

Stargazing Park

A Proposed Development Agreement between

STAR-GAZE
Nova Scotia

and

HALIFAX
Halifax Regional Municipality

Location:	5933 Prospect Rd, Big Lake, NS (Lot 8)
PID	40873184
Applicant:	Charles Freeman Architect for
Owner:	Stargaze Nova Scotia
Date:	<u>24 May 2024 (update when adopted)</u>

Please read this document in conjunction with:

Appendix A: Site Plan;

Appendix B: Traffic Statement;

Appendix C: Preliminary Stormwater Management Plan; and,

Appendix D: Wetland Delineation Report,

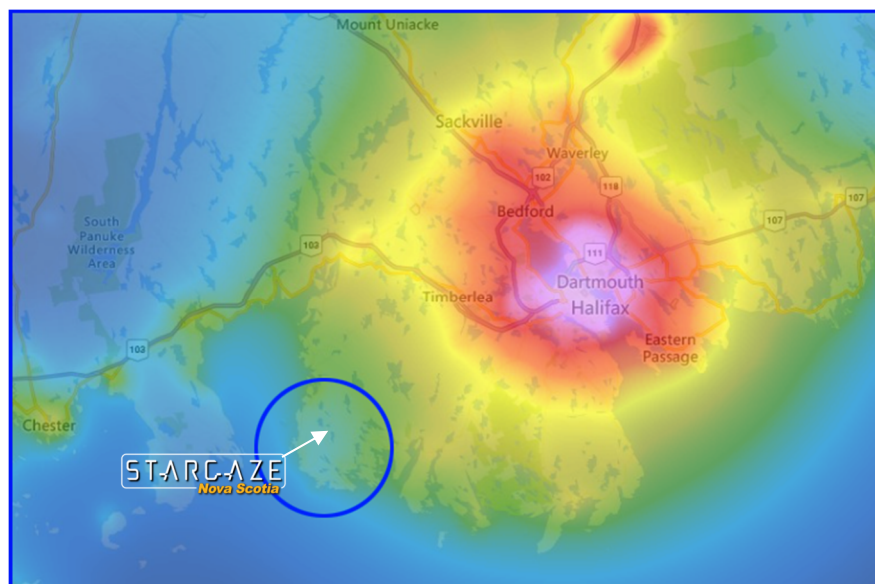
which form a part of this proposed development agreement.

An adopted text should omit all underlined word text including the word "proposed"

1. Rationale Overview

The seaside communities lining Prospect Road and Peggy's Cove Road have a long history of attracting the travelling public (MPS 3). They attract visitors with the picturesque quality of these communities as well as the natural scenic beauty that surround them (MPS 3). A Stargazing Park on Big Lake, outlined in this document, complements the scenic qualities of the area. The park expands the area's recreational offerings during the day with educational programming and extends these offerings into the evening with guided stargazing.

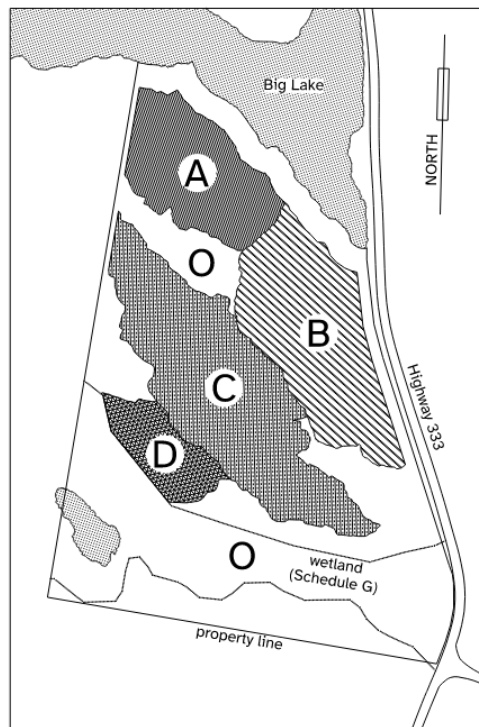
Where the area has a long history of supporting itself with fishing and its daytime beauty (MPS 6), the proposed park aims to tap into another important natural resource: the area's dark skies. Only 30 minutes by car or bus from downtown Halifax, the proposed Stargazing Park enjoys mostly fog free nights thanks to topography and wind direction. It is removed from the light pollution of urban areas in Halifax proper such that the Milky-Way is clearly visible on moonless nights. In the light pollution map below, blue zones denote these dark skies:



