FOTENN

S1 Future Neighbourhood

Community Energy Plan Report
Lifting of Future Neighbourhood Overlay
November 5, 2025

FOTENN

Prepared for Minto

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1. Introduction

Fotenn Planning + Design ("Fotenn") is pleased to submit this Community Energy Plan (CEP) Brief on behalf of Minto Group ("Minto"), in support of the lifting of the Future Neighbourhoods Overlay for the S1 Future Neighbourhood (also known as the Barrhaven South Phase 3 lands).

This Community Energy Plan (CEP) is intended to support exploration of options for development in the planning area to move towards a more sustainable and less carbon-intensive future, contributing to the achievement of local, provincial, and national climate change goals. The CEP also identifies specific climate risks in the planning area and provides direction for mitigation.

The CEP establishes a set of approaches for reductions in energy use and design-oriented adaptation and mitigation measures for the planning area, to be explored as planning and design work continues for the future community.

1.1 Basis of the Community Energy Plan

Climate Crisis → Climate Change Master Plan and Energy Evolution

1.1.1 Enabling Official Plan Policy

New urban growth is directed through the Future Neighbourhood Overlay, applied to lands identified to be added to the urban boundary. The overlay promotes walkable 15-minute neighbourhoods with compact design, a mix of uses and development densities, connected street networks, and sustainable transportation options.

The Barrhaven South Phase 3 lands are subject to the Future Neighbourhood Overlay, as identified on Schedule C17 – Urban Expansion Areas of the Official Plan (Figure 1). Policy 1 of Section 5.6.2.1 states that development within the Future Neighbourhood Overlay may only receive draft approval once the overlay has been removed through an Official Plan Amendment. Removal of the overlay can only occur once the policies of Section 5.6.2 have been satisfied.

Section 12.3 of the Official Plan, which establishes direction for the creation of secondary plans in Future Neighbourhoods, states that:

1) The creation of a new secondary plan or revision to an existing secondary plan is required prior to development of any lands with a Future Neighbourhood Overlay and all of the following are required in advance of the City initiating an Official Plan Amendment to implement said secondary plan and remove the Future Neighbourhood Overlay [among others]:

    a) A Community Design Plan, in accordance with Annex 4; […]

    g) A community energy plan, unless it can be demonstrated that the design of the proposed development complies or is consistent with the High-performance Development Standard[.]

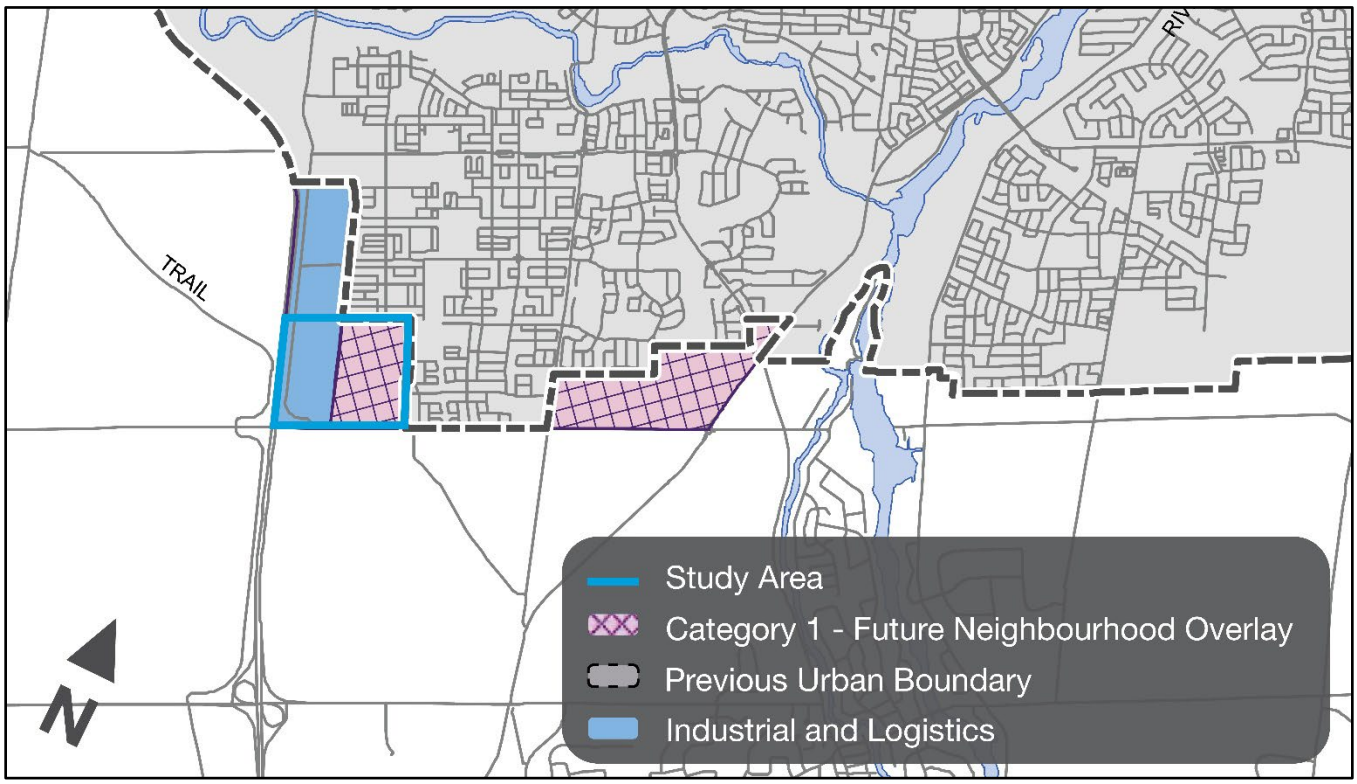

Figure 1: Extract from Schedule C17 - Urban Expansion Areas

1.1.2 Integrated Planning Process

This CEP is part of the integrated planning process for the Barrhaven South Urban Expansion Areas. The draft of the CEP has been prepared on the basis of the draft update to the Barrhaven South Urban Expansion Area Community Design Plan (CDP) and supporting existing conditions reports.

The CEP also draws on publicly available resources, including local and national climate data, municipal climate projections, and corporate sustainability initiatives. Baselines for building operating emissions are assumed to be in accordance with the Ontario Building Code SB-10, while broader climate resiliency and energy efficiency perspectives were guided by the City of Ottawa's climate projections and the sustainability practices of local utilities and Minto.

The analysis is qualitative and synthesizes these sources to provide a high-level understanding of energy use, emissions, and resilience opportunities for the community, without involving detailed modeling or calculations.

