondary Type**" of livestock are determined by comparing the scale of different livestock activities on the parcel. The "Main Type" of livestock does not represent the primary agricultural activity, but only the main type of livestock activity.

"**Intensive**" livestock activities utilize specialized structures such as barns, feedlots and stockyards designed for confined feeding at higher stocking densities.

"**Non Intensive**" livestock activities allow animals to graze on a pasture and often utilize non intensive barns and corrals/paddocks.

The scale system used to describe livestock operations relies on animal unit equivalents which is a standard measure used to compare different livestock types. One animal unit equivalent is approximately equal to one adult cow or horse. The scale system includes 4 levels:

- "**Very Small**" Approximately 1 cow or horse or bison, 3 hogs, 5 goats or deer, 10 sheep, 50 turkeys, 100 chickens (1 animal unit equivalent)
- "**Small**" LESS THAN 25 cows or horses or bison, 75 hogs, 125 goats or deer, 250 sheep, 1250 turkeys, 2500 chickens (2 - 25 animal unit equivalents)
- "**Medium**" LESS THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5000 turkeys, 10,000 chickens (25 - 100 animal unit equivalents)
- "**Large**" MORE THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5000 turkeys, 10,000 chickens (over 100 animal unit equivalents).

Table 15. Livestock activities

Livestock group	Livestock detail *	By parcel		Total activities	By activity type	
		Main type	Secondary type		Intensive	Non Intensive
Beef	Beef	3	-	3	-	3
	Beef (Llama)	1	-	1	-	1
	Beef Total	4	-	4	-	4
Dairy	Dairy Total	1	-	1	1	-
Poultry	Chicken	1	-	1	-	1
	Goose (Chicken)	-	1	1	-	1
	Poultry Total	1	1	2	-	2
Sheep / lamb / goat	Sheep / lamb	1	-	1	-	1
	Goat	-	2	2	-	2
	Sheep / lamb / goat Total	1	2	3	-	3
Inactive operation **	Inactive operation Total	3	-	3	3	-
Equine	Horse	2	2	4	-	4
	Horse (Pony)	1	-	1	-	1
	Equine Total	3	2	5	-	5
TOTAL		13	5	18	4	14

* When livestock type appears in parentheses (), it indicates the livestock activity is a mixed herd or flock.

** Inactive operation is where livestock structures were present but appear to be unused.

Table 15 shows that equine is the most common type of livestock activity on Barnston Island with 5 of 18 or 28% of all livestock activities. Beef is the second most common with 4 activities. All beef activities are the main livestock type on the parcel, while only 3 out of 5 equine activities are the main livestock type on the parcel.

Historically, the island was home to several dairy farms, however, only one active dairy was present at the time of the survey. The one dairy is the only “intensive” activity. The three inactive “intensive” livestock operations further indicate a recent decline in livestock activities on the Island.

Refer to Maps B12 and B13 in Appendix B for more information.

Figure 19. Livestock activities by scale and type

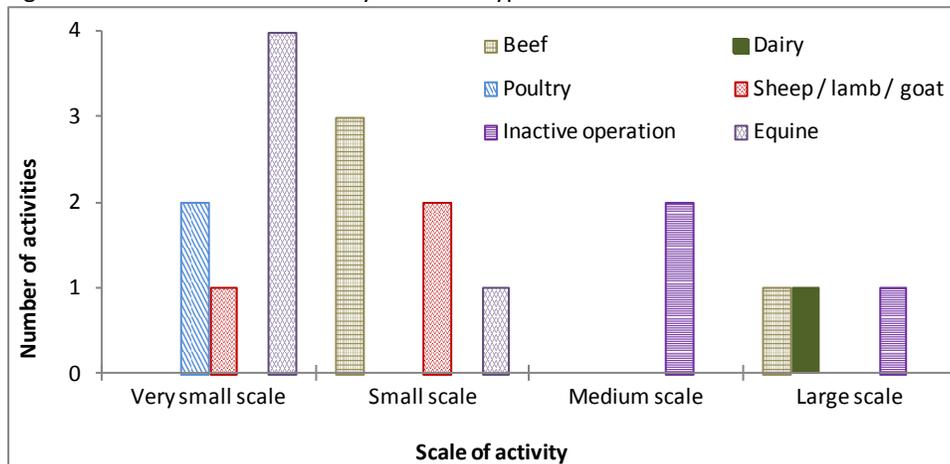


Figure 19 illustrates the scale of livestock activities on Barnston Island.

There are few livestock activities and most of these are “small” or “very small”.

The only active “large” scale livestock activities are beef and dairy.

Refer to Tables A6, A8, A10, A12 and A14 in Appendix A for more information.

Figure 20. Livestock compared with equine activities by scale

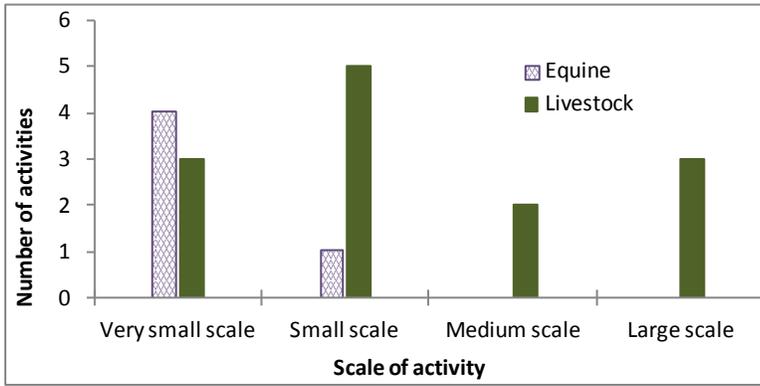


Figure 20 compares the scale of livestock activities with equine activities.

All equine activities are “very small” or “small” scale. There are 5 “medium” or “large” scale livestock activities, although 3 of these are inactive.

Refer to Tables A7, A9, A11, A13, and A15 in Appendix A for more information.

Figure 21. Livestock activities by parcel size and scale

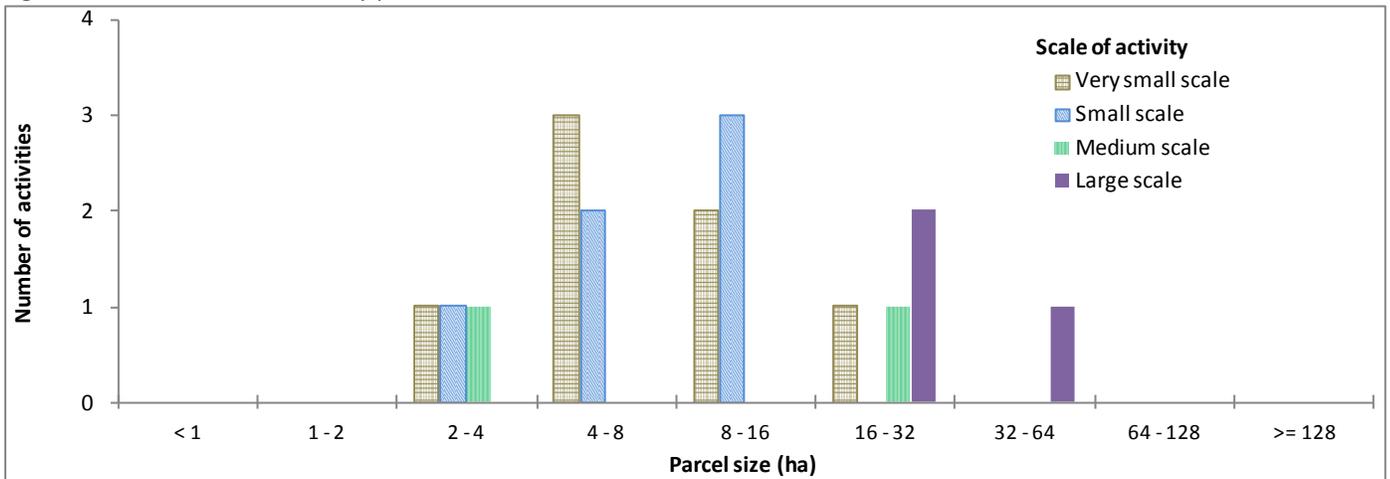


Figure 21 illustrates the distribution of livestock activities (including inactive operations) by scale across parcel size categories. While most “large” scale livestock activities occur on larger parcels, there are also a few smaller livestock activities that occur on larger parcels.

Refer to Tables A7, A9, A11, A13, A15 and Figures A1, A3, A5, A6, and A8 in Appendix A for more information.