Parallel with this application, Stargaze Nova Scotia seeks to engage neighbours and other local stakeholders in an application to protect these dark skies. This process will result in Dark Sky Certification from the Royal Astronomical Society of Canada or inclusion in the International Dark Sky Sanctuaries program of Dark Sky International.

The proposed Stargazing Park sits on a beautiful piece of land. The Park will sit on 26 acres of coastal barrens situated on the west side of Prospect Road, in Big Lake, NS. It is bordered by Big Lake to its north, and the road to its east. A large wetland, shown in Schedule G, crosses the property at its southern end. This wetland stretches north in the adjacent property (PID

41024117) to meet Big Lake. The wetland, lake and road maroon an “island” of developable land which consists primarily of two granite ridges, one bordering the lake to the north (A) and the other bordering the wetland to the south (C). A flat area of ground (B) sits between the ridges and is protected from view of the road by a series of berms formed by granite outcroppings topped with alpine vegetation. Also, a small flat area (D) sits on the shoulder of the south ridge between it and the scheduled wetland. Other areas (O) include watercourse and lot line buffers, and other interstitial areas in which very light development may be possible. No development is proposed in the wetland delineated in Schedule G, where development is not permitted.



Any development in the Stargazing Park will preserve the scenic qualities of the property it sits on, including the vista it provides for travelers on the adjacent Prospect Road. The most visible elements will be small and will sit upon the granite ridges and outcrops that stretch across the property. A café, near the road, will stand out where it sits on granite outcropping that hides the café’s motor vehicle parking behind it. The most visible building on the property will be the Abbey Ridge Observatory, with its domed roof popping above the horizon like a small lighthouse, creating a sense of intrigue and visual interest.

All other developments will be minimized from public view. Small bunkhouse observatories will allow overnight guests to use a dedicated telescope attached to their accommodation. These bunkhouses will blend

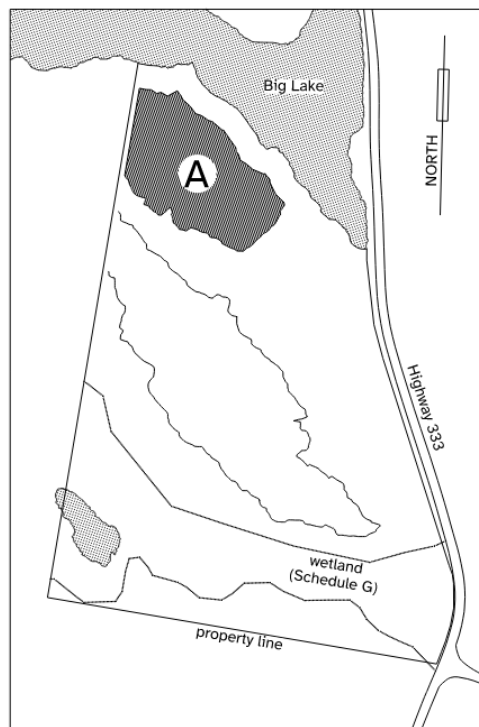
in with the vegetation of the ridges they sit on. The owners' residence and rental cabins will sit as far from the road as possible, on the granite ridge overlooking Big Lake. An analog research station is completely hidden from public view behind a large granite ridge. This station is where researchers can grow plants and astronauts can train in habitations like they would on Mars or the Moon to simulate those environments.

The most intense development will be hidden from public view by sitting in the flat area marked (B) which is screened from view by the series of berms that naturally line the road. These developments include a 13,000 SF Stargazer's Lodge and its associated motor vehicle parking. The Lodge will act as a visitors' centre for the park, providing reception for stargazers, a planetarium for daytime and cloudy nights, a museum highlighting recent developments in Nova Scotia's growing space exploration sector, washrooms and showers for travelers camping on site, as well as a craft shop.