1.1.3 Terms of Reference

The City of Ottawa has published a draft Terms of Reference (February 15, 2024) which outlines requirements for preparation of a Community Energy Plan, as enabled by the Official Plan. The Terms of Reference outline a Performance Pathway, which requires modelled analysis of the proposed scenario, and a Prescriptive Pathway, which allows proponents to select from a set of prescriptive building commitments.

Since issuance of the draft Terms of Reference, the Province of Ontario passed the Protect Ontario by Building Faster and Smarter Act (Bill 17). The new legislative framework clarifies that municipalities are not authorized to establish construction standards, including requirements related to building systems such as energy performance, mechanical systems, or renewable energy infrastructure. A technical briefing accompanying a letter from Minister Rob Flack further clarifies that municipalities do not possess jurisdiction to mandate construction requirements for buildings.

Accordingly, this CEP follows a modified version of the Prescriptive Pathway, and any recommendations and approaches pertaining to construction methods or building systems are advisory in nature.

1.2 Partners

Engagement efforts have focused on Minto and its consultant team, as well as external stakeholders, including utility providers. As part of this process and in alignment with the CEP Terms of Reference, Fotenn initiated correspondence with Enbridge Gas and Hydro Ottawa to introduce the CEP and invite their participation in the planning process, including the option to meet to discuss the project and identify opportunities for involvement.

A response was received from Enbridge Gas acknowledging the outreach (Appendix A). At present, Enbridge typically becomes involved in subdivision projects once formal applications are submitted through their GetConnected system, which occurs after development approvals are granted.

Enbridge expressed interest in gaining further clarity on how CEP requirements are to be integrated into their processes and suggested that the most effective next step may be a joint meeting with the City of Ottawa, builder partners, Enbridge, and Hydro Ottawa to ensure alignment on expectations and responsibilities moving forward. At the time of writing, a response has not yet been received from Hydro Ottawa. While efforts have been made to engage partner organizations in collaborative discussions, the City's current processes are not well structured to facilitate early coordination with utility companies, which continues to present challenges for effective collaboration.

1.3 Description of Development

1.3.1 Proposed Development

The study area is approximately 68.55 hectares (169.12 acres) in area and abuts the southwest boundary of the existing Urban Area of the Barrhaven community of the City of Ottawa, as shown in Figure 2 below. The entirety of the study area is located in Ward 3 – Barrhaven West.

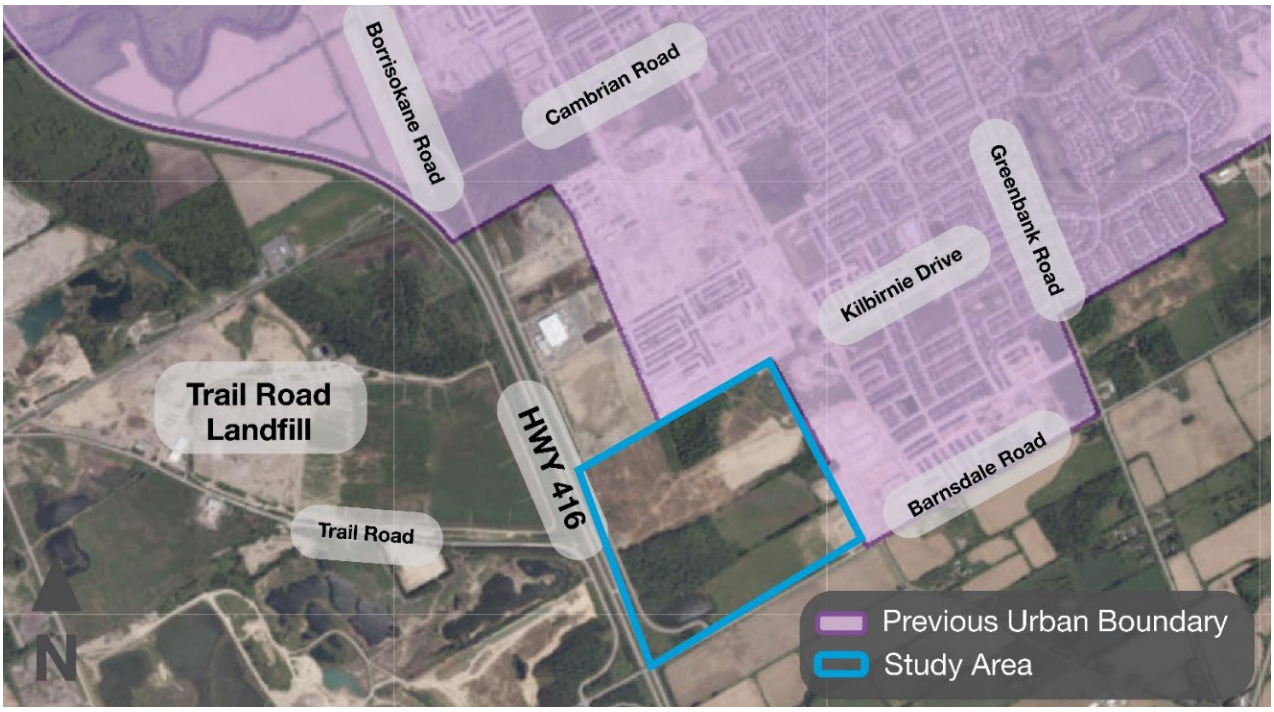

Figure 2: Study area in the surrounding context, including the previous urban boundary.

The study area includes both the area subject to the Future Neighbourhoods Overlay and the area designated Industrial and Logistics along Borrisokane Road (Figure 1). For the purposes of this CEP, these lands are collectively referred to as the “Study Area;” however, the focus of the CEP is on the lands subject to the Future Neighbourhoods Overlay, as the future land uses and associated energy requirements for the Industrial and Logistics area are unknown at this stage.

The Land Use Plan for the S1 Future Neighbourhood includes a mix of low- and medium-density residential areas, industrial lands, a stormwater management facility, a park, and existing woodlots. The majority of the lands are designated for residential development, with industrial lands representing the second largest land use, followed by the retained woodlot, stormwater management pond, and park, in descending order of area. The Industrial and Logistics lands are generally within the 500-metre area of influence for the Trail Road Landfill located west of Highway 416.

The breakdown of land use within the S1 lands is as follows:

Land Use	**Size (Hectares)**		**Percentage of Total Land Use**
Residential	23.31 ha total		33.56 %
	Unit Type	**Size**	
	Singles	14.02 ha	
	Executive Towns	6.59 ha	
	Avenue Towns	2.70 ha	
Industrial	16.41 ha		23.62 %
Streets	14.53 ha		20.92 %
Woodlots	8.65 ha		12.45 %
Open Space	0.9 ha		1.29%
Stormwater Pond	3.66 ha		5.26 %
Park	1.99 ha		2.86 %
Total Land Area	69.45 ha		100.00%

The residential development will provide a total of 1,008 new residential dwelling units, 16.41 hectares (40.55 acres) of industrial lands, an area of 3.66 hectares (9.04 acres) dedicated to stormwater management, 8.65 hectares (21.37 acres) of retained woodlot, 0.9 hectares (2.22 acres) of open space, and 1.99 hectares (4.92 acres) of parkland to the community.