Figure 22. Livestock activities by parcel size and type

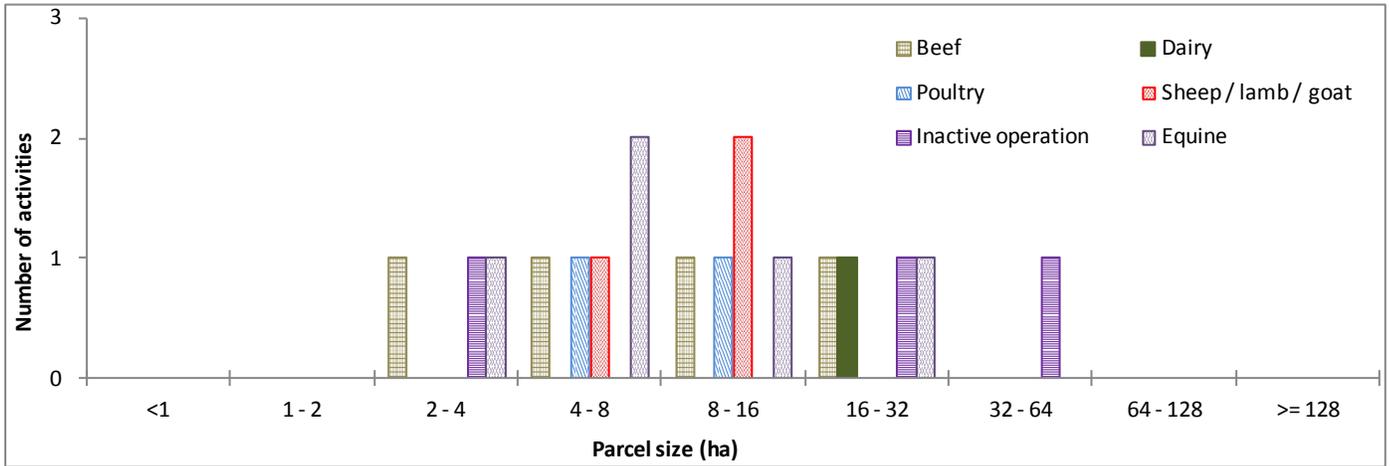


Figure 22 compares the distribution of different livestock types across parcel size categories. While most inactive livestock operations occur on larger parcels, there is one inactive operation on a 2-4 hectare parcel. Beef production occurs across almost all parcel sizes.

Refer to Table A5 in Appendix A for more information.

Figure 23. Livestock compared with equine activities by parcel size

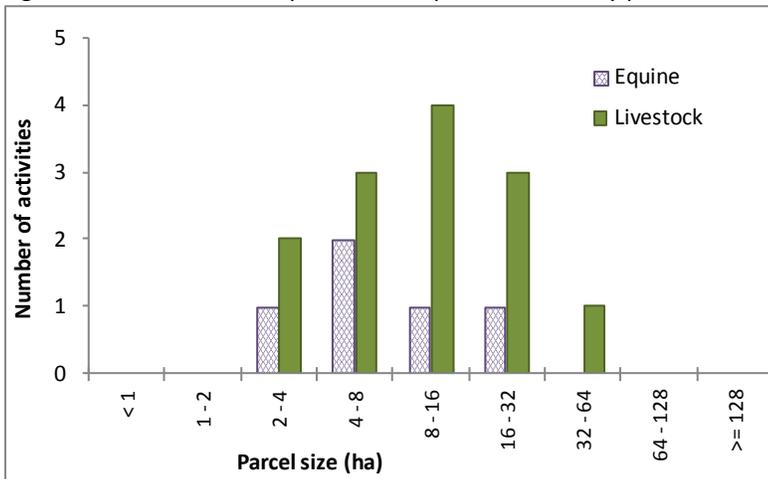


Figure 23 compares the distribution of equine and livestock across parcel size categories.

Equine activities are generally on smaller parcels than other livestock activities.

Refer to Table A5 in Appendix A for more information.

Figure 24. Average area in forage, pasture and farm infrastructure on parcels with livestock activities (excluding very small scale)

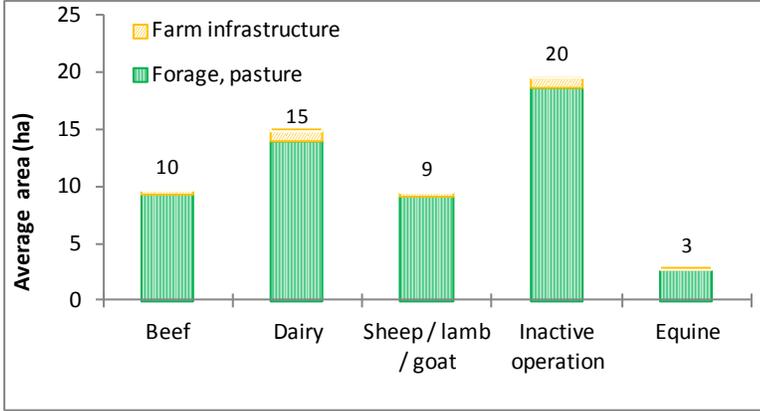


Figure 24 shows that on average, the one dairy operation on Barnston Island is associated with more forage and pasture land than any other type of active livestock activity.

Figure 25. Total area in forage, pasture and farm infrastructure on parcels with livestock activities (excluding very small scale)

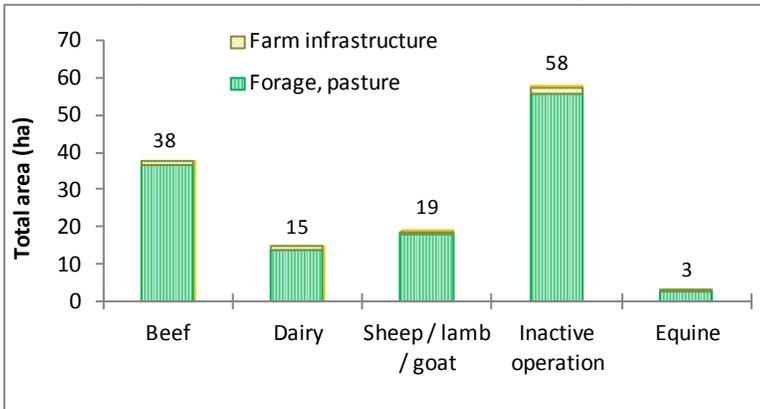


Figure 25 shows that the total area in forage and pasture land for beef activities is larger than for any other active livestock activity.

The actual forage area for livestock is often underestimated as not all forage fields will be located on the same parcel as the livestock.

Refer to Figures A2, A4, A7, and A9 in Appendix A for more information.

Figure 26. Percent of parcel area utilized for forage, pasture and farm infrastructure on parcels with livestock activities (excluding very small scale)

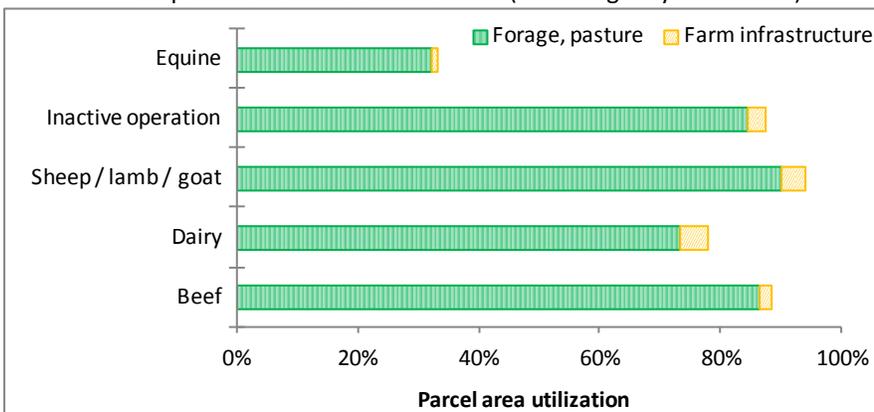
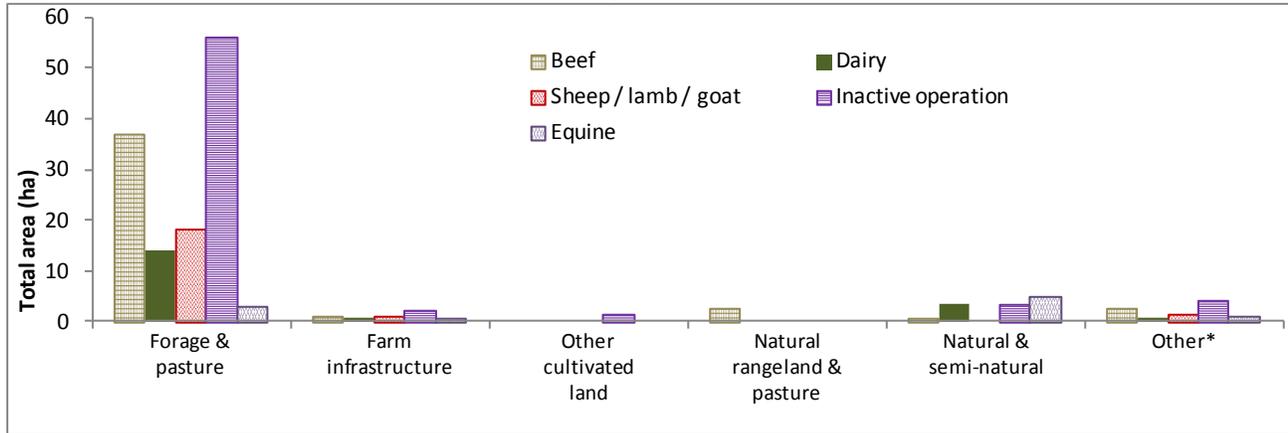