2. Uses and Structures

This section details all structures, buildings, and uses in this proposed development agreement.

2.1 Area A - North Ridge



This proposed development agreement includes a single use dwelling for the use of the owner, a caretaker, or other long-term tenant.

Single Unit Dwelling

Number of Buildings	at most one (1)
Max Building Footprint	2000 SF / 186 m ²
Max Building Height	35' / 10.7 m
Min Distance Between Buildings	18' / 5.4 m
External Decks	Allowed
Motor Vehicle Parking	Four (4) spaces
Septic Services	Yes, full bathrooms and kitchen
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zone	RRA-1
MPS policy authorization	RRA-2: residential use, as of right

This proposed development agreement includes rental cabins with views of the lake and surrounding area. These cabins can be rented on a nightly, weekly, monthly, or annual basis to members of a traveling public. Visiting astronomers, astronauts, scientists or artists-in-residence could use them to participate in or lead programming for the Stargazing Park.

Rental Cabins

Number of Buildings	At most twelve (12)
Max Building Footprint	2000 SF / 186 m ² each
Max Building Height	35' / 10.7 m
Min Distance Between Buildings	18' / 5.4 m
External Decks	Allowed
Motor Vehicle Parking	Two (2) spaces
Septic Services	Yes, full bathrooms and kitchen
Potable Water	Yes
Electricity	Yes, connected to grid

LUB Zones	RB-2 and RRA-1
MPS policy authorizations	RB-11: commercial recreation use in zone RB-2 IM-6: applies policy RB-11 to zone RRA-1

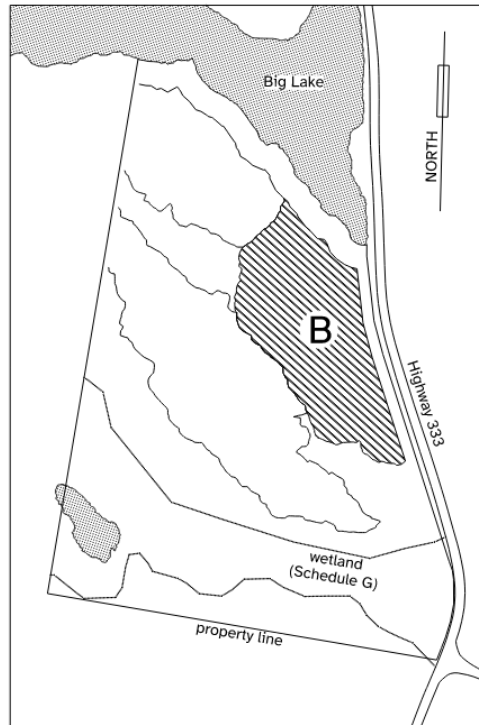
NOTE: The site plan pictures 12 rental cabins at their maximum allowed footprint.

Alternatively to rental cabins, the proposed development agreement provides for the inclusion of camping sites for recreational vehicles (RVs). Each cabin can be replaced by two RV camping sites. If no cabins are built, the maximum number of RV sites is 24. If 12 cabins are built, then no RV sites will be permitted. The proposed development agreement allows for any mix that does not exceed the total maximum of 12 cabins or equivalent (i.e. 6 cabins and 12 RV sites, or 9 cabins and 6 RV sites hit the maximum build-out).

RV Campsites

Number of Sites	Two (2) RV sites can replace any rental cabin
External Decks	Not allowed
Number of RVs	One (1) per site
Motor Vehicle Parking	One (1) space
Septic Services	By direct connection to septic system or at RV dumping station at septic field
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2 and RRA-1
MPS policy authorizations	RB-11: commercial recreation uses in zone RB-2 IM-6: applies policy RB-11 to zone RRA-1

2.2 Area B - Flat Between Ridges



Area B is the main visitor area, where all guests to the park will arrive, leave behind the cars, bikes or tour buses they arrive on, and then begin their engagement with the programming. For brief visitors, this engagement may mean visiting the cafe or craft shop and snapping a photo in front of the Abby Ridge Observatory and the surrounding natural beauty. For night-time visitors, the visitor area is a place to meet their astronomer guide in a multipurpose room before venturing to an observatory during clear weather or the planetarium during poor weather.