The unit typology is described in the table below:

Unit Type	Phase 3A	Phase 3B	Phase 3C	Total	Percentage
36' Single	124	29	85	238	23.61%
Executive Towns	130	118	90	338	33.53%
Avenue Towns	118	90	56	264	26.19%
Total	454	255	299	1,008	100.00%

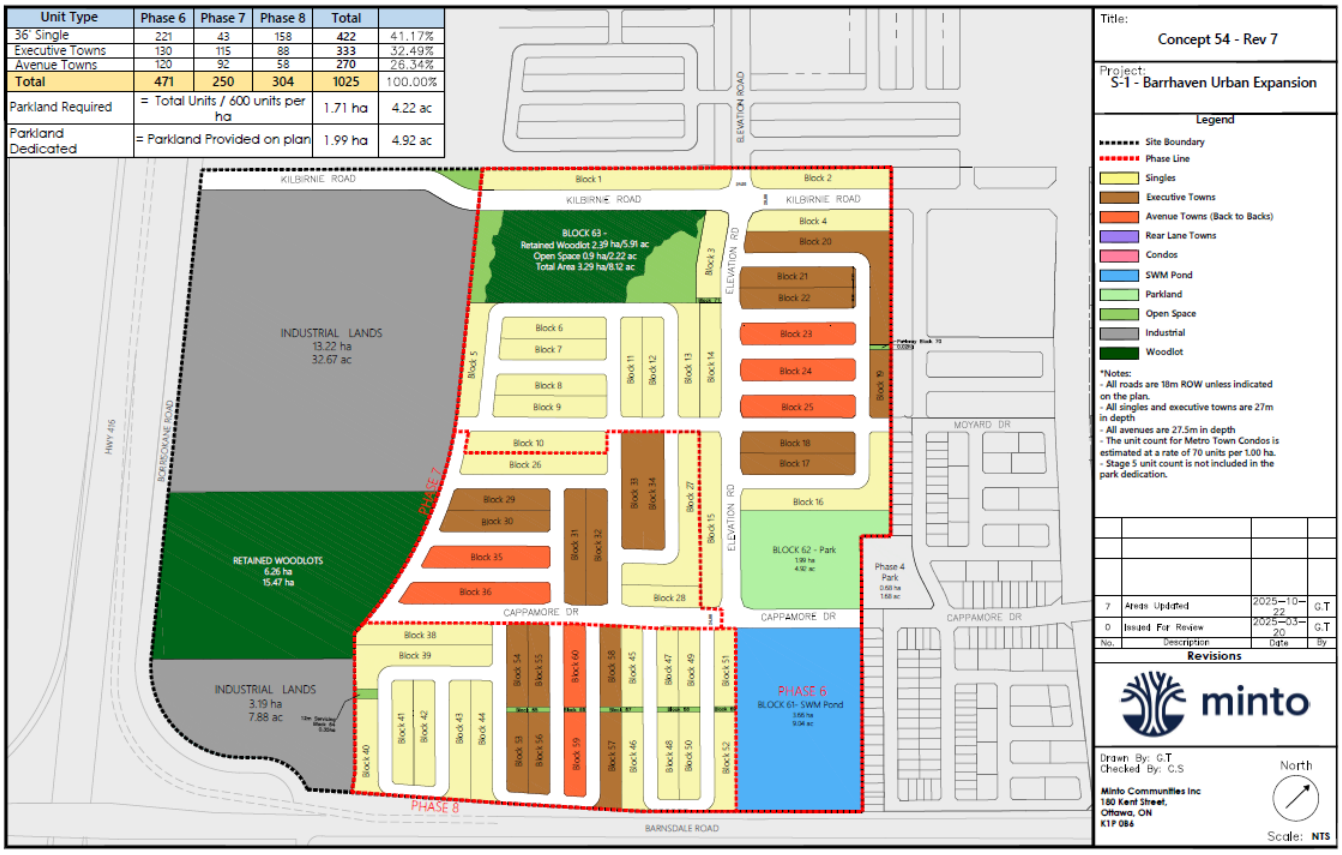

Figure 3: Concept Plan of the S1 Lands, illustrating the proposed unit typologies, parkland, woodlots, stormwater management, and industrial lands.

1.3.2 Phasing

The S1 Expansion Lands will be phased as depicted in the anticipated Phasing Plan (Figure 4). The development of the study area will represent a logical continuation of Minto's developments to the south and east, and therefore the numbering of the phasing begins at Phase 3A:

- Phase 3A
- Phase 3B
- Phase 3C

/ Industrial area

Occupancy for Phase 3A is anticipated to begin in March 2028, with final occupancy expected by March 2032. Phases 3B and 3C are planned to proceed thereafter.