Figure 26 shows that most livestock activities on Barnston Island utilize a high proportion of their parcel area for forage, pasture and farm infrastructure.

Equine activities are an exception as they utilize only 33% of the parcel areas for forage, pasture and farm infrastructure.

Figure 27. Percent of parcel area utilized for forage, pasture and farm infrastructure on parcels with livestock activities (excluding very small scale)



* Other includes vegetated lands seeded or planted for landscaping, dust, or soil control but not cultivated for harvest or pasture, lands covered by built objects but not farm infrastructure, and bare areas such as piles, pits, fill dumps.

Figure 27 shows that the land cover associated all livestock activities is primarily forage and pasture. These operations are growing some of their own feed.

Equine activities are associated with a similar amount of forage, pasture and natural & semi-natural vegetation.

Refer to Figures A2, A4, A7, and A9 in Appendix A for more information.

ON-FARM VALUE-ADDED

Activities which add value to raw commodities produced on the farm are reported in this section. At least 50% of the commodity utilized must be produced on farm¹⁴ or the activity is considered non-agricultural. In many cases, local knowledge in combination with the field survey is used to determine if an activity meets the criteria to be considered on-farm value-added. The three main categories of value-added are: processing, direct sales, and agri-tourism.

Processing is an activity that maintains or raises the quality or alters the physical or chemical characteristics of a raw farm commodity, or adds value to it in any way. Processing includes grain mill or oilseed crushing, meat processing, wine or cider, kitchen / bakery, and canning. This category does not include crop washing and packaging.

Direct sales to the public occur through permanent stores, temporary stores such as fruit stands, U-pick, or restaurant / take out service located on the farm. Direct farm marketing sites are considered ambassadors of agriculture. Direct farm marketing engages the public's interest in food production and increases awareness of the benefits of local agriculture.

Agri-tourism promotes visits to the operation for the purpose of recreation, education or active involvement in the operation - a tourism experience. Agri-tourism must be in a farm setting and secondary to primary agricultural operation to be considered value-added. Included are corn mazes, petting zoos, bed & breakfasts, campsites, winery or orchard tours, guest ranches offering equestrian related activities, horse or donkey rental for trail riding / outfitting, and seasonal events such as farm festivals or pumpkin patches.

The scale system used to describe value-added activities reflects the human effort needed to support the activity. The scale system includes 3 levels:

- “**Small**” scale represents a predominantly single household endeavour with management requiring less than one full time worker. Examples of small scale include temporary roadside fruit stand, small field u-pick, or egg sales from backyard flock.
- “**Medium**” scale is sufficient to add value to on-farm products for sale to small local markets or serve a moderate number of people. Usually includes designated parking for customers and requires at least one full-time worker to manage. An example is 3-10 tourist accommodation spots.
- “**Large**” scale is intended to add value to large amounts of on-farm generated products or serve large numbers of people. Requires multiple workers to operate value-added component of farm operation. An example is more than 10 tourist accommodation spots.

¹⁴ On-farm refers to the farm unit which includes all the property belonging to the farm and may incorporate more than one parcel.

Figure 28. Percentage of parcels used for farming and with value-added activities

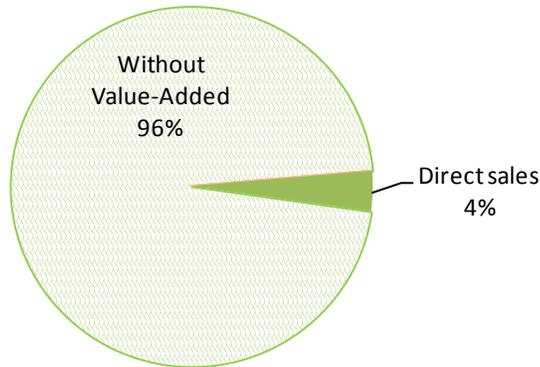


Figure 28. Only 1 parcel or 4% of all parcels used for farming are also being used for value-added activities.

Given the close proximity to large urban populations, there are opportunities to increase activities such as agri-tourism and direct sales.

Table 16. Number of parcels with value added activities

Value added	Description	Scale of activity			Total number of activities	Average parcel size (ha)
		Small scale	Medium scale	Large scale		
Direct sales	Seasonal store (stand)	1	-	-	1	14.3
TOTAL NUMBER OF ACTIVITIES		1	-	-	1	

Table 17 demonstrates that only one parcel with value-added activities was reported.

The one seasonal store sells beef and goat meat directly to the public.

5. Condition of ALR Lands

This section presents a parcel based analysis of parcel size and residential uses in the ALR.

PARCEL INCLUSION IN THE ALR

The inventory area included 614 hectares of ALR on 52 parcels which is over 99% of the ALR on Barnston Island. The remaining ALR was excluded from the inventory as it is in outside of parcels in foreshore.

ALR boundaries do not always coincide with parcel boundaries which results in many parcels having only a portion of their area in the ALR. To achieve an accurate picture of the ALR land, only parcels that meet the following criteria are included in this section of the report:

- parcels > 0.05 hectares in size with at least half their area ($\geq 50\%$) in the ALR, or
- parcels with at least 10 hectares (≥ 10 hectares) of ALR land.

In total, all 52 parcels on Barnston Island meet the above criteria and are included in the further analysis of the ALR. This includes one parcel associated with Barnston Island 3 Indian reserve.

Figure 29. Parcel inclusion in the ALR



Figure 29 illustrates the distinction between parcels considered to be within or outside the ALR:

Considered to be within the ALR:

- lot A is completely in the ALR
- lot B has 50% or more of its area in the ALR.

Considered to be outside the ALR:

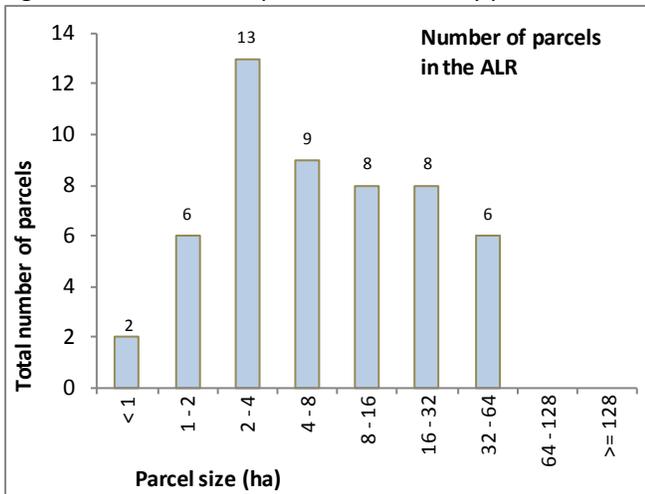
- lot C has less than 50% of its area and less than 10 hectares in the ALR
- lot D is completely outside the ALR.

PARCEL SIZE & FARMING IN THE ALR

Parcel size must be considered when determining the agricultural potential of a land parcel. Larger parcels usually allow farmers greater flexibility to expand or change their type of operation as the economy and markets change. Although some types of agriculture can be successful on small parcels, such as intensive organic market gardens, greenhouse operations and nurseries, generally the smaller the parcel is, the fewer viable options there are for farming.