All Area B Buildings

Number of Buildings	At most ten (10)
Max Building Footprint	15,000 SF / 1394 m ² combined
Max Building Height	35' / 10.7 m
Min Distance Between Buildings	18' / 5.4 m

External Decks	Allowed
Motor Vehicle Parking	94 spaces, maximum
Bus Parking Spaces	8 spaces, maximum
Class A and B Bicycle Parking	No maximum number of spaces

The proposed development agreement places these most extensive land uses in the flat area among ridges and granite outcrops for two reasons. First, this area is hidden from view from the road and avoids spoiling the natural beauty up on the ridges, and second, this is the only flat area on the site for parking lots and large buildings.

The site plan pictures the maximum building footprint for this area divided among three (3) buildings. In reality, the development of the program might mean combining the listed uses in fewer buildings or dividing them among more buildings. In any case, these uses will sit entirely within “Area B” on the site plan.

Uses for Area B Buildings Combined

A café is set to serve patrons of the Stargazing Park with food and beverages with views of the site and its natural beauty. Locals and passers-by will also frequent the café.

Café Use

Septic Services	Yes, water closets and commercial kitchen
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2
MPS policy authorizations	RB-11: commercial recreation use

A Stargazers Lodge reception provides a place to greet and organize guests as well as provide shower facilities for overnight patrons. This area may include overnight lodging for astronomer guides who are on site late at night.

Stargazers Lodge Reception Use

Septic Services	Yes, water closets, showers, kitchenette
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2
MPS policy authorizations	RB-11: commercial recreation use

Multipurpose rooms will allow for meetings among stargazing guests and staff, as well as large gatherings of astronomers, researchers, academic groups such as the Saint Mary’s Department of Astronomy and Physics, and societies such as the Royal Astronomical Society of Canada, or the Dalhousie Astronomy Society. In these ways, the multipurpose rooms act as community halls for space lovers but could also extend to uses by members of the local communities for their community functions as well.

Multipurpose Room Uses

Septic Services	Yes, water closets, kitchenette and catering kitchen
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2
MPS policy authorizations	RB-11: commercial recreation use

A planetarium will allow large groups of people to experience astral displays when direct observations of sky are not possible.

Planetarium Use

Septic Services	Yes, water closets
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2
MPS policy authorizations	RB-11: commercial recreation use

A craft shop will sell photographs, souvenirs, art works and other goods related to stargazing, as well as the local area.

Craft Shop Use

Max Gross Floor Area	2000 SF / 186 m ²
Septic Services	Yes, water closets
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2
MPS policy authorizations	RB-1: commercial use, as of right

Space exploration exhibits will present recent astral observations as well as other information about stargazing and the local area to guests.

Space Exploration Exhibit Uses

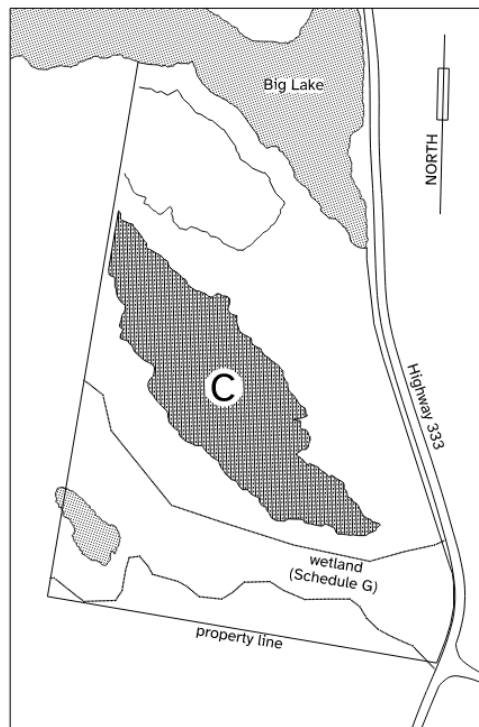
Septic Services	Yes, water closets
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2
MPS policy authorizations	RB-11: commercial recreation use

Service buildings will allow for the organization of site maintenance equipment as well as storing vehicles for moving people around the site for whom low-light conditions and uneven topography cause barriers to accessibility.

