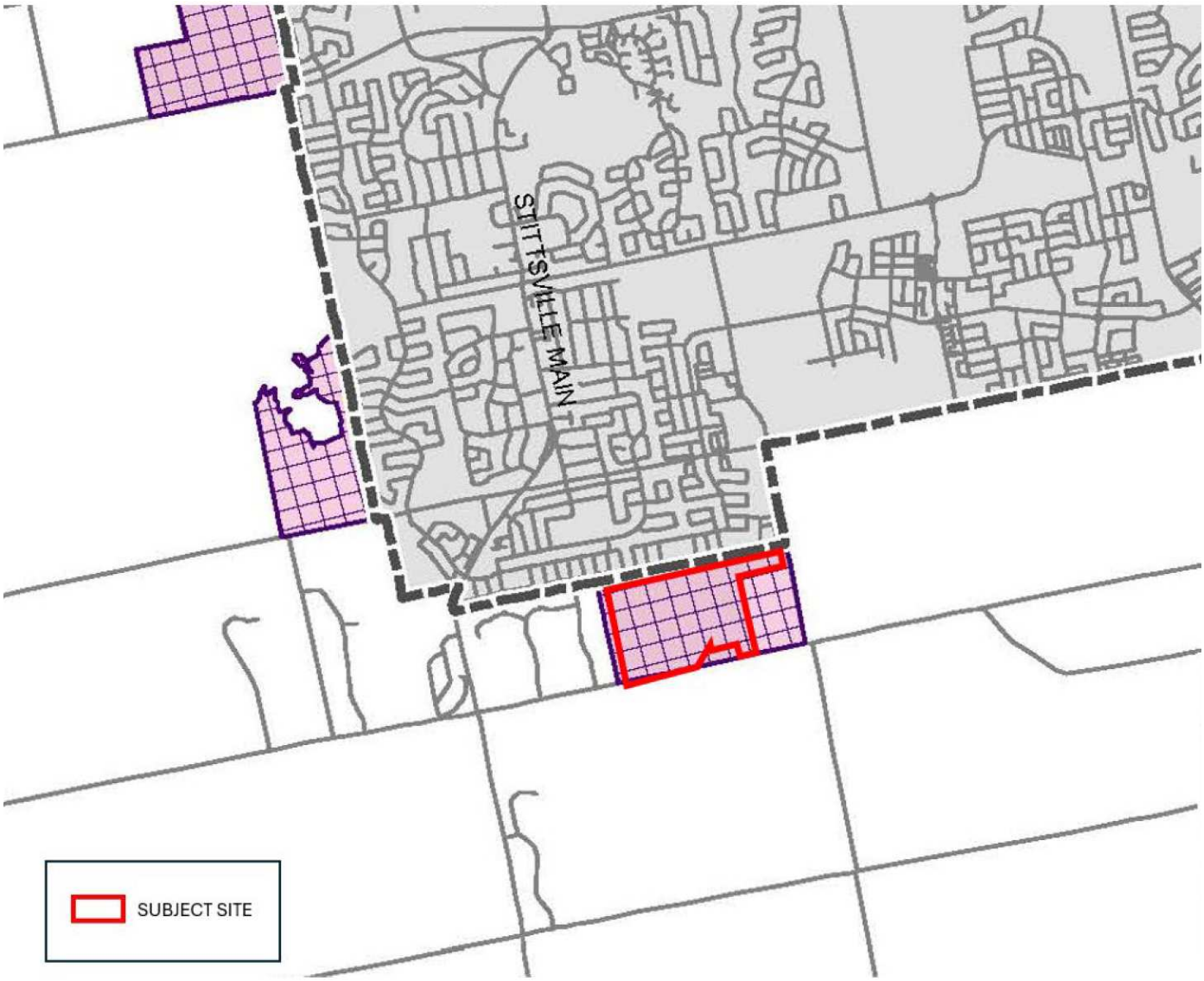
DECEMBER 3, 2025



STITTSVILLE SOUTH

COMMUNITY ENERGY PLAN BRIEF

Prepared for:

CAIVAN

Prepared by:

URBAN EQUATION

URBAN EQUATION

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December 3rd, 2025

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Attention: Sue Murphy

Dear Sue,

We are pleased to submit the Community Energy Plan Brief (CEP Brief) for Stittsville South for your review.

The development of these lands presents a unique opportunity to accommodate planned growth within the City of Ottawa through the development of a new community. This Brief has been prepared on behalf of Caivan.

The purpose of this document is to provide an update to the Community Energy Plan, by describing the short list of energy strategies being considered for the new Stittsville South community.

Should you have any questions, don't hesitate to reach out.

Sincerely,

Steve Dulmage
Director, Sustainability

1 Introduction

On April 24, 2019, Ottawa City Council declared a climate emergency to underscore scientific warnings that Canada is warming roughly twice as fast as the global average, raising local risks of flooding, heatwaves and costly infrastructure damage. This action was meant to "name, frame and deepen" the city's commitment to safeguarding its economy, ecosystems and community from climate change, particularly after record Ottawa River floods and other extreme weather events in the region.