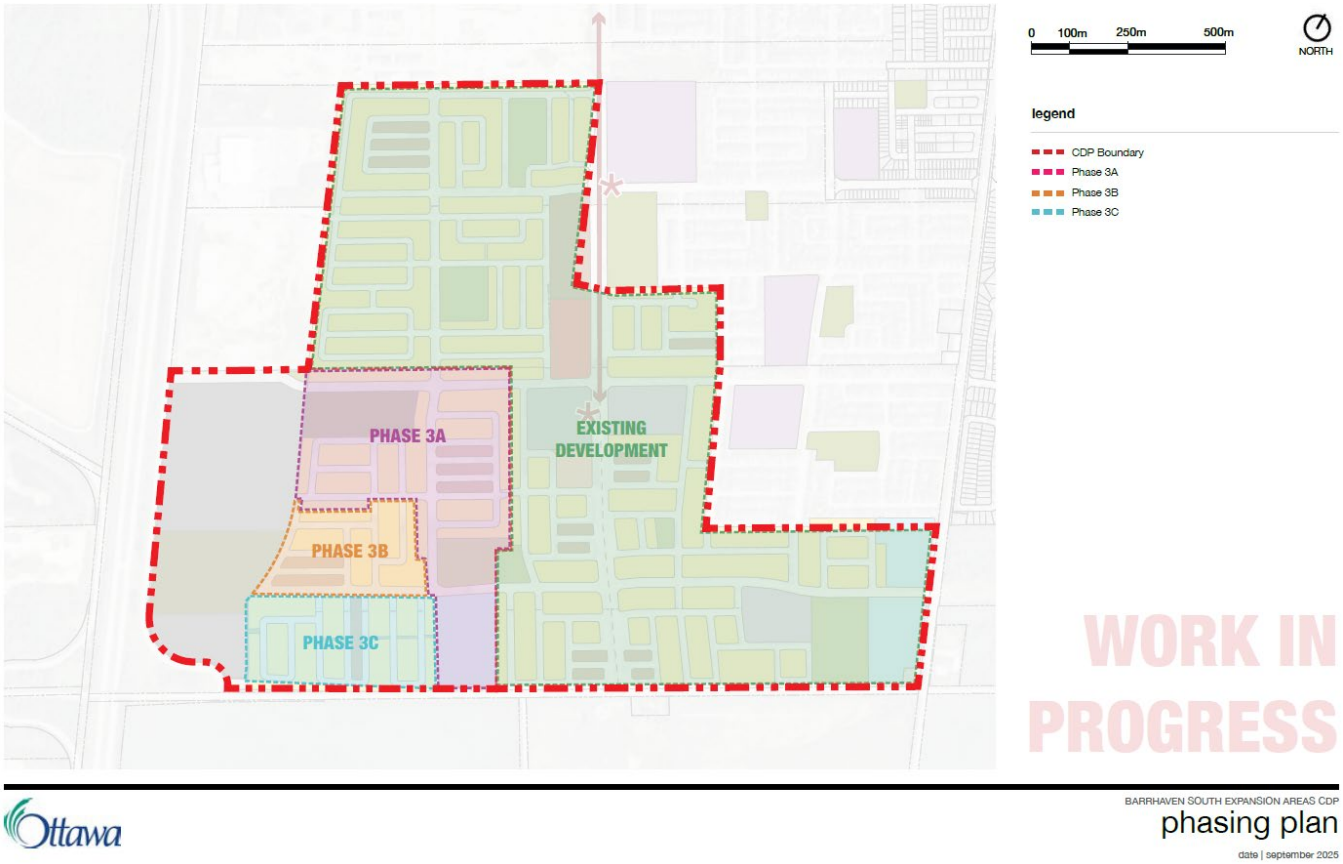

Figure 4: Phasing Plan – S1 Lands and Surrounding Area, which has already been built and established.

1.3.3 Transportation

CGH Transportation prepared an existing conditions report for the Barrhaven South Phase 3 – S1 Area, following the City's Terms of Reference for Future Neighbourhoods. The report outlines the study area and community context, summarizes relevant projects and policies, and provides a high-level review of Barrhaven with a more detailed look at the local area within a roughly 1- to 5-kilometre radius of the S1 Lands.

Transportation represents 40.4 percent of Ottawa's emissions, exceeding those of residential buildings, which contribute 28.9 percent of Ottawa's emissions. Moves to enable shifts to more sustainable modes (transit, active transportation), reduce per-capita travel distances (15-minute communities), and support fuel switching (electric vehicles), therefore representing a significant contribution to the achieving of CEP goals. Additionally, smart transportation decisions can support climate adaptation through, for example, designing resilient infrastructure, mitigating heat impacts on travelers, increasing mobility options, and supporting community health.

Key transportation considerations for the Community Energy Plan include:

/ Barnsdale Road and existing Greenbank Road currently function as major vehicular corridors in the area. Collectors that connect the study area to the arterial network include Borrisokane Road, Elevation Road, Kilbirnie Drive, and Cappamore Drive. The Jock River screenline operates at less than the existing available

capacity, suggesting that residual traffic capacity exists to accommodate future growth. All intersections within the surrounding area operate without capacity issues.

- Provincial Highway 416 is located to the west of the area. The nearest interchange with Highway 416 is Bankfield Road, approximately 2 kilometres south of Barnsdale Road. A new interchange at Barnsdale Road has been approved through an EA process to relieve traffic demand pressures in Barrhaven South and provide convenient access to the expressway.
- Greenbank Road (EA approved in 2014) is planned to be realigned to intersect with Barnsdale Road approximately 275 metres east of the east edge of the study area. The realigned Greenbank Road is planned to include a Bus Rapid Transit (BRT) line, which will terminate in a 2.5-hectare, 400-car Park and Ride at Kilbirnie Station. Most of the study area will be located within one kilometre of the future BRT station, with most of the area within a 600-metre radius of the future BRT Station, while the furthest properties will be just over 1 kilometre.
- In addition to vehicle lanes and dedicated BRT lanes (in the centre of the right-of-way), the Greenbank Road cross-section will include cycle tracks and sidewalks.
- Existing cycling facilities in the area are predominantly provided through rural paved shoulders, off-road pathway networks, and linkages, with sections of bike lanes appearing along select major roadways. Some cycle tracks and multi-use pathways are present on local streets within the surrounding area. There are significant gaps in the cycling networks within five kilometres of the study area, particularly on Borrisokane Road, Barnsdale Road, Cambrian Road west of Greenbank, Greenbank Road between Cappamore Drive and Kilbirnie Drive, and a lack of connectivity between Strandherd Drive and the Cross-Town Bikeway terminating at Cedarview Road.
- There are significant gaps in the pedestrian networks within five kilometres of the study area, particularly along Borrisokane Road and Cambrian Road.
- Adjacent lands include developing residential neighbourhoods to the east and northeast, containing a mix of low- and medium-density residential uses, as well as schools and open spaces. Grocery stores, retail stores, schools, childcare centres, parks, long term care homes, BRT stops, libraries and recreational facilities are located within five kilometres of the study area, in Barrhaven South and Barrhaven.
- Within the study area, further cycling facilities are planned to include cycle tracks and local cycling routes. A new design standard for select arterials is being contemplated, which would have grade-separated cycle tracks to segregate cyclists from motor vehicles.
- Sidewalks are proposed on both sides of the collector streets and along one or both sides of select local streets. Mid-block connections are planned to provide connections for active transportation users, allowing convenient movement through the community.

1.3.4 Servicing

Paterson Group prepared an Existing Conditions – Geotechnical report for the study area. In the undeveloped area, the ground surface is generally flat, with a gentle slope from north to south, spanning an approximate geodetic elevation of 107 metres to 99 metres. The subsurface profile of the study area generally consists of topsoil underlain by compact or very dense silty sand becoming silty sand to sandy silt with depth. Some silty sand and sandy silt contains gravel, cobbles, and boulders. Other areas featured silty clay.

Paterson also assessed the Hydrogeological Existing Conditions for the study area. The planning area lies within the Ottawa Valley Kars Esker physiographic region, intersecting portions of the Sand Plains. Groundwater depths range from about 1 to over 9.8 metres, with deeper overburden and bedrock aquifers that recharge beyond the site boundaries. The area drains into 17 sub-catchments within the Jock River, Mud Creek, and Rideau River watersheds, with culverts along Barnsdale, Cambrian, and Borrisokane Roads aiding flow. While a small waterbody exists in the southwest of the lands, no other waterbodies occur within the area due to high soil permeability. The Jock River floodplain approaches but does

not extend into the planning area, and the Thomas Baxter Municipal Drain, located just south along Barnsdale Road, conveys flow to Mud Creek.

