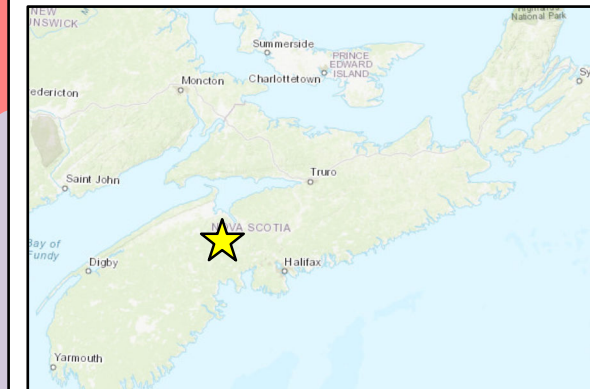
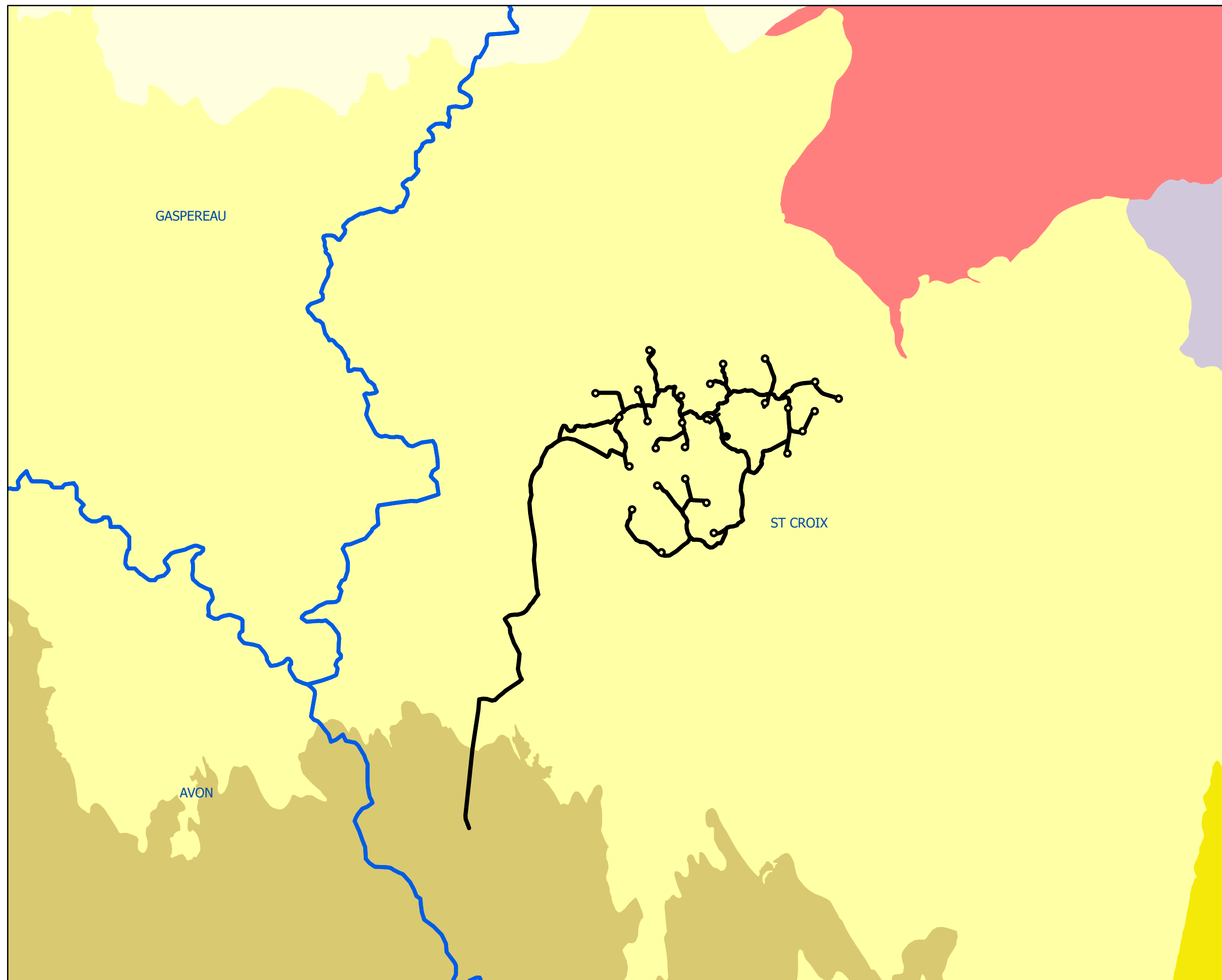


Figure 20
Ecodistricts and Secondary Watersheds



Legend

- Project PDA
- Watershed Boundary

Ecodistrict

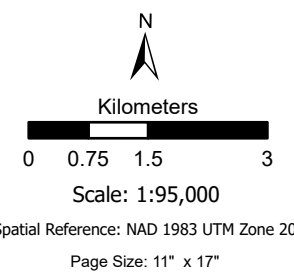
- Rawdon/Wittenburg Hills
- Central Lowlands
- Valley Slope
- South Mountain
- Lahave Drumlins
- St. Margaret's Bay