A farming operation may utilize more than one parcel as a farm unit¹⁵, however it is generally more efficient to run a farm on fewer larger parcels than many smaller parcels. Larger parcels accommodate equipment more efficiently and reduce the need to move farm equipment on public roads. Smaller parcels are more impacted by bylaws designed to reduce potential land use conflicts, such as setbacks from lot lines and road allowances, and may encourage alternative land uses such as residential.

Figure 30. Number of parcels in the ALR by parcel size



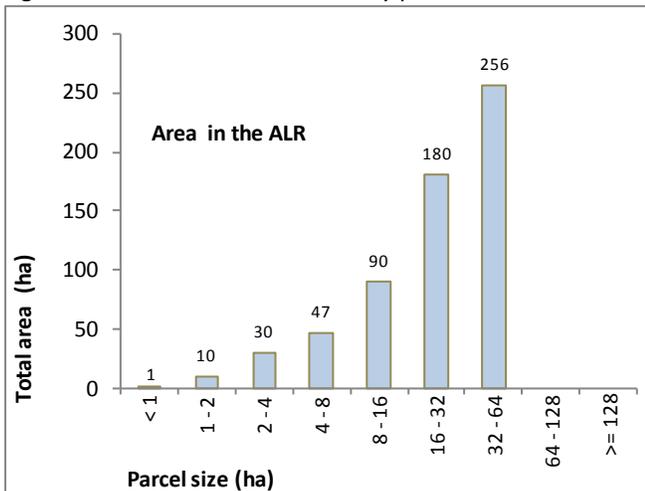
Approximately 40% of Barnston Island's 52 ALR parcels are less than four hectares. The average parcel size is 11.9 hectares and the median parcel size is 5.0 hectares.

Figure 30 illustrates that of the 52 parcels in the ALR:

- 4% (2 parcels) are less than 1 hectare.
- 40% (21 parcels) are less than 4 hectares.
- 17% (9 parcels) are between 4 and 8 hectares.
- 15% (8 parcels) are between 8 and 16 hectares.
- 27% (14 parcels) are greater than 16 hectares.

Refer to Map B14 in Appendix B for more information.

Figure 31. Total area in the ALR by parcel size



Even though Barnston Island has many small parcels, most of its ALR area is in larger parcels.

Figure 31 illustrates that of the 614 hectares on parcels in the ALR:

- <1% (1 hectare) is on parcels less than 1 hectare.
- 7% (41 hectares) is on parcels less than 4 hectares.
- 8% (47 hectares) is on parcels between 4 and 8 hectares.
- 15% (90 hectares) is on parcels between 8 and 16 hectares.
- 71% (436 hectares) is on parcels greater than 16 hectares.

¹⁵Farm Unit – An area of land used for a farm operation consisting of one or more contiguous or non-contiguous parcels, that may be owned, rented or leased, which form and are managed as a single farm.

Table 17. Number of farmed and not farmed parcels in the ALR

Parcel status with respect to farming	Number of parcels	% of parcels in the ALR
Used for farming	28	54 %
Not used for farming	24	46 %
TOTAL	52	100 %

Table 17 demonstrates that of the 52 parcels in the ALR, 28 parcels or 54% are "Used for farming" while 24 parcels or 46% are "Not used for farming".

Figure 32. Number of farmed and not farmed parcels in the ALR by parcel size

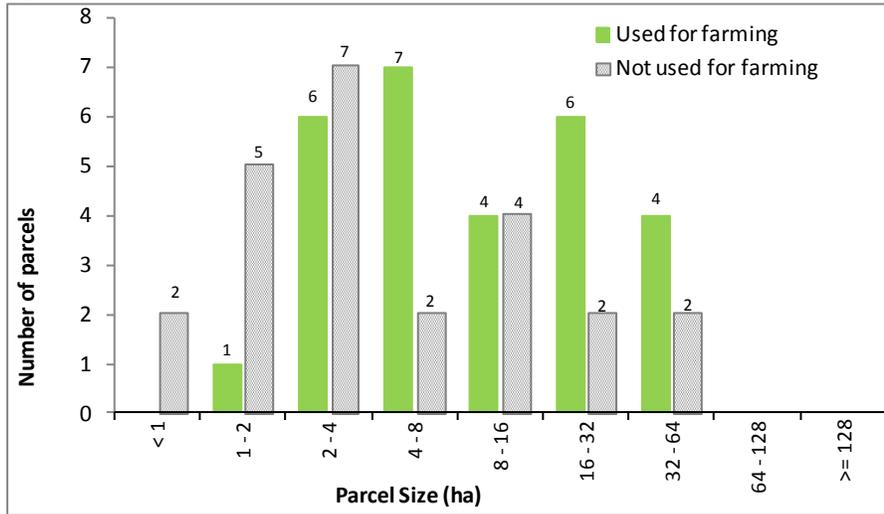


Figure 32 shows that of the 24 parcels in the ALR and "Not used for farming", 14 or 58% are less than four hectares.

Figure 33. Number of farmed and not farmed parcels in the ALR by parcel size (line chart)

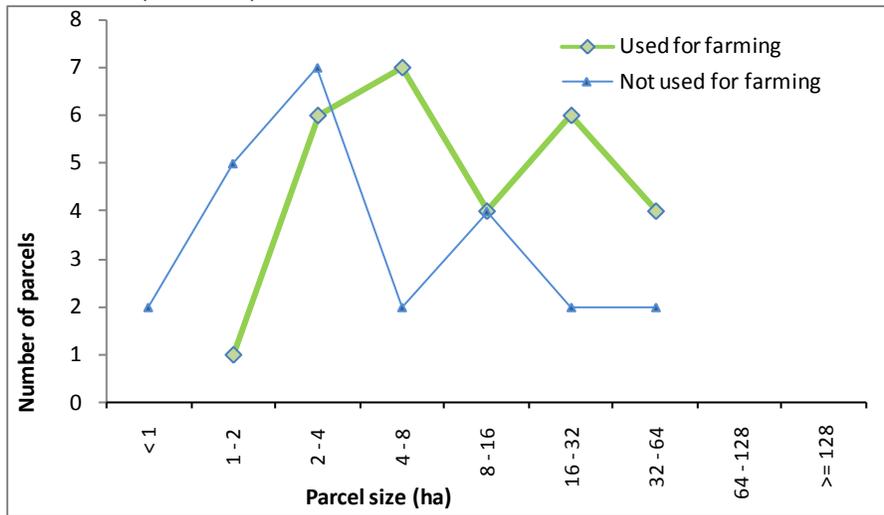


Figure 33 illustrates that although parcels of all sizes are "Used for farming", large parcels are more likely to be farmed.