J.L. Richards prepared an Existing Conditions Report for the S1 Area to inform the Master Servicing Study, analyzing current site conditions, infrastructure, and servicing opportunities and constraints. Recommendations include connecting wastewater to the Barnsdale Road and Greenbank Road sewers while minimizing infiltration, ensuring water servicing meets domestic and fire flow needs with some areas requiring oversized laterals, and managing stormwater through the nearby Quinn's Pointe sewer with a new end-of-pipe facility and Low Impact Development measures to support infiltration and protect the Kars Esker.

These studies will inform the Environmental Management Plan and Master Servicing Study for the study area. While servicing infrastructure has carbon and energy costs for embodied carbon and operational emissions, consideration of these is not within the scope of the CEP or any other required study. Servicing and hydrogeology is relevant to the CEP in consideration of climate adaptation and resilience.

1.4 Climate and Energy Assets

1.4.1 Energy Sources

Consistent with standard practice, Hydro Ottawa and Enbridge will service the study area with electricity and natural gas, respectively.

Hydro Ottawa prioritizes energy sustainability by setting an ambitious goal of achieving net-zero operations by 2030 – positioning Hydro Ottawa as the first municipally-owned utility in Canada to set such a target. Furthermore, they are actively shaping a smart energy future for the city, empowering Ottawa residents, businesses, and institutions to significantly reduce their own energy footprint and approach net zero. A crucial aspect of their progress involves tracking and reducing Scope 1 and Scope 2 greenhouse gas (GHG) emissions. These categories provide a clear picture of their direct and indirect environmental impact.

From a climate resilience perspective, they are currently engaged in a multi-year project to enhance the intelligence and resilience of their network by automating outage restoration, improving capabilities to withstand severe weather, expanding customer options for distributed generation and storage, and making grid operations more flexible and efficient. Some of the ways in which they are enhancing their preparedness for extreme weather events and climate change include smart grids, Distributed Energy Resources (DERs), microgrids, and renewable generation.

Hydro Ottawa invests in renewable energy through its subsidiary, Portage Power, which is dedicated to expanding green power production, modernizing the electricity grid to integrate hydroelectric, solar, and landfill gas-to-energy, which collectively generates 131 megawatts of renewable electricity, enough to supply 110,000 homes annually. Portage Power has expanded its renewable generation capacity six-fold in 12 years.

In October 2020, Hydro Ottawa partnered with Zibi Canada and Kruger Products to create Ottawa's first carbon-neutral community by implementing a district energy cooling and heating system that provides zero-carbon power for all Zibi community tenants.

Enbridge has also committed to the goal of net-zero emission from their operations by 2050. They intend to meet this target through innovations such as renewables, infrastructure modernization, and exploration of greener fuels. They are also investing in forward-looking solutions that modernize how energy is produced, delivered, and used, including:

- Lower-carbon fuels like renewable natural gas (RNG), hydrogen blending, compressed natural gas (CNG), gas heat pumps, and carbon capture to diversify their energy mix;
- Hybrid heating, meaning combining electricity and natural gas. Hybrid heating systems offer a flexible, efficient, and reliable way to heat homes, especially during peak demand or extreme cold; and

- Customer-focused programs, such as energy conservation initiatives that help customers reduce energy use and costs while supporting energy emissions reduction efforts.

Together, the study area's energy providers uphold a strong commitment to energy conservation and sustainable, renewable energy sources.

1.4.2 Community Facilities

The area to the immediate north and east is known as the "Stonebridge – Half Moon Bay" neighbourhood per the City of Ottawa Neighbourhood Study layer on GeoOttawa and is currently experiencing significant growth. The neighborhood is characterized primarily by a mix of low- and medium-density residential uses, as well as schools, parks, and other community facilities. Access to the neighborhood will be gained primarily from the north by the realigned Greenbank Road following construction.

The developing community to the north and east contains several community amenities in close proximity to the study area. Nearby parks include Black Raven Community Park, River Mist Park, Guiness Park, and Cappamore Park. The Minto Recreation Complex, which offers pools, ice rinks, and playing fields, is located at the intersection of Cambrian Road and Greenbank Road.

St. Benedict Catholic Elementary School is currently operational northeast of the study area, with new public elementary, Catholic elementary, and Catholic secondary schools planned for the adjacent neighbourhood to the east.

Proximity of these community facilities is key to supporting reduction in transportation emissions, as well as building social resilience.

1.4.3 Ecological Services

Arcadis prepared a Natural Heritage Existing Conditions Report for the S1 lands and found that the site is mostly disturbed with low ecological value, but with key ecological features that should be protected and/or mitigated.

The study area is predominantly undeveloped, with no identified cultural heritage resources or significant built landmarks. Topography generally slopes from north to south, with a total elevation change of approximately 12 metres. Land cover in the study area includes a 3.97-hectare wooded area along the northern extent (Woodland A), a 7.32-hectare wooded area at the southwest corner (Woodland B), a constructed pond at the southwest corner of the study area (offline pond). A headwater drainage feature is located along Barnsdale Road at the southern edge of the study area. The balance of the study area is a mixed meadow vegetation community that has developed on former agricultural fields, separated by hedgerows.

The two significant woodlands are proposed to be generally retained. These woodlands support habitat for a variety of wildlife, including a candidate bat maternity colony and a confirmed Woodland Raptor Nesting site, and contribute to overall biodiversity within the planning area.

Surface runoff is conveyed to the Mud Creek and Jock River watersheds, with soils being highly permeable due to the Ottawa Valley Kars Esker, resulting in low overland flow, except during larger storm events. The S1 area is classified as a significant groundwater recharge area and a highly vulnerable aquifer, therefore it is highly important to maintain the pre-development water balance and prevent contamination, particularly in the context of anticipated climate impacts.

The headwater drainage feature in the southern portion of the site has ephemeral flow, limited riparian function, contributing function to fish habitat, and limited function for terrestrial habitat. However, this feature will be managed to maintain its role in conveying flows to downstream fish habitat, providing a small but important hydrological and ecological function. Together, these retained natural areas will support stormwater infiltration, reduce runoff, and help preserve groundwater recharge, particularly in connection with the Kars esker system.

By retaining these landscapes and natural functions, the S1 lands will continue to provide essential ecological services, including habitat preservation, maintenance of hydrological functions, and support for regional biodiversity, while also offering opportunities to integrate natural features into the future development in a sustainable and resilient manner.