Notes

The site will be accessed via Highway 344
Turbine markers are not to scale

Sources

- Basedata provided by the Province of Nova Scotia
- Basemap: ESRI World Topo Map



Production Date: Dec 19, 2022



Corridors are natural linear communities that link parts of the ecodistrict (NSDNRR 2015a). When assessing connectivity, watercourses are defined as linear corridors and often times serve as a natural delineation of the landscape. The Project is located within the St. Croix primary watershed. Scaling for this, the Project is located in the Avon River secondary watershed (1DE-2), described in **Section 3.1.4**. As previously mentioned, landscapes are large and heterogeneous areas with a variety of land covers and different shapes, sizes, and compositions. As such, the process to define an assessment area for the Project is different than those used for the Local Assessment Areas (LAA) described in **Section 3.1**. When conducting a landscape analysis, the scale will depend on specific conditions of the area, spatial heterogeneity, and objectives of the study. Having a fixed size for the spatial dimension can be arbitrary and may not provide a comprehensive view of the impacts of the Project. The purpose of landscape analysis is to understand the region as an ecological system and explore the structures and functions within it (Stewart and Neily 2008).

To provide a better understanding of the landscape-scale impacts of the Project, different scales were used when characterizing the current landscape status and connectivity. There is not a single LAA for ecological connectivity as with other VECs, but rather different study areas depending on the component that is being analyzed. It is important to note that this analysis used a landscape feature approach focused on “general species” rather than a specific multi-species approach, which could present different results. This analysis also focused solely on structural ecological connectivity, not functional connectivity.

4.2 Landscape Status/Connectivity

4.2.1 Approach and Methodology

A desktop review using publicly-available resources was conducted to characterize the current state of the landscape surrounding the Project. The following sources were included:

- Nova Scotia Department of Natural Resources and Renewables (NSDNRR) geographic information systems (GIS) map layers (Ecological Land Classification, Forest and Non-Forest Inventory, Old Growth Forest Policy, Land Cover, Road Index, Seral Stage, Ecological Emphasis Class, Protected Natural Areas, Wildlife Management Zones) (data.novascotia.ca. Contains information licensed under the Open Government License – Nova Scotia);
- Nova Scotia (NS) provincial landscape viewer (NSDNRR 2022);
- Spatial data retrieved from *Forest connectivity in Nova Scotia* by Cunningham et al. (2020);
- NSDNRR 2021 Recovery Plan for Mainland Moose;
- NSDNRR 2012 Special Management Practices for White-tailed Deer Wintering Areas; and,
- High-resolution Google Earth satellite imagery.

Nova Scotia’s *Procedural Guide for Ecological Landscape Analysis* (Stewart and Neily 2008) details the process to carry out a historical and existing landscape analysis in the province. Using this information as a basis, this section focuses on identifying the current landscape

conditions around the Project and assessing how different Project stages could modify them. Several concepts from this guide were used to provide a better understanding of the landscape (i.e., Ecological Land Classification, Land Cover, Seral Stage, Road Index, and Ecological Emphasis Classification). While each component shows different interpretations of the landscape, the holistic view of all components allows us to understand the Project and region's landscape composition.

As described in **Section 3.1.1**, available mapping and observations gathered during the biophysical assessments were used to generate GIS maps showing the existing habitat and land use features surrounding the Project and to calculate the area of potential disturbance within each type (**Figure 4**). Approximately 34% of the Potential Development Area (PDA) is located within areas that have been largely previously disturbed by forestry, agriculture, recreational trails, and access roads. The remaining non-disturbed areas of the PDA are primarily softwood and mixedwood forests (27% and 23%, respectively; **Table 8**).

4.2.2 Ecologically Significant Areas

The closets wilderness area, approximately 12 km south from the closest Project turbine, is the South Panuke Wilderness Area. This wilderness area extends from Highway 103 near Chester to Panuke Lake, encompasses roughly 68 km², and serves as a corridor that facilitates connectivity between western Nova Scotia and the rest of the province. The area contains mainly mature red spruce, with some hemlock and white pine.

Across the lake from the South Panuke Wilderness Area is the Panuke Lake Nature Reserve, about 14 km from the nearest Project turbine. The reserve is only 1.5 km², serves to protect old-growth forests, and is protected by a surrounding buffer zone of 104 hectares.

A Deer Wintering Area (DWA) is located about 2km north of the Project Site, on the north side of the West Branch of the Avon River. During the winter, White-tailed Deer congregate in high density groups in areas with which provide shelter from the prevailing wind, offer maximum exposure to the sun and offer cover as well as access to vegetation for browse (NSDNR 2012). DWAs are identified by NSDNRR for identifying areas for special management practices in Nova Scotia. Although no designated DWAs on the Project site, there is potential for deer to winter in uncut forested areas, generally located on the east side of the project site.