Service Building Uses

Septic Services	Yes, water closets
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2
MPS policy authorizations	RB-11: commercial recreation use

2.3 Area C - South Ridge



Look-off decks allow daytime visitors to the site to walk the trails and stop to observe the natural beauty of the surrounding landscape.

Look-Off Decks

Number of Decks	At most three (3)
Max Deck Footprint	2000 SF / 185.8 m ² each
Max Deck Height	15' / 4.6 m above highest exposed bedrock
Max Weather Protection	200 SF / 18.6 m ² of roofed area
Septic Services	No
Potable Water	No
Electricity	Yes, connected to grid
LUB Zones	RB-2 and RRA-1
MPS policy authorizations	RB-11: commercial recreation use in zone RB-2 IM-6: applies policy RB-11 to zone RRA-1

The proposed development agreement includes relocating the Abbey Ridge Observatory to this proposed site while also expanding its mission and its footprint. The Abbey Ridge Observatory was founded by the late astronomer Dr. Dave Lane, Director Emeritus of the Saint Mary’s University Observatory, who built Abbey Ridge at its current location in Stillwater Lake, NS.

The observatory will allow members of the traveling public to experience stargazing through a professional telescope, guided by a local astronomer. Group sizes of up to 60 will be able to see what the telescope is capturing from large monitors in a warm-room, or through the eyepiece of the telescope itself in the unheated observation dome.

The observatory will provide barrier-free access from the parking lot, will include washrooms, including a universal washroom, as well as storage for technical equipment, a kitchenette, and an astronomer’s office. It will also provide showers and teeth-brushing / dish-washing areas for those staying in tent sites or in the bunk house observatories.

During the day, the large monitors will be able to show visitors recent observations from the telescope. When not in use by tours, astronomers around the world will be able to book time on the telescope through remote observation. Whenever the sky is clear and dark, this telescope will contribute to our understanding of the cosmos.

Abbey Ridge Observatory

Number of Buildings	At most one (1)
Max Building Footprint	2000 SF / 186 m ²
Max Buildings Height	45’ / 13.7 m
Septic Services	Yes, water closets, kitchenette, showers for campers
Telescope	Professional Telescope
Potable Water	Yes
Electricity	Yes, connected to grid
LUB Zones	RB-2
MPS policy authorizations	RB-11: commercial recreation use IM-6: applies policy RRA-6 to zone RB-11 RRA-6: institutional use (accessory)

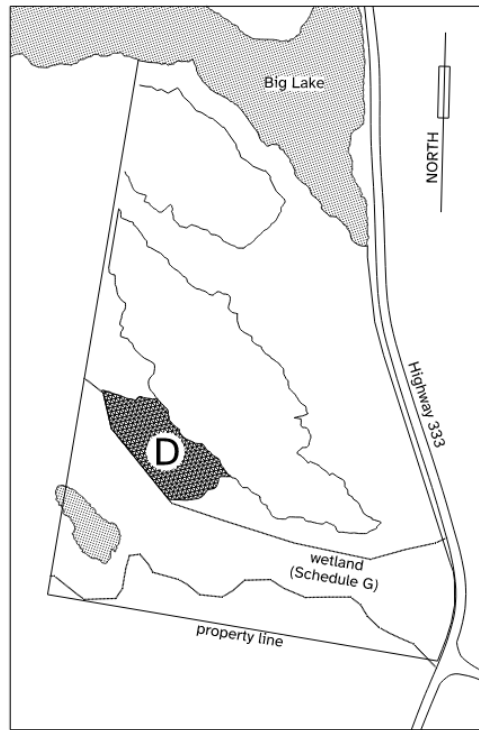
Bunkhouse observatories are unheated shelters for use in spring, summer, and fall seasons. Each bunkhouse will sleep 4 to 6 people in a bunkhouse/warming room and will house a telescope in an observatory room with a retractable roof. The stargazing experiences here would be self-

guided or guided by a local astronomer.