Ottawa's building-sector decarbonization agenda is anchored in the City's Climate Change Master Plan (CCMP) and the companion Energy Evolution Strategy. Together they set a pathway to cut community-wide building emissions to *zero* by 2050. Energy Evolution is one of eight priorities in the Climate Change Master Plan – the City's overarching framework to reduce greenhouse gas emissions and respond to climate change imperatives. Its vision is to transform Ottawa into a thriving city powered by clean, renewable energy.

In addition to the climate crisis, Ottawa is also facing a housing crisis. The Canada Housing and Mortgage Corporation (CMHC) estimates that Canada needs approximately 3.5 million additional units by 2030 to restore affordability[1], with the Province of Ontario committing to building 1.5 million new units by 2031[2]. Building this much housing is, according to The Task Force for Housing and Climate, both a generational challenge and opportunity.

The Stittsville South development is addressing the housing crisis head on by helping Ottawa meet its housing needs. Furthermore, by leveraging its local, ABIC advanced manufacturing processes, Caivan is leaning into new and innovative ways to reduce the wider environmental impacts associated with homebuilding.

2 Description of Development

2.1 Development Overview

Stittsville South is planned to be a new residential community located in the western limits of the City of Ottawa. The 69-hectare Study Area is within the W-4 Stittsville Urban Expansion Area and designated in the Official Plan as a Future Neighbourhood. The Official Plan Amendment was approved by the Council on September 24, 2025, deleting the Future Neighbourhood overlay and designating the subject lands "Neighbourhood" within the Suburban (Wet) Transect Policy Area. In addition, the new Area Specific Policies are to guide development of the Stittsville South community.

The development is proceeding through a draft plan approval process. The subdivision is consistent with the approved OPA concept plan. The subdivision ties into existing infrastructure and roads to the community to the north. Retained and integrated with the proposed community plan, the Faulkner Drain and existing stormwater management pond will support the community's water quality functions and create an open space amenity with passive recreational uses. With the potential to expand on the recreational opportunities, a distinct

[1] https://www.cmhc-schl.gc.ca/professionals/housing-markets-data-and-research/housing-research/research-reports/accelerate-supply/housing-shortages-canada-updating-how-much-we-need-by-2030
[2] https://www.ontario.ca/page/tracking-housing-supply-progress

feature of Stittsville South is the hydro corridor that intersects the community, creating west and south development pockets. Stittsville South offers a variety of open spaces, such as a hierarchy of park spaces and stormwater management facilities, which are strategically located adjacent to the hydro corridor, effectively expanding the open space network and connecting the two pockets to create a holistic community.

The Stittsville South development is being guided by opportunities for innovation, sustainability, connectivity, and accessibility. It reflects the objectives set out in The New Official Plan from the City of Ottawa, Urban Design Guidelines for Greenfield Neighbourhoods (Ottawa, 2007), Building Better and Smarter Suburbs (Ottawa, 2015), Designing Neighbourhood Collector Streets (Ottawa, 2019), Park Development Manual (Ottawa, 2017), and Traffic Calming Design Guidelines (Ottawa, 2019).

This CEP Brief outlines the strategies being considered for Stittsville South. Due to the stage of design and adjacency to existing infrastructure, many strategies will not be feasible for this development. However, the CEP, and this CEP Brief, will continue serving as a guide to future Caivan developments.

The CEP Brief also reflects recent Life Cycle Assessments (LCA) completed for several Caivan housing typologies. While this CEP Brief focusses on operational emissions, it also includes some of the strategies being considered to reduce upfront carbon emissions associated with new construction. The LCA results cannot be shared due to proprietary requirements.

2.2 Sustainability Drivers

Caivan is setting a new standard for sustainable residential development in Ottawa through its commitment to environmental stewardship and innovation. Central to this commitment is the company's Advanced Building Innovation Centre (ABIC), a 105,000-square-foot prefabrication facility that embodies their ethos of innovation, sustainability and responsible future-forward construction.

Unlike conventional building practices that generate significant material waste and emissions, Caivan’s processes eliminate waste entirely during structural assembly. Their zero-waste facility ensures optimal use of materials through precise digital design, cataloging, and cutting technique that drastically reduce landfill contributions compared to traditional methods.

Each home component is engineered with millimeter-level accuracy, resulting in airtight, high-performance building envelopes that contribute to greater energy efficiency. By shifting much of the construction process off-site, Caivan also minimizes the carbon footprint associated with on-site building activity.

For the Stittsville South project, the ABIC fully electrified production line, the use of sustainably sourced and kiln-dried SPF lumber, and a streamlined delivery system will help eliminate the thousands of vehicle trips and associated emissions commonly required for conventional construction. Additionally, ABIC-built homes arrive at site fully enclosed, minimizing the need for temporary propane heating and reducing the project’s overall carbon impact.

2.3 Development Characteristics

The CEP Brief is based on the Urban Design Brief as of October 2025, prepared for the draft plan of subdivision. (see Figure 1).