Figure 34. Proportion of parcels farmed and not farmed by parcel size in the ALR

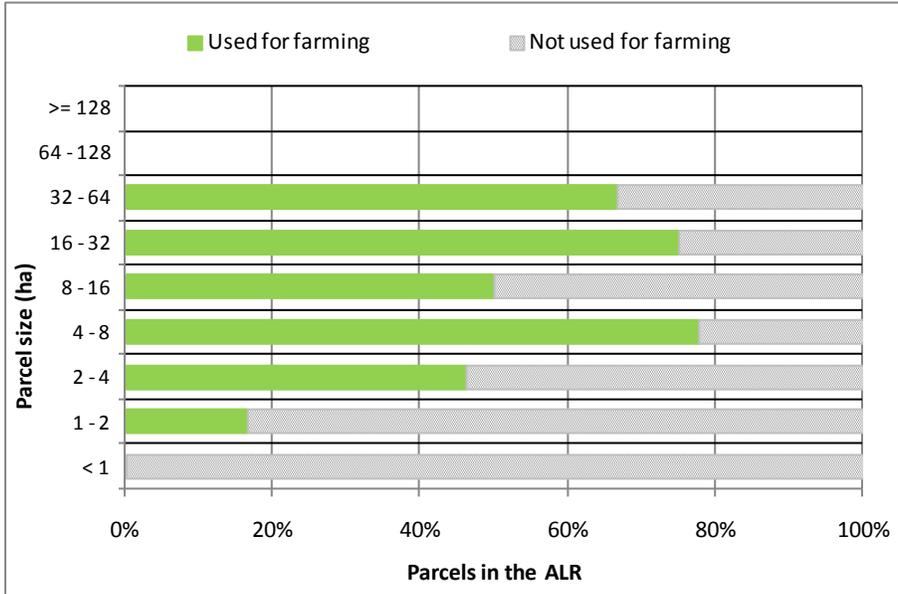
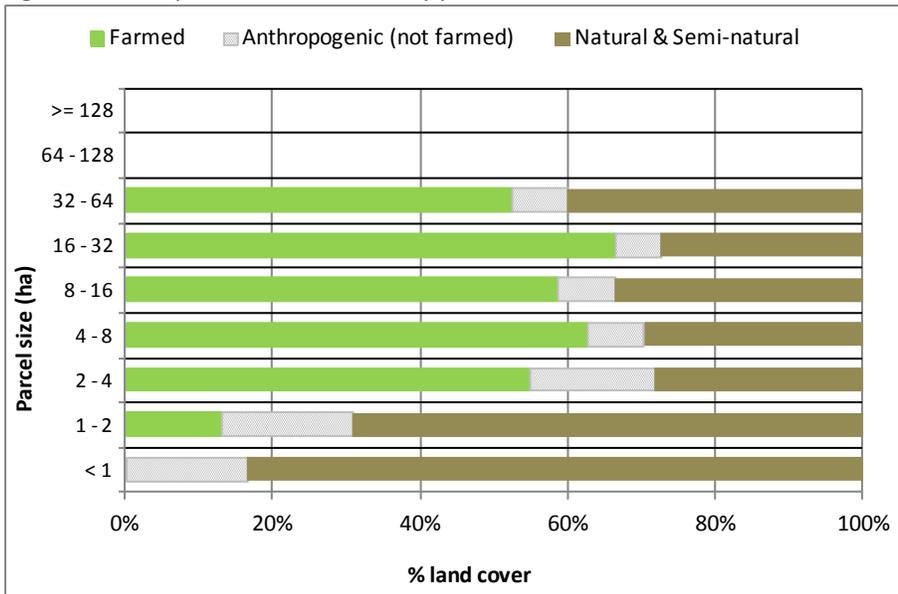


Figure 34 shows that on Barnston Island, the proportion of parcels being "Used for farming" increases as the parcel size increases.

Figure 35. Proportion of land cover by parcel size in the ALR



Similar to Figure 34 above, Figure 35 shows that on Barnston Island, the proportion of farmed land cover increases as the parcel size increases.

RESIDENTIAL USE IN THE ALR

The ALR is a provincial zone in which agriculture is the priority use. Some “Residential” use is considered a necessary accessory to the agricultural use of a property, however “Residential” use which is not an accessory to agriculture can effectively limit the ability of agriculture to grow, intensify and respond to market demands. When the primary motivation for ownership of ALR land is residential, the residence is often placed to maximize privacy and views, with little consideration for agricultural opportunities on the parcel. Houses that are not adjacent to the frontage road alienate portions of land from future agriculture. If the occupants are non-farmers, they are more likely to be affected by noise, odour, or dust from neighbouring farm operations.

The size of the residence may be another factor to consider. Properties with larger residences usually have higher property values making it more difficult for a farmer to acquire and convert this land to farmland in the future.

In the following analysis cabins/cottages, mobile homes, single-family houses, duplexes, townhouses, apartments, motels, hotels, dormitories, and institutional living buildings are included. Single-family houses are further described by estimated size of the building:

- Small single-family house <1,500 sq. ft.
- Medium single-family house 1,500 – 3,500 sq. ft.
- Large single-family house 3,500 – 5,000 sq. ft.
- Estate (very large) single-family house > 5,000 sq. ft.

Residential footprint includes the main residence plus its associated yard, driveway, parking and any auxiliary buildings or structures. When two residences are on a property, areas associated to both (such as shared driveways, parking or yard), are assigned to the closest residence.

Properties “Not used for farming but available” are properties with either no apparent use or an existing non-farm use that is compatible with agriculture, such as Residential.

Properties “Not used for farming and unavailable” have an established non-farm use that is incompatible with agriculture.

Table 18. Farming and residences in the ALR

Parcel status	With residence		Without residence		Total number of parcels
	Number of parcels	% of parcels	Number of parcels	% of parcels	
Used for farming	16	31%	12	23%	28
Not used for farming but available	11	21%	13	25%	24
Not used for farming and unavailable	-	-	-	-	-
TOTAL	27	52%	25	48%	52

Table 18 shows that 27 parcels or 52% of the ALR parcels have residences and that 11 of these parcels are “Not used for farming”.

Table 19. Farming and residence type in the ALR

Parcel status	Residences							Total residences	Total number of parcels
	Single mobile home	Small house	Medium house	Large house	Estate house	Duplex	Apartment		
Used for farming *	4 (2)	19 (12)	2 (2)	-	-	-	-	25	16
Not used for farming but available *	3 ()	27 (9)	2 (2)	-	-	-	-	32	11
Not used for farming and unavailable *	-	-	-	-	-	-	-	-	-
TOTAL RESIDENCES	7	46	4	-	-	-	-	57	
TOTAL PARCELS	2	21	4	-	-	-	-		27

* xx(yy) - xx indicates the number of residences and (yy) indicates the number of parcels where the residence type is the largest on that parcel. For instance, Barnston Island has one parcel "Not used for farming but available" with 3 single mobile homes and 14 small houses. This parcel is counted in the "Small house" category as a small house is considered larger than a single mobile home.

Table 19 demonstrates that there are 27 parcels in the ALR with 57 residences (some parcels have more than one residence). There are no "Large" or "Estate" houses on Barnston Island.

The Barnston Island 3 Indian reserve is counted as one parcel "Not used for farming but available" with 3 single mobile homes and 14 small houses. If the reserve was excluded from this analysis, there would be 26 parcels in the ALR with 40 residences.

Figure 36. Total area in residential footprint by parcel size

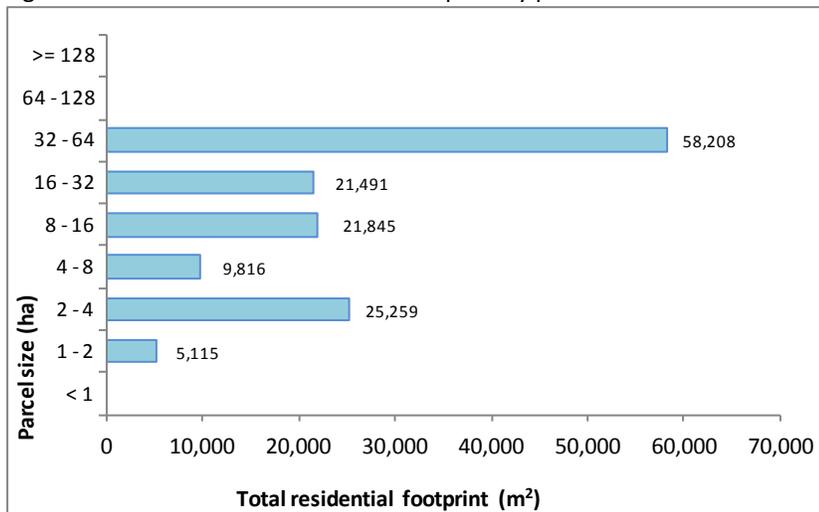
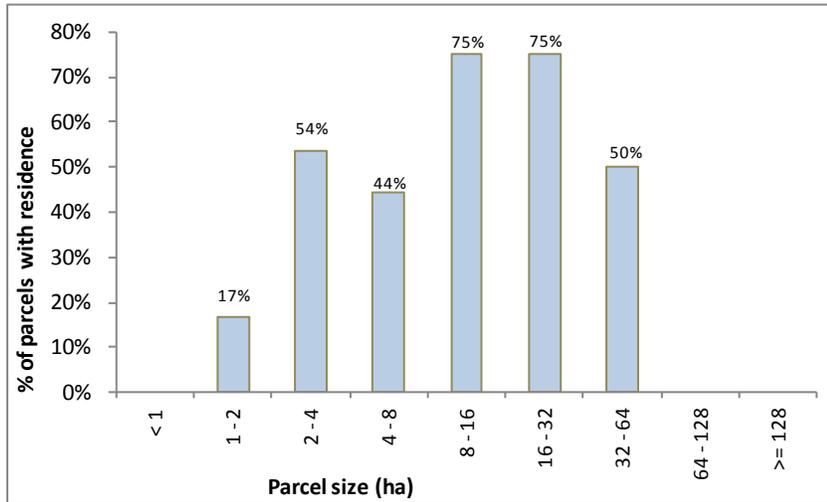


Figure 36 illustrates that there are over 14 hectares (141,734 m²) of ALR land in residential footprints distributed across all parcel sizes except for the <1 hectare category.