Bunk House Observatories

Number of Buildings	At most 12
Max Deck Footprint	215.27 SF / 20 m ² each
Max Buildings Height	20' / 6.01 m
Septic Services	no
Potable Water	no
Electricity	yes: solar or connected to grid
LUB Zones	RB-2 and RRA-1
MPS policy authorization	RB-11: commercial recreation use in zone RB-2 IM-6: applies policy RB-11 to zone RRA-1

2.4 Area D - Shoulder of South Ridge



An analog research station simulates human habitation for places such as Mars or the Moon. This station will provide training opportunities for potential astronauts and others. It will allow investigation by academics, as well as provide hands-on educational opportunities for tourists and other patrons of Stargaze Nova Scotia. The station will not involve the development or production of end products for space exploration.

Also, this facility would have affiliations with universities, space agencies, astronauts, astronomers, as well as Stargaze Nova Scotia.

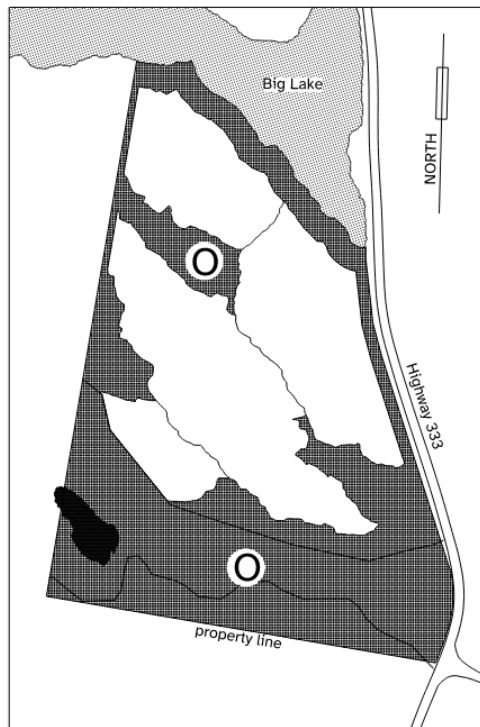
Since our common understanding of space travel and space habitats continue to evolve, the precise number and types of buildings and structures will be proposed when seeking development permits to erect them. For illustration, the site plan uses the exact building outlines of the Mars Desert Research Station (MDRS) in Utah as of Spring 2024.

The research station will sit entirely in "Area D" on the site plan. It will not be visible from the road and most of the Stargazing Park.

Analog Research Station

Number of Buildings	At most ten (10)
Max Building Footprints	4,000 SF / 371.6 m ² combined
Max Building Height	35' / 10.7 m
Min Distance Between Buildings	18' / 5.4 m
External Decks	Allowed
Motor Vehicle Parking	Open yard with space for service vehicles
LUB Zone	RRA-1
MPS policy authorization	RRA-6: institutional use RB-11: commercial recreation IM-6: applies policy RB-11 to zone RRA-1

2.5 Area O - Other Areas



A sign and outdoor display will allow motorists, cyclists, and pedestrians on the road to locate the stargazing park for planned visits as well as impromptu drop-ins.

Sign and Outdoor Display

Number of Signs	One (1) two-sided sign; or, two (2) one-sided signs
Max Area of Signs	16 SF / 1.5 m ² (one-sided) or 32 SF / 3 m ² (two-sided)
Number of Outdoor Displays	One (1)
Max Footprint of Display	100 SF / 30.5 m ²
Electricity	Yes, externally lit with lights connected to grid
LUB Zone	RB-2
MPS policy authorization	RB-1: as of right [LUB 10.4 (d) and (e)]

Patrons of the park will be able to camp in walk-in tent sites. Services such as observatories, meeting rooms, washrooms, and kitchens will be located in centralized buildings as previously details

Walk-In Tent Sites

Max Number of Sites	At most 20 (15 pictured)
Max Deck Footprint	215.27 SF / 20 m ²
Septic Services	no
Potable Water	no
Electricity	yes: solar or connected to grid
LUB Zones	RB-2 and RRA-1
MPS policy authorization	RB-11: commercial recreation use in zone RB-2 IM-6: applies policy RB-11 to zone RRA-1

OPEN SPACE USES

Other areas (“Area O”) will include open space uses which involve minimal development. These areas will be untouched except for trails, stairs, and walk-in tent sites. None of these additional uses will encroach on the front, rear, or side yard setbacks pictured on the site plan.