While no analysis has been directly undertaken for the study area, the 2016 study "Natural Capital: The Economic Value of the National Capital Commission's Green Network" is indicative of the climate mitigation and adaptation services that will be provided by the retained features. Of the habitat types within the study area, the woodlots provide the most value in ecosystem services. Carbon storage for forests was estimated at 220 tones per hectare (estimated value in 2016 dollars for climate regulation is $241/ha/year), whereas grasslands were estimated to contain 105 tonnes of carbon per hectare ($76/ha/year). Additionally, woodlands provide valuable climate adaptation services by removing air pollutants, absorbing and filtering water, and preventing disturbance caused by extreme rain events. The estimated economic value of these services to an urban neighbourhood is relatively higher than the same services provided in a rural setting.

1.5 Policy Context

1.5.1 City of Ottawa Official Plan (2022, as amended), including Annex 4

The City of Ottawa's Official Plan is informed by the Climate Change Master Plan and guides growth to 2046, when the population is expected to exceed 1.4 million. The Plan is built around Five Big Moves: Growth Management, Mobility, Urban and Community Design, Resiliency, and Economic Development. Big Policy Move 5 to "Embed environmental, climate and health resiliency and energy into the framework of our planning policies" is particularly relevant to the preparation of a CEP.

The integrated planning process, as represented by the CDP, takes direction from the climate mitigation, climate resiliency and energy efficiency principles embedded in multiple sections of the Official Plan.

Policy Intent	Implications for the CEP
1) Plan a compact and connected City	Planning for complete communities is addressed primarily through the CDP. The CEP will note relevant approaches and cross-connections.
2) Apply sustainable and resilient site and building design as part of development	The CEP can identify potential approaches to be integrated into development and site design. Design guidelines are included in the CDP.
3) Prioritize a shift to energy efficient transportation modes	Planning for strong active transportation connections, access to high-quality transit, and local destinations is addressed primarily through the CDP and Community Transportation Study. CEP to note relevant approaches and cross-connections.
4) Enable the use of local renewable energy sources	The CEP can identify potential approaches for integrating and enabling renewable energy, to be discussed with utility partners through the development process.
5) Reduce the urban heat island effect and help protect the vulnerable from extreme heat	Planning for soft landscaping, tree canopy cover, and other heat island mitigation is addressed primarily through the CDP. The CEP to note relevant approaches and cross-connections.
6) Build resilience to future flood risks and increased stormwater runoff	Planning for SWM infrastructure that is resilient to projected climate conditions and integrates LID and nature-based solutions is primarily addressed through the Environmental Management Plan and Master

Policy Intent	Implications for the CEP
	Servicing Study. The CEP can note relevant approaches and cross-connections.
7) Protect, and enhance tree canopy and protect wetlands and other natural areas and use nature-based solutions	Retention and protection/mitigation measures for existing natural features is guided primarily by the existing Ecological Conditions Report and Environmental Impact Statement and is integrated into the Land Use Plan for the CDP. Climate-related considerations are to be noted in the CEP, with potential approaches to enhance carbon sequestration and climate resilience of retained, enhanced, and created natural features and nature based solutions.
8) Enable sustainable local food production	N/A – significant local food production is not planned within the study area. Urban agriculture on residential lots is permitted by the planning framework.

1.5.2 The Climate Change Master Plan

In 2019, Ottawa City Council declared a climate emergency, recognising that fast-rising global temperature has created a climate crisis which threatens the health, wellbeing, and prosperity of Ottawa.

The Climate Change Master Plan is the City's overarching framework to reduce greenhouse gas emissions and respond to the current and future effects of climate change. The plan aims to take unprecedented collective action to transition Ottawa into a clean, renewable, and resilient city by 2050.

The Climate Change Master Plan sets the goal of Ottawa reaching net-zero GHG emissions by 2050, with interim targets of 68% by 2030 and 96% by 2040. These targets are aligned with the Intergovernmental Panel on Climate Change's Paris targets, to limit global warming to 1.5 degrees Celsius.

The first priority of the Climate Change Master Plan is implementation of Energy Evolution, the City's energy transition strategy.

1.5.3 Energy Evolution

Energy Evolution sets the framework for what it will take for Ottawa to achieve its GHG emission reduction targets. It is a community energy transition strategy designed to manage energy consumption, promote the use of renewable energy, and advance local economic development opportunities in Ottawa.

The Energy Evolution project developed a model to estimate "Business as Planned" (BAP) community-wide emissions to 2050, as well as the pathways to reduce community-wide emissions in line with the targets.

Selected key actions from Energy Evolution to reach net-zero include:

- **Implementation of the High Performance Development Standards (HPDS), to ramp towards new buildings being net zero energy by 2030, contributing 6% of the required emissions reductions by 2050, relative to BAP.**

  Note that the HPDS have not been implemented by Council, and many components of the proposed HPDS are outside the City's mandate to implement. Nevertheless, any reductions to building energy use relative to existing practice will contribute towards the intent of this target.

- **Personal Vehicles Electrification Strategy, exceeding 7% of personal vehicle sales being EVs by 2025, contributing 5% of the required emissions reductions by 2050, relative to BAP.**

- **Transportation Mode Shift, to move towards the 2030 mode share targets, contributing 3% of the required emissions reductions by 2050, relative to BAP:**
  - 24-hour mode shares by 2030
    - auto: 58%
    - transit: 20%
    - walk: 14%
    - bike: 8%
- **Organics Resource Recovery Strategy, to significantly reduce emissions associated with managing waste and enabling energy from waste, contributing 7 % of the required emissions reductions by 2050, relative to BAP.**

In addition to the specific actions listed above, meeting the Climate Change Master Plan targets will require significant expansion of electricity generation and delivery. While the Province regulates the energy grid, Hydro Ottawa and its subsidiary Portage Power play a major local role through hydroelectric, landfill gas, and solar power generation.

The 2025 Climate Change Master Plan Progress Update and GHG Inventories, found that Ottawa was not on track to achieve the 2025 target of a 43-percent emissions reductions and is instead likely to have community emissions that are 5% lower than 2012, with per-capita emissions approximately 19 percent lower.

- Transportation is the largest source of emissions, representing 44 per cent of community emissions and sitting about 5 per cent above 2012; emissions associated with on-road transportation account for almost 33 per cent of total community emissions.
- Buildings are the second largest source at 41 per cent, with an almost 16 per cent reduction in emissions compared to 2012. Natural gas contributes about 31 per cent of total community emissions, and electricity about 7.5 per cent.
- Waste contributes 12 per cent and is up about 5.5 per cent since 2012; public and private landfills generate nearly 95 per cent of waste emissions.