There are 3 parcels 32 – 64 hectares in size that have residences. One parcel associated with Barnston Island 3 Indian reserve has a total area of 4.9 hectares (49,081 m²) in residential footprints.

Figure 37. Proportion of parcels with residences by parcel size



Although there are 8 parcels in ALR that are less than 2 hectares in size (refer to Figure 30), Figure 37 shows that only 17% of them have residences.

Figure 38. Average percent of parcel area in residential footprint by parcel size

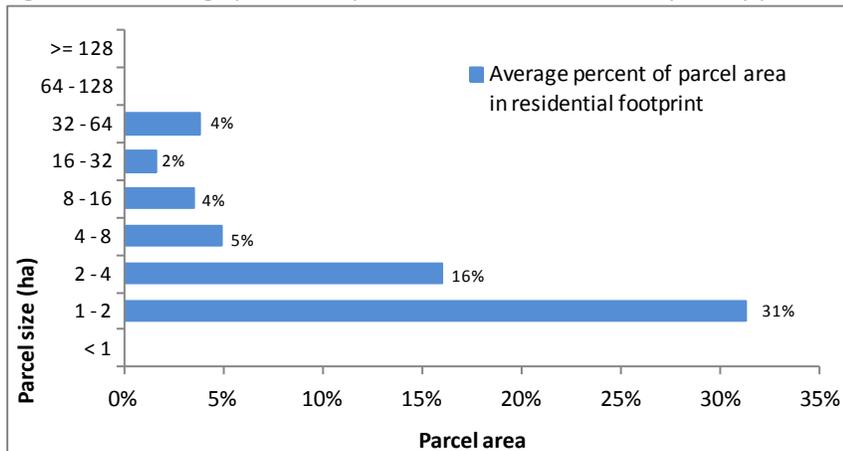


Figure 38 demonstrates that residential footprints on smaller parcels use a greater proportion of the parcel area than those on larger parcels.

Table 20. Main agriculture activity and largest residence on parcels "Used for farming" in the ALR

Main agricultural activity	Largest residence					Number of parcels
	Single mobile home	Small house	Medium house	Large house	Estate house	
Berries	-	2	-	-	-	2
Equine	-	1	-	-	-	1
Forage, pasture	1	5	1	-	-	7
Livestock	1	4	1	-	-	6
TOTAL PARCELS	2	12	2	-	-	16

Table 20 shows that houses occur most frequently on parcels with forage, pasture or livestock production as the main agricultural activity.

There are no "Large" or "Estate" houses on Barnston Island.

Appendix A

CULTIVATED FIELD CROPS

Table A1. Distribution of crop field sizes for all cultivated land

Field size (ha)	Number of crop fields				Total number
	Forage, pasture	Cranberries	Cultivated land *	Mixed vegetables	
< 1	3	-	-	1	4
1 - 2	8	-	1	-	9
2 - 4	10	-	-	-	10
4 - 8	5	-	-	-	5
8 - 16	4	1	-	-	5
16 - 32	4	3	-	-	7
32 - 64	1	-	-	-	1
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF FIELDS	35	4	1	1	41
AVERAGE CROP AREA (ha)	8 ha	21 ha	1 ha	< 1 ha	9 ha
MEDIAN CROP AREA (ha)	3 ha	22 ha	1 ha	< 1 ha	3 ha
AVERAGE PARCEL SIZE (ha)	12 ha	27 ha	30 ha	5 ha	13 ha

* Cultivated land refers to land that has been prepared for planting but the crop is not yet visible.

Table A2. Distribution of forage and pasture field sizes

Field size (ha)	Number of forage or pasture fields			Total number
	Forage	Pasture	Unused *	
< 1	2	3	-	5
1 - 2	5	1	3	9
2 - 4	6	4	-	10
4 - 8	2	2	1	5
8 - 16	4	-	-	4
16 - 32	3	1	-	4
32 - 64	1	-	-	1
64 - 128	-	-	-	-
>= 128	-	-	-	-
TOTAL NUMBER OF FIELDS	23	11	4	38
AVERAGE CROP AREA (ha)	9 ha	4 ha	2 ha	7 ha
MEDIAN CROP AREA (ha)	3 ha	3 ha	1 ha	3 ha
AVERAGE PARCEL SIZE (ha)	14 ha	10 ha	13 ha	13 ha

* Unused refers to forage or pasture which has not been cut or grazed during the current growing season.

Table A3. Distribution of cranberry field sizes

Field size (ha)	Cranberries	Total number
< 1	-	-
1 - 2	-	-
2 - 4	-	-
4 - 8	-	-
8 - 16	1	1
16 - 32	3	3
32 - 64	-	-
64 - 128	-	-
>= 128	-	-
TOTAL NUMBER OF FIELDS	4	4
AVERAGE CROP AREA (ha)	21 ha	21 ha
MEDIAN CROP AREA (ha)	22 ha	22 ha
AVERAGE PARCEL SIZE (ha)	27 ha	27 ha

Table A4. Distribution of natural pasture areas

Area (ha)	Number of areas	Total number
	Pasture (natural)	
< 1	1	1
2 - 4	2	2
2 - 4	-	-
4 - 8	-	-
8 - 16	1	1
16 - 32	1	1
32 - 64	-	-
64 - 128	-	-
>= 128	-	-
TOTAL NUMBER OF AREAS	5	5
AVERAGE AREA (ha)	11 ha	11 ha
MEDIAN AREA (ha)	4 ha	4 ha
AVERAGE PARCEL SIZE (ha)	16 ha	16 ha

LIVESTOCK

Table A5. Distribution of livestock activities by type

Parcel size (ha)	Type of activity						Total number of activities
	Beef	Dairy	Poultry	Sheep / lamb / goat	Inactive operation *	Equine	
< 1	-	-	-	-	-	-	-
1 - 2	-	-	-	-	-	-	-
2 - 4	1	-	-	-	1	1	3
4 - 8	1	-	1	1	-	2	5
8 - 16	1	-	1	2	-	1	5
16 - 32	1	1	-	-	1	1	4
32 - 64	-	-	-	-	1	-	1
64 - 128	-	-	-	-	-	-	-
>= 128	-	-	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	4	1	2	3	3	5	18
MEDIAN PARCEL SIZE (ha)	10 ha	19 ha	7 ha	9 ha	28 ha	5 ha	8 ha
AVERAGE PARCEL SIZE (ha)	11 ha	19 ha	7 ha	10 ha	22 ha	10 ha	12 ha

* Inactive operation is where livestock structures were present but appear to be unused.

Table A6. Beef activities

Type of activity	Scale	By parcel		Total number of activities	By activity type	
		Main type	Secondary type		Intensive	Non Intensive
	Small scale (2-25 cattle)	3	-	3	-	3
Cow calf	Large scale (> 100 cattle)	1	-	1	-	1
TOTAL	TOTAL	4	-	4	-	4

"Main Type" and "Secondary Type" of livestock are determined by comparing the scale of different livestock activities on the parcel and does not represent primary agricultural activity.

"Intensive" livestock activities utilize specialized structures such as barns, feedlots and stockyards designed for confined feeding at high stocking densities.

"Non Intensive" livestock activities allow animals to graze on a pasture and often utilize non intensive barns and corrals/paddocks.

Table A7. Distribution of beef activities by parcel size and scale

Parcel size (ha)	Scale of beef activities				Total number of activities
	Very small (1 cow)	Small (2-25 cattle)	Medium (25-100 cattle)	Large (> 100 cattle)	
< 1	-	-	-	-	-
1 - 2	-	-	-	-	-
2 - 4	-	1	-	-	1
4 - 8	-	1	-	-	1
8 - 16	-	1	-	-	1
16 - 32	-	-	-	1	1
32 - 64	-	-	-	-	-
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	-	3	-	1	4
AVERAGE PARCEL SIZE (ha)	-	7 ha	-	20 ha	