The site plan shows an estimation of the path network. The exact route of these paths will depend on constructability as determined by designers and trail building contractors.

Trail construction will be a combination of the following:

- a. exposed granite bedrock
- b. existing earth and rhizomatous mats
- c. granite crusher dust
- d. wide boards laid end-to-end
- e. wooden boardwalks
- f. wooden or metal stairs

3. Policy Discussion

This section discusses how the proposed development agreement conforms with applicable policies of the Municipal Planning Strategy (MPS) for Planning District 4 (Prospect) as last amended on 13 October 2023.

3.1 Policy RB-1

The proposed development agreement includes “craft shop” use, and “open space uses” which are as-of-right uses under the land use bylaw for planning district four as last amended 13 October 2023. Policy RB-1 authorized Council to allow these uses in zone “RB-1” (LUB 56).

Further, Council allowed for signs and outdoor displays under the craft shop use (LUB 10.4 on pg. 57). The proposed development agreement includes such allowances for signage and displays for the stargazing park.

3.2 Policy RB-11

The primary use in this proposed development agreement is “commercial recreation,” which policy RB-11 authorizes Council to allow by development agreement.

These structures contain commercial recreation uses:

- rental cabins
- RV campsites
- café
- Stargazers Lodge reception
- multipurpose rooms
- planetarium

- service buildings
- space exploration exhibits
- look-off decks
- abbey ridge observatory
- bunk house observatories
- analog research station
- walk-in tent sites

The proposed development agreement accounts for the listed considerations under policy RB-11:

- (a) The site plan follows watercourse setbacks as described in the LUB. The plan places no development in wetlands delineated in Schedule G. An accompanying preliminary stormwater management plan outlines stormwater management.
- (b) An accompanying traffic report outlines traffic generation. The most intense uses are corralled in "Area B" on the site plan, which is hidden from view from the road and neighbouring properties.
- (c) An accompanying traffic statement outlines traffic generation.
- (d) The site plan includes no rifle ranges, racetracks, or amusement parks.
- (e) The site plan shows the general layout and design of the facility.
- (f) Service buildings allow for any required maintenance equipment to be stored inside.
- (g) The site plan shows the position of one sewage treatment facility, which will be designed and installed by qualified persons according to Environment and Climate Change Nova Scotia. The analog research station will include a closed system for waste to replicate extraterrestrial habitation, necessitating occasional pumping out of the system for blackwater and the possible installation of an on-site graywater treatment system. These systems will also be designed and installed by qualified persons according to Environment and Climate Change Nova Scotia.
- (h) The proponent of the site has written approval from Nova Scotia Public Works for two driveway accesses to Highway 333 (Prospect Road). As mentioned, any wastewater treatment systems require approval from Environment and Climate Change Nova Scotia with design and installation by qualified persons. These systems will also be designed and installed by qualified persons according to Environment and Climate Change Nova Scotia.
- (i) The hours of operation will be 24 hours, with overnight guests and nighttime stargazers. Facilities will also allow for daytime visitors, locals and tourists alike.

- (j) Refer to the discussion for policy IM-11 for discussion on compliance

3.3 Policy RRA-2

The proposed development agreement includes “single unit dwelling use,” and “open space uses” which are as-of-right uses under the land use bylaw for planning district four as last amended 13 October 2023. Policy RRA-2 authorized Council to allow these uses in zone “RRA-1” (LUB 69).

3.4 Policy RRA-6

The secondary use in this proposed development agreement is “institutional,” which policy RRA-11 authorizes Council to allow by development agreement.