1.6 Climate Risks

Drawing on the Climate Change Vulnerability and Risk Assessment for the National Capital Region (NCC) and the Canada Climate Atlas, the primary climate risks likely to impact the S1 Lands study area include:

- **Average Temperatures:** Between 1948 and 2016, Canada's average annual temperature rose by 1.7°C, and the National Capital Region is projected to warm by 2 to 3°C by mid-century and 3 - 5°C by 2071. The Climate Atlas Report projects Ottawa's mean annual temperature will rise from 6.4°C to 8.5°C (+2.2°C) by 2050.
- **Warm Extremes, Heat Warnings & Humidex**: The NCC report projects that the number of very hot days (≥30°C) in Ottawa will rise from about 11 days annually (1981 – 2010) to 25 – 28 days by 2050, 32 – 43 days by 2070, and up to 72 days by 2100, increasing the frequency of extreme heat warnings. While the Climate Atlas projects that the number of very hot days will increase from 13.5 to 31.4 days per year by 2050. Humidity will intensify these impacts, with humidex >40°C events expected to increase from 1 day historically to 4 days by 2050 and up to 9 days by 2100. Hotter, more humid summers will increase health risks and disrupt outdoor programming and recreation.
- **Wildfires:** Driven by rising temperatures, drought, changing precipitation, and urban expansion, wildfires in Canada are projected to become larger and more intense, affecting regions that previously faced low fire risk. Vulnerable populations are especially at risk from smoke and poor air quality.

- **Seasonal Changes:** Warming temperatures will shift seasonal patterns, with spring frost ending earlier and fall starting later. Winters will be shorter and milder, with fewer extreme cold days and cascading impacts on species control, recreation, and infrastructure. Warmer conditions are expected to increase transmission of vector-borne diseases, such as Lyme disease.
- **Annual Precipitation & Winter Precipitation:** Total annual precipitation in Ottawa is projected to increase by up to 12% by 2100, mainly in winter and shoulder seasons, with heavier one-day rainfall and more frequent short, intense storms. These events will heighten flood risks, damaging infrastructure, ecology, and posing health and safety hazards.
- **Extreme Snow & Blizzards:** Freezing rain events in Ottawa are expected to increase by about 40% in winter months, leading to more damage to vegetation, infrastructure, and crops, as well as greater safety risks and environmental impacts from increased salt use. Extreme snow and blizzard events will still occur, but warmer winters mean more precipitation will fall as rain, altering winter storm patterns and still posing risks.
- **Extreme Wind & Tornadoes:** High wind events are projected to become more frequent in Ottawa, with gusts over 60 km/h increasing from about 14 – 15 to 16 occurrences annually by mid-century, causing greater risks to infrastructure and trees. While tornadoes remain relatively rare, the probability of an EF1+ tornado is expected to rise from 14.6% to 18.2% by 2041 – 2070, and even infrequent events can cause severe damage.

These projections demonstrate the urgency and opportunity to integrate climate resilience into community energy planning and infrastructure design.

Climate Ready Ottawa, Ottawa's Climate Resiliency Strategy, is now considered the Environment and Climate Change Committee, as of October 21, 2025. The Strategy, once approved by Council, will be a resource for future work undertaken as part of the ongoing Integrated Planning Process.

2.
Energy and Climate Targets

2.1 Energy and Sustainability Objectives

Minto has a formal Environmental Policy that commits the organization to managing environmental impacts systematically and responsibly. Key elements of this policy include:

- Managing environmental impacts and opportunities in a planned and systematic way;
- Demonstrating leadership through community involvement, industry participation, and strategic partnerships;
- Setting environmental objectives and targets, and reporting on performance;
- Preventing pollution by reducing resource consumption, lowering carbon emissions, and increasing waste diversion;
- Encouraging resident participation through accessible information and compatible technologies;
- Complying with applicable legal and third-party energy and environmental verification programs; and
- Continually improving systems and products to enhance environmental performance.

These commitments provide a framework to support future sustainability measures in the future S1 Lands community.

2.2 Envisioned Outcomes

2.2.1 CEP TOR Reference Scenarios

The Community Energy Plan requires that the project consider how the proposed solution (referred to as 'Scenario 4') will compare to three (3) reference scenarios. As established in the City's CEP Terms of Reference, the scenarios include:

- **Scenario 1: A Business As Planned (BAP) Scenario**
  The BAP Scenario estimates 1,175kg equivalent annual CO_2 emissions added for every new home. Household energy for Ottawa's baseline year 2016 is estimated at 105.56GJ / household declining down to 65.93 GJ / household by 2050.
- **Scenario 2: 50% Emissions Reduction Scenario**
  The Energy Evolution Strategy Model to 2050 reduces emissions 50% from the BAP scenario to 587kg equivalent annual CO2 emissions per new home between 2020 and 2030.
- **Scenario 3: Near Zero Emissions Scenario**
  The Energy Evolution Strategy target scenario calls for near zero emissions for every new home built after 2030. Household energy use in this scenario is expected to reduce to 23.43 GJ / household in the target scenario, this consumption is offset by local renewable energy generation to achieve near zero emissions.

2.2.2 Proposed Scenario (Scenario 4)

The proposed scenario for development within the study area is not based on specific energy targets, but instead based on implementation of the following initiatives in the S1 Future Neighbourhood and in low-rise construction:

- New homes exceed municipal building codes energy efficiency by 15.5%;
- Waste diversion (developments and rentals) with an average of 80.7%. Construction waste gets picked up by a contractor and then sorted at a recycling plant. Monthly waste diversion reports are then provided;
- Water consumption reductions through use of low flow fixtures;
- Airtightness compliance (including testing) surpassing Energy Star on all low-rise construction;

- Pre-manufactured components for townhomes to minimize material waste, improve build quality, and construction efficiency, and high waste diversion rates through other construction practices;
- Smart home and energy-efficient technologies, including heat pumps, Energy Recovery Ventilators (ERVs), CFL lighting, smart thermostats, sensors, and Energy Star appliances;
- Use of the Etobicoke Exfiltration System (EES), a low-impact development (LID) stormwater management practice located within the right-of-way that reduces runoff volumes and pollutant loads by capturing rainwater and snowmelt from urban areas and allowing it to seep into the surrounding soil. By mimicking the natural hydrology, the EES helps to provide resilience against the anticipated impacts of changes to precipitation patterns;
- Conceptual design at a community and house level to meet the need of residents; and
- Studying sites for risks and opportunities including flood mitigation and renewable energy.

These measures reflect Minto's existing environmental commitments and offer a foundation for exploring potential energy and sustainability objectives for the S1 Future Neighbourhood as planning and design activities continue.

These strategies offer a coordinated approach to energy efficiency, resource conservation, and climate resilience, aligning with Minto's corporate sustainability commitments and moving towards implementation of the City's broader climate objectives.