Additionally, the Project is set back from the following ecologically significant areas:

- 3.9 km to the nearest Important Bird Area (IBA), Southern Bight, Minas Basin;
- 4.3 km to the nearest Provincial Park, Falls Lake Provincial Park;
- 14 km to the Wolfville Watershed Nature Preserve;
- 15 km west to Eagles Nest Nature Reserve

4.2.3 Local Ecodistricts

As previously mentioned, the Project is located primarily in the South Mountain ecodistrict (720) (**Figure 20**). Approximately 86% of the South Mountain Ecodistrict is forested and 6% is comprised of wetlands. The remainder of the ecodistrict is comprised of other land types such as agriculture, barrens, urban and utility.

46% of forested area consists of softwood cover type, 24% is mixed wood, and 30% is hardwoods (Neily et al. 2017). The mid-succession hardwood and mixedwood, and late-succession softwood forests would provide habitat for an extensive number of wildlife species. Mainland moose occur in this ecodistrict, primarily at the opposite end to where the Project is located. Other rare wildlife found in the South Mountain ecodistrict include American marten, southern flying squirrel, osprey, and some raptor species.

There are a considerable number of wetlands across the ecodistrict, providing important habitat and environmental functions. Many lakes and watercourses are also present in the ecodistrict, which serve as a habitat for a variety of flora and fauna.

A profile of the South Mountain landscapes identified and mapped eight key landscape elements to better understand patterns in vegetation and the effects of disturbance (NSDNRR 2019). These elements are listed in order of size:

- Red and Black Spruce Hummocks (matrix element);
- Spruce Hemlock Pine Hummocks and Hills (patch element);
- Spruce Pine Flats (patch element);
- Tolerant Mixedwood Drumlins (patch element);
- Wetlands (patch element);
- Tolerant Mixedwood Hummocks (patch element);
- Tolerant Hardwood Hills (patch element); and
- Spruce Pine Hummocks (patch element)

Red and Black Spruce Hummocks is the most dominant element, covering more than 67% of the ecodistrict. This is a climax forest, consisting of late successional shade-tolerant softwoods, such as red spruce and eastern hemlock. The Project is located on a mix of this element and the Spruce Hemlock Pine Hummocks and Hills element.

The southernmost 2km of the access road to the Project is within the LaHave Drumlins Ecodistrict (740). This ecodistrict encompasses a 275,071-hectare area spanning from the Kejimikujik Nation Park in the west to New Ross in the east. This ecodistrict is defined by many drumlins and shallow, stony till and is comprised of about 75% forested area. One dominant matrix element (Tolerant Mixedwood Drumlins), four patch elements (Spruce Hemlock Pine Hummocks and Hills, Spruce Pine Flats, Wetlands, and Pine Oaks Hills and Hummocks) and one corridor element (Valley Corridors) were identified within this ecodistrict.

Other ecodistricts adjacent to the South Mountain ecodistrict within 50 km of the Project include Central Lowlands (630), Valley Slope (710), Rawdon/Wittenburg Hills (410) and St. Margaret's Bay (760).

4.2.4 Land Cover

The NSDNRR land cover classification identifies forest and non-forest cover types, and it includes 12 vegetation communities based on three cover groups (i.e., softwood, mixedwood,

and hardwood), as well as wetlands, harvests, and agriculture, among other classifications. The landcover within the PDA is mostly classified as softwood (30%), harvests (26%), mixedwoods (25%) and hardwoods (17%), with patches of urban/utility/quarry/transportation (0.6%), and wetlands (0.32%).

Wildlife corridors, also called dispersal corridors or landscape linkages are passages that connect terrestrial areas to one another. These corridors are crucial to preserve landscape-scale connectivity. These pathways allow terrestrial flora to disperse and terrestrial fauna to move into habitats where they can reproduce, forage and find shelter (NCC 2022). Given the distribution of hardwood, mixedwood, softwood and wetlands in the area surrounding the PDA, and considering the locations of any nearby important potential habitats, there is no identification of any significant potential wildlife corridors impacted by the Project. The Project is located on large distribution of harvested land, which suggests that terrestrial animals, such as Mainland moose, will be less likely to use these areas and instead opt to travel through more forested paths that offer cover (NSDNRR 2021). The Project is not located within Mainland moose concentrated areas, nor is it within Core Habitat for Mainland moose (NSDNRR 2021).

There is, however, a patch of approximately 0.84 km² old growth forest about within 500 m of the PDA. When considering the pathway options to and from this patch for wildlife, most movement would likely take place adjacent to or away from the PDA and not through it. This is due to the already fragmented nature of the landscape, the locations of the Wolfville Watershed Nature Preserve and the other old growth patch to the southeast of the PDA, and the primarily agricultural and urban land to the northeast of the PDA.

Additionally, there is an intact patch of hardwood adjacent to the Project to the East. This patch remains intact from previous forest harvesting activities and is about 5.5 km². It is possible that this patch is used for north-to-south movement of wildlife. Although the PDA does intersect with this patch, the intersection is only 2.6 hectares and does not fragment the forest.