These structures contain institutional uses as accessory uses to commercial recreation uses:

- multipurpose rooms
- planetarium
- Abbey Ridge Observatory
- analog research station

The proposed development agreement accounts for the listed considerations under policy RRA-6:

- (a) The site displays excellent characteristics for institutional uses as a stargazing park. The dark skies allow for optimum stargazing, direct road access and adequate parking allow for visitors to access the site, and the low alpine vegetation, rocky outcroppings, and wetlands evoke the remoteness that make the analog research station more believable for its users.
- (b) An accompanying traffic statement outlines traffic generation.
- (c) The most intense uses are corralled in “Area B” on the site plan, which is hidden from view from the road and neighbouring properties.
- (d) An accompanying traffic statement outlines traffic generation.
- (e) Service buildings allow for any required maintenance equipment to be stored inside.
- (f) The site plan shows the position of one sewage treatment facility, which will be designed and installed by qualified persons according to Environment and Climate Change Nova Scotia. The analog research station will include a closed system for waste to replicate extraterrestrial habitation, necessitating occasional pumping out of the system for blackwater and the possible installation of an on-site graywater system. These systems will also be designed and installed

by qualified persons according to Environment and Climate Change Nova Scotia.

- (g) The hours of operation will be 24 hours, with overnight guests and nighttime star gazers. Facilities will also allow for daytime visitors, locals and tourists alike.
- (h) The site plan follows watercourse setbacks as described in the LUB. The plan places no development in wetlands as delineated in Schedule G. An accompanying preliminary stormwater management plan outlines stormwater management.
- (i) Refer to the policy discussion for policy IM-11 for discussion on compliance.

3.5 Policy IM-6

Policy IM-6, clause “(a)” authorizes Council to allow uses permissible in one zone by development agreement to apply to abutting properties with a different zone. The proposed development agreement sits on a 26-acre property that includes zones RB-1 and RRA-1, while also abutting other properties with both zones.

Therefore, the proposed agreement allows for the following “commercial recreation uses” in zone RRA-1 that policy RB-11 normally can allow in zone RB-1:

- rental cabins
- RV campsites
- Look-Off Decks
- bunk house observatories
- analog research station

The proposed agreement also allows for the following “institutional uses” in zone RB-1 that policy RRA-6 normally can allow in zone RRA-1:

- multipurpose rooms
- planetarium
- Abbey Ridge Observatory

3.6 Policy IM-11

Policy IM-11 allows Council to consider this and other development agreements under the municipal planning strategy (MPS) and in conformance with the Planning Act and the Halifax Charter.

The proposed development agreement accounts for the listed considerations under policy IM-11:

- (a) The opening of this rationale, the listed uses, and the policy

discussion describe how this proposed development agreement conforms with the intent of the municipal planning strategy. In particular, the site plan shows how the development limits interventions to the natural beauty in the highest visibility areas-- the ridges, outcrops, shorelines, wetlands, and road-side areas. The development's uses respect a long-standing tradition in serving tourists and the travelling public. The development capitalizes on the dark skies that make this area excellent for stargazing.

- (b) The proposal includes no large financial burdens on the municipality. All water and septic services will be on-site. The road is owned and maintained by the province. Since the proposal only includes one long-term dwelling unit, additional pressure on local schools, community centres, and services will be negligible. An accompanying traffic statement outlines traffic generation. The site includes no historic buildings or sites.
- (c) The site plan includes controls that limit its effect on adjacent properties. The predominant use is open space use, which includes no alteration of the landscape and its vegetation. The most intense uses are corralled in "Area B" on the site plan, which is hidden from view from the road and neighbouring properties. A traffic statement outlines the associated increases in traffic. The site plan does not include open storage. The signs and outdoor display sizes match what is currently allowed as-of-right for craft shops in zone RB-1.
- (d) An accompanying preliminary stormwater management plan outlines stormwater management. It considers the appended wetland delineation report that shows two wetland areas on the property for this proposed development agreement. Further work in these areas can only take place with a Wetland Alteration Approval from Nova Scotia Environment and Climate Change. Such approvals would be sought at the time of development. The proposed development agreement includes no development in the wetland area delineated in Schedule G of the LUB.
- (e) The site plan does not call for the subdivision of land.