2.2.3 Assessment of Proposed Scenario

The proposed approach is not target-based but nevertheless responds to the key actions identified in Energy Evolution:

- Occupancy of the first phase of development is anticipated between 2028 and 2032. With an expected 15.5% improvement in energy efficiency relative to Building Code, this development will not achieve the Energy Evolution benchmark of near-net-zero by 2030. Nevertheless, the proposed approach represents an improvement relative to minimum standards, with further improvements possible through continued decarbonisation of the electricity grid, reduced carbon intensity for natural gas, and additional energy efficiency approaches, as outlined below.
- Energy Evolution anticipates that 7 percent of personal sales would be EVs by 2025. While EV sales numbers have been volatile over the past several years, sales rates in Ontario in 2025 were approximately 7.3 percent, down from earlier highs. At-home and community charging infrastructure is important to EV adoption. As the proposed residential typologies include detached dwellings and townhomes, parking provided accessory to each unit can be expected to have, at a minimum, infrastructure to support Level 1 charging without additional demands on electrical servicing, which is sufficient for many EV drivers. Provision of Level 2 charging may be desirable and will be considered, as outlined below.
- The 2022 Origin-Destination survey found that daily mode shares in the suburban transect were 61 percent for automobile drivers, 18 percent for automobile passengers, six (6) percent for transit, eight (8) percent for walking, two (2) percent for cycling, and five (5) percent for other modes. The S1 Future Neighbourhood should aim to meet the 2030 mode share targets.
  - The draft CDP and land use plan outline an approach to transportation that emphasises safe connectivity and movement for pedestrians, cyclists, transit-users and motorists, and development of a 15-minute community.
  - The proposed walking and cycling networks provide strong access to planned higher-order transit.
  - Additional measures, including those undertaken by the City, will likely be required to achieve modal shares, as outlined below.

- Minto's success with waste diversion supports the Organics Resource Recovery Strategy outlined in Energy Evolution.

The primary constraints for Minto to adopt a target-based approach, more aggressive building energy requirements and novel sustainability approaches include:

- Cost premiums for higher performance construction negatively impacting housing affordability;
- Higher soft costs due to additional effort in application preparation and submission, as well as longer approvals timelines due to additional review of materials by staff and additional effort to ensure alignment on proposed measures with City staff across multiple departments; and,
- For ownership housing, limited household energy literacy among potential purchasers reduces the demand for high-performance homes, particularly where there is a premium in purchase price.

The proposed scenario, in conjunction with the potential approaches outlined below, will help address these constraints, ultimately supporting Ottawa's transition to a low-carbon city.

2.3 Potential Approaches

This section outlines a range of additional potential measures that may be explored as design and planning activities progress to further enhance community energy performance, reduce greenhouse gas emissions, and increase climate resilience identified in Scenario 4.

Embodied Carbon
As part of its sustainability strategy, Minto uses pre-fabricated components for townhouse construction and seeks to reduce construction waste. Additional approaches can include:

- Use of sustainably sourced and low-carbon materials (e.g. local timber) to reduce emissions associated with construction and transportation;
- Optimize structural framing to reduce the amount of timber used;
- Use/substitute lower Global Warming Potential insulations; and
- Work with contractors to reduce construction waste.

Passive Design Strategies
The land use breakdown for the S1 community includes just under 60 percent townhomes, with shared walls that minimize heat exchange to the exterior.

Additional passive design strategies to minimize energy use can include:

- Minimizing building articulation to reduce the exterior surface area and complex corners which can be more difficult to keep airtight;
- Use of shading, insulation, and landscaping to reduce heating and cooling loads; and
- Use glazing strategically (lower window-wall ratio) and employ high-performance glazing products with low solar heat gain coefficients.

Energy System Resiliency
Anticipated climate conditions, including higher winds, extended periods of extreme heat and wintertime precipitation falling as rain/freezing rain can all threaten energy infrastructure. Approaches to reduce exposure to these threats can include:

- High-performance building envelopes to maintain indoor temperature during heating/cooling system failures;
- Integrating projected climate conditions in mechanical and electrical building design; and
- Collaborate with Hydro Ottawa and Enbridge to discuss opportunities to mitigate climate risks.

Natural Services and Climate Resiliency

The S1 Future Neighbourhood leverages retention of Woodlots A and B, which will provide substantial ecosystem services with respect to heat island mitigation, stormwater management and air pollution. Additionally, EES will promote infiltration, supporting a healthy hydrology for the site. Additional approaches to leverage natural services and climate resiliency to reduce energy use and increase climate adaptation include:

- Maximize planting of large-canopy native trees, in locations with sufficient soil volumes to mitigate heat island effects, manage stormwater, and enhance community resilience;
- Consider integrating LID features into residential landscaping; and
- Design the SWM pond to maximize habitat potential.

Transportation

The draft CDP and proposed land use plan includes strong directions to provide direct, well-connected and safe pedestrian and cycling routes within the study area. Achieving the modal share targets set by the Climate Change Master Plan will require work by the City of Ottawa, including:

- City-initiated improvements to the pedestrian and cycling networks outside the study area, as noted in the Transportation Existing Conditions Report; and
- Construction of the Greenbank BRT and Kilbirnie Park and Ride and provision of regular, reliable transit service.

Additionally, continued build-out of commercial blocks outside the study area will be important to provide commercial amenities within a short walk or bicycle ride of the S1 Future Neighbourhoods.

It is recommended that Minto continue to monitor EV uptake as well as emerging technology (e.g. smart panels, load balancing technology) that allows for Level 2 residential EV charging without costly upsizing of electrical services.

Behaviour

Behavioural change is one of the most important components of efficient energy use. Opportunities exist to increase energy literacy and conservation through, for example:

- New Homeowner Information Packages with advice on minimizing home energy use and use of energy-saving features (e.g. heat pumps)
- Support of community programs (e.g. partnerships with other developers within the expansion lands to create educational initiatives at community centres, or storyboards at the woodlots identifying the carbon capture and storage and ecological services provided by the woodlot).

3. Conclusions

3.1 Implementation Measures and Monitoring Recommendations

The measures contained in this CEP are intended to serve as guidance for Minto, providing a framework to support energy efficiency, sustainability, and climate resiliency, where feasible. Adoption of any specific practices remains voluntary, with responsibility for implementation resting with the project proponents.

To support ongoing evaluation of the community's energy performance and climate resilience, it is recommended that implementation of energy, climate and sustainability measures be tracked over time. Monitoring may include periodic reviews of energy efficiency initiatives, documentation of implemented sustainability practices, and assessment of emerging technologies or policies. These activities would provide insight into the effectiveness of any implemented measures and inform future planning decisions.

3.2 Final Conclusion

This CEP provides an opportunity to assess the future S1 Future Neighbourhood energy plan, outline site context and risks, review planned strategies, and identify potential improvements. Critical risks include temperature volatility, shifting weather patterns, and increased extreme events. Minto has precedents implementing energy efficiency into previous projects and plans to apply its environmental commitments to this future community. Additional recommendations have been provided to further strengthen performance. The CEP similarly offers guidance to support voluntary adoption of energy-efficiency and resiliency practices.

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