Figure A1. Distribution of beef activities by parcel size and scale

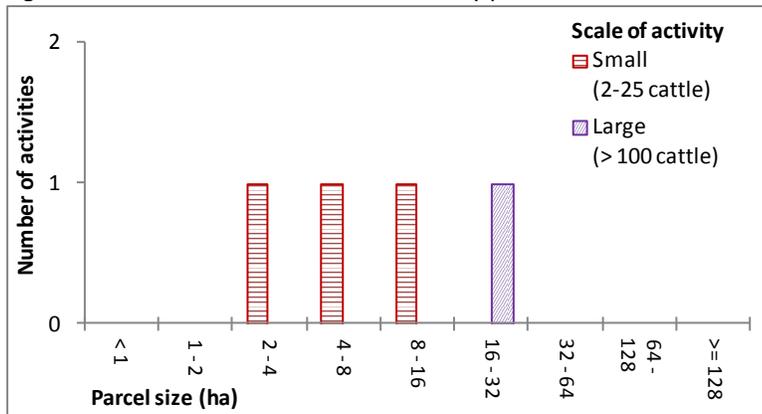
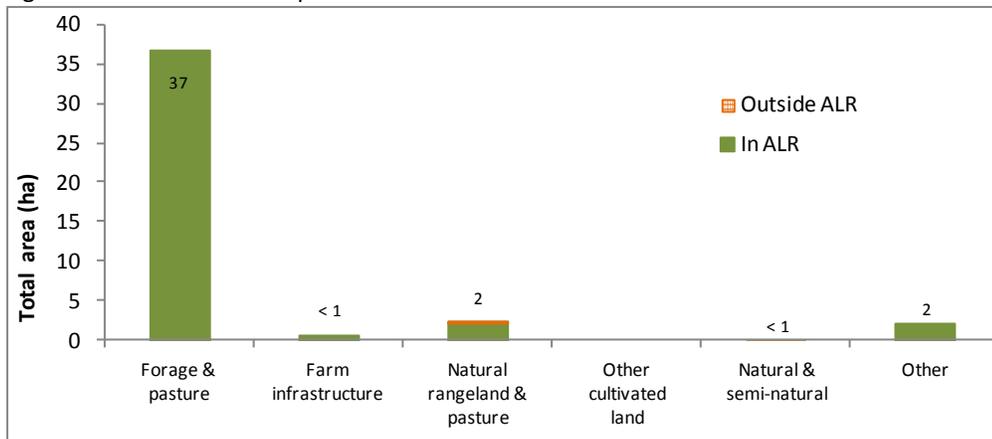


Figure A2. Land cover on parcels with beef activities¹



¹ Other includes vegetated lands seeded or planted for landscaping, dust, or soil control but not cultivated for harvest or pasture, lands covered by built objects but not farm infrastructure, and bare areas such as piles, pits, fill dumps.

Table A8. Dairy activities

Scale of dairy activity	By parcel		Total number of activities	By activity type	
	Main type	Secondary type		Intensive	Non intensive
Large scale (> 100 cattle)	1	-	1	1	-
TOTAL	1	-	1	1	-

"Main Type" and "Secondary Type" of livestock are determined by comparing the scale of different livestock activities on the parcel and does not represent primary agricultural activity.

"Intensive" livestock activities utilize specialized structures such as barns, feedlots and stockyards designed for confined feeding at high stocking densities.

"Non Intensive" livestock activities allow animals to graze on a pasture and often utilize non intensive barns and corrals/paddocks.

Table A9. Distribution of dairy activities by parcel size and scale

Parcel Size (ha)	Scale of dairy activities				Total number of activities
	Very small (1 cow)	Small (2-25 cattle)	Medium (25-100 cattle)	Large (> 100 cattle)	
< 1	-	-	-	-	-
1 - 2	-	-	-	-	-
2 - 4	-	-	-	-	-
4 - 8	-	-	-	-	-
8 - 16	-	-	-	-	-
16 - 32	-	-	-	1	1
32 - 64	-	-	-	-	-
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	-	-	-	1	1
AVERAGE PARCEL SIZE (ha)	-	-	-	19 ha	19 ha

Figure A3. Distribution of dairy activities by parcel size and scale

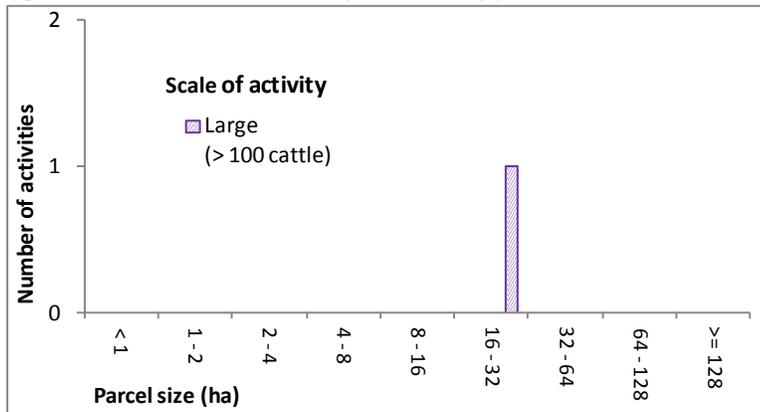


Figure A4. Land cover on parcels with dairy activities²

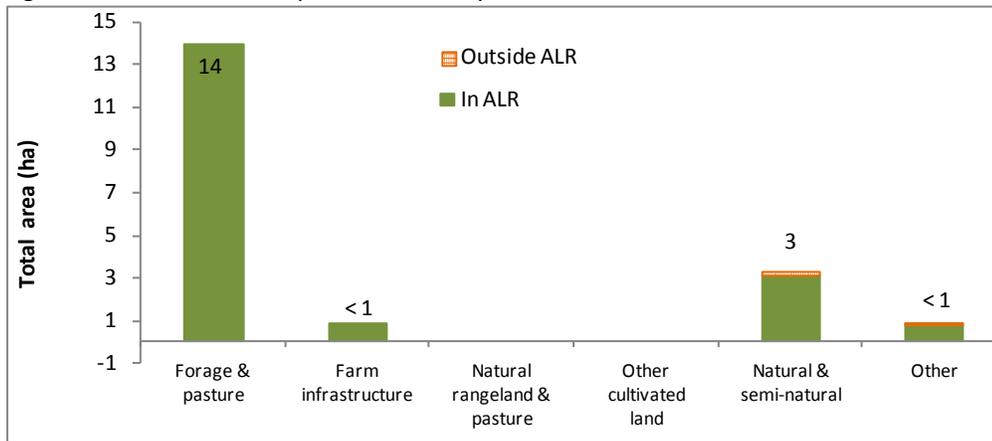


Table A10. Poultry activities

Poultry activity	Scale	By parcel		Total number of activities	By activity type	
		Main type	Secondary type		Intensive	Non intensive
Chicken	Very small scale (< 100 birds)	1	-	1	-	1
Goose	Very small scale (< 100 birds)	-	1	1	-	1
TOTAL	TOTAL	1	1	2	-	2

"Main Type" and "Secondary Type" of livestock are determined by comparing the scale of different livestock activities on the parcel and does not represent primary agricultural activity.

"Intensive" livestock activities utilize specialized structures at high stocking densities.

"Non Intensive" livestock activities allow animals to graze on a pasture and often utilize non intensive barns.

Table A11. Distribution of poultry activities by parcel size and scale

Parcel size (ha)	Scale of poultry activities				Total number of activities
	Very small (< 100 birds)	Small (100 - 2,500 birds)	Medium (2,500 - 10,000 birds)	Large (> 10,000 birds)	
< 1	-	-	-	-	-
1 - 2	-	-	-	-	-
2 - 4	-	-	-	-	-
4 - 8	1	-	-	-	1
8 - 16	1	-	-	-	1
16 - 32	-	-	-	-	-
32 - 64	-	-	-	-	-
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	2	-	-	-	2
AVERAGE PARCEL SIZE (ha)	7 ha	-	-	-	7 ha

² Other includes vegetated lands seeded or planted for landscaping, dust, or soil control but not cultivated for harvest or pasture, lands covered by built objects but not farm infrastructure, and bare areas such as piles, pits, fill dumps.

Figure A5. Distribution of poultry activities by parcel size and scale

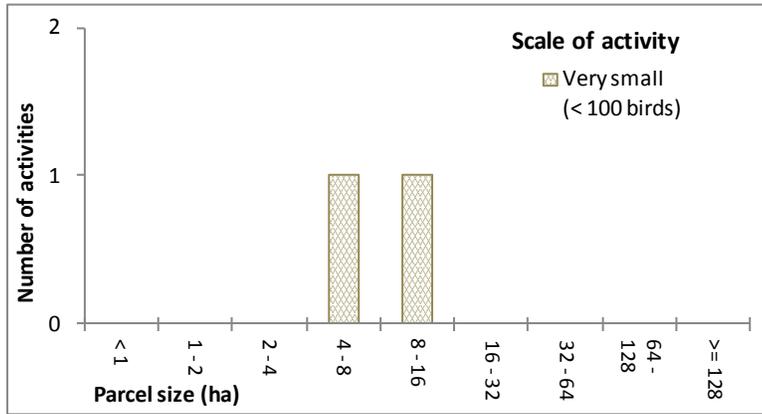


Table A12. Sheep and goat activities

Type of activity	Scale of dairy activity	By parcel		Total number of activities	By activity type	
		Main type	Secondary type		Intensive	Non intensive
Sheep / lamb	Very small scale (< 10 sheep)	1	-	1	-	1
Goat	Small scale (< 125 goats)	-	2	2	-	2
TOTAL	TOTAL	1	2	3	-	3

"Main Type" and "Secondary Type" of livestock are determined by comparing the scale of different livestock activities on the parcel and does not represent primary agricultural activity.

"Intensive" livestock activities utilize specialized structures such as barns, feedlots and stockyards designed for confined feeding at high stocking densities.

"Non Intensive" livestock activities allow animals to graze on a pasture and often utilize non intensive barns and corrals/paddocks.

Table A13. Distribution of sheep and goat activities by parcel size and scale

Parcel Size (ha)	Scale of sheep and goat activities				Total number of activities
	Very small (5 goats or 10 sheep)	Small (5-125 goats or 10-250 sheep)	Medium (25-100 cattle)	Large (> 100 cattle)	
< 1	-	-	-	-	-
1 - 2	-	-	-	-	-
2 - 4	-	-	-	-	-
4 - 8	-	1	-	-	1
8 - 16	1	1	-	-	2
16 - 32	-	-	-	-	-
32 - 64	-	-	-	-	-
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	1	2	-	-	3
AVERAGE PARCEL SIZE (ha)	9 ha	10 ha	-	-	10 ha

Figure A6. Distribution of sheep and goat activities by parcel size and scale

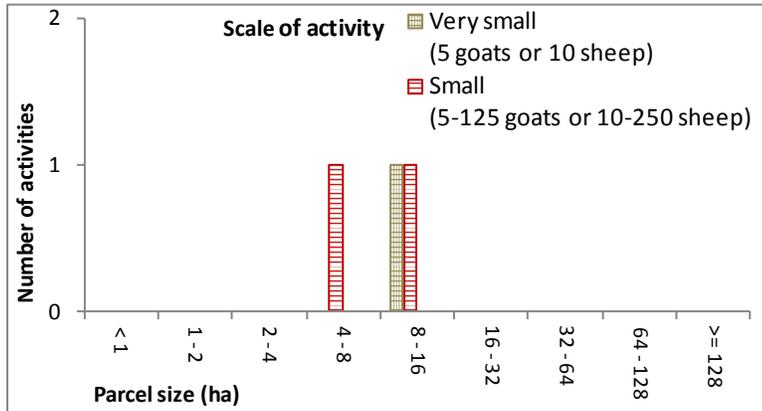


Figure A7. Land cover on parcels with sheep or goat activities³

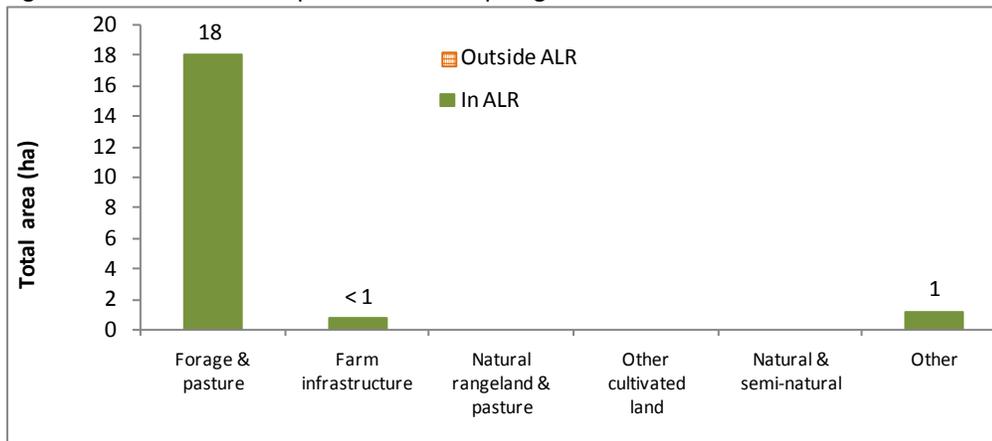


Table A14. Equine activities

Type of activity	Scale of equine activity	By parcel		Total number of activities	By activity type	
		Main Type	Secondary Type		Intensive	Non intensive
	Very small scale (1 horse)	2	2	4	-	4
	Small scale (2-25 horses)	1	-	1	-	1
TOTAL	TOTAL	3	2	5	-	5

"Main Type" and "Secondary Type" of livestock are determined by comparing the scale of different livestock activities on the parcel and does not represent primary agricultural activity.

"Intensive" livestock activities utilize specialized structures such as barns, feedlots and stockyards designed for confined feeding at high stocking densities.

"Non Intensive" livestock activities allow animals to graze on a pasture and often utilize non intensive barns and corrals/paddocks.

³ Other includes vegetated lands seeded or planted for landscaping, dust, or soil control but not cultivated for harvest or pasture, lands covered by built objects but not farm infrastructure, and bare areas such as piles, pits, fill dumps.

Table A15. Distribution of equine activities by parcel size and scale

Parcel size (ha)	Scale of equine activities				Total number of activities
	Very small (1 - 2 equine)	Small (2 - 25 equine)	Medium (25 - 100 equine)	Large (> 100 equine)	
< 1	-	-	-	-	-
1 - 2	-	-	-	-	-
2 - 4	1	-	-	-	1
4 - 8	2	-	-	-	2
8 - 16	-	1	-	-	1
16 - 32	1	-	-	-	1
32 - 64	-	-	-	-	-
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	4	1	-	-	5
AVERAGE PARCEL SIZE (ha)	10 ha	8 ha	-	-	10 ha

Figure A8. Distribution of equine activities by parcel size and scale

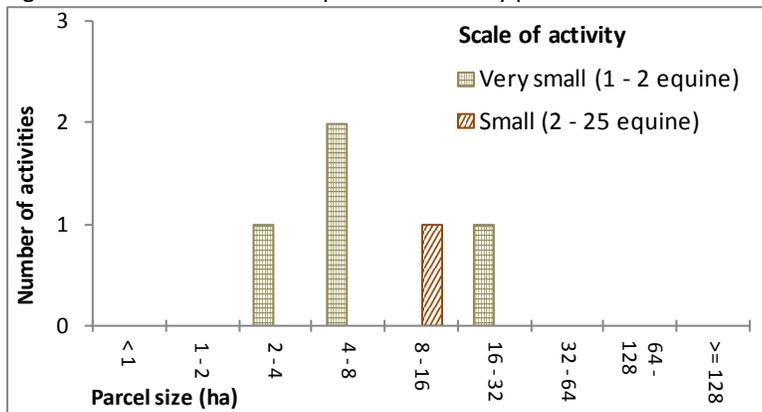
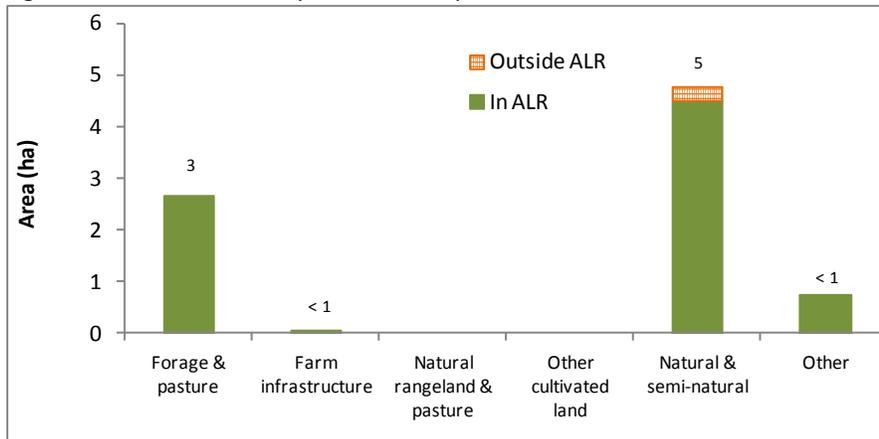


Figure A9. Land cover on parcels with equine activities⁴



⁴ Other includes vegetated lands seeded or planted for landscaping, dust, or soil control but not cultivated for harvest or pasture, lands covered by built objects but not farm infrastructure, and bare areas such as piles, pits, fill dumps.