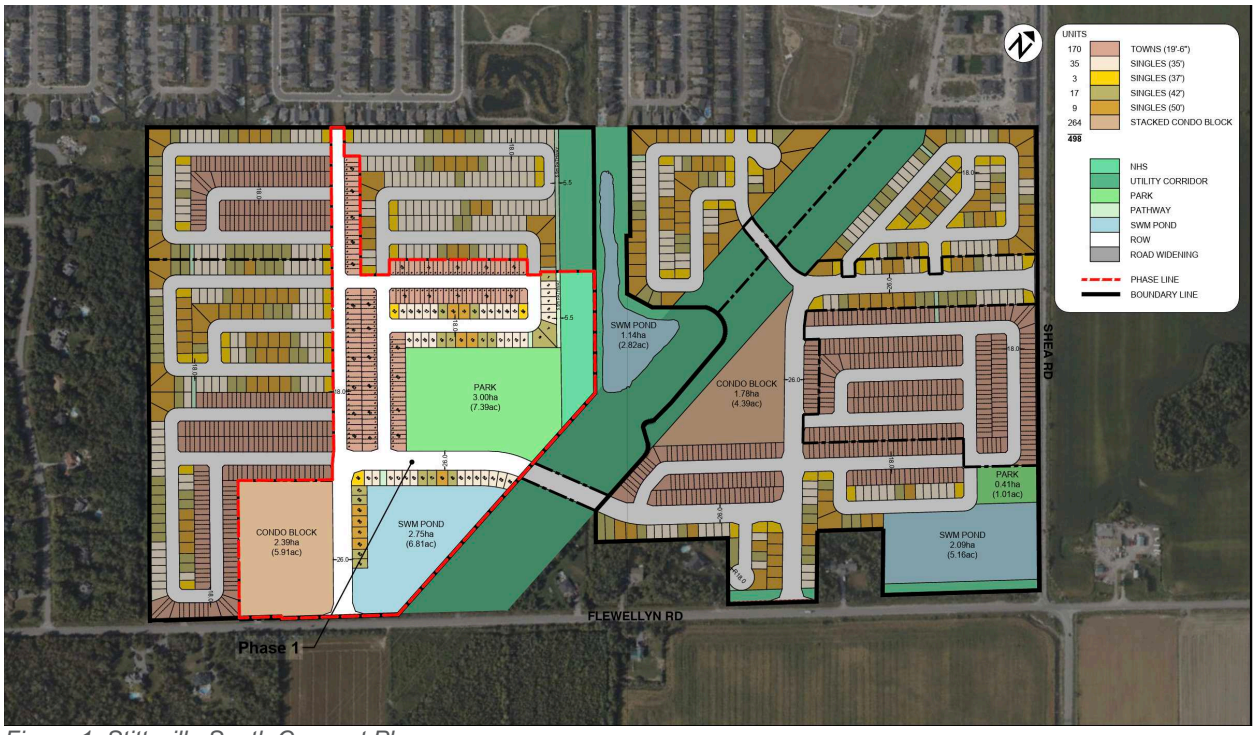

Figure 1: Stittsville South Concept Plan

The community design plan brief is defined by the following key components:

1. **Access and Visibility to Surrounding Natural Areas** is recognized as important function of enhanced livability. This will be achieved through retention and enhancement of a wooded buffer area along the Faulkner drain; a linked hydro corridor and open space system that provides visual and physical access.
2. **Fine-grained Network of Streets** with logical connections to adjacent existing communities including pedestrian connectivity that will provide an integrated neighbourhood.
3. **Integrated Active and Passive Park and Open Spaces** provide a robust system for all ages and abilities to have all season access.
4. **High Quality and Attractive Built Form** will be provided through a variety of new housing forms and designs. The built form will showcase Cavan's commitment to quality architecture and thoughtful community design.

2.3.1 Preliminary Development Statistics and Phasing

The community will primarily showcase a mix of single detached and standard townhomes strategically interspersed, as well as stacked townhomes within the medium density blocks. Preliminary projections (see Table 1: Stittsville Development Statistics) have been prepared based on the Urban Design Brief prepared for the application. Best available information has

been used to inform this CEP, including technical engineering reports. The following assumptions have been used to define areas:

- New Land Area includes lot area + 50% of ROW in front of lot.
- Floor areas include the total area of each floor whether located above, at, or below grade per the Community Energy Plan Terms of Reference.
- Estimated floor area taken from an average unit size.

Table 1: Stittsville Preliminary Development Statistics

Density Zone	Building Archetype	Net Land Area (% of total)	Total Units (approx.)	Floor Area Per Unit (m^2) (estimated)	Total Floor Area (m^2) (estimated)
Low Density	Single Detached	36	667	263	175,421
	Standard Townhome	24	837	153	128,061
	Stacked Townhome	7	550	89.5	49,225
Total	**-**	**-**	**2054**	-	**352,707**

To better analyze the energy and carbon data within the context of the CEP Terms of Reference (TOR), Stittsville South's development characteristics were mapped onto the HPDS building archetypes (see Table 2: Stittsville Development Statistics – HPDS Archetypes).

It was assumed that back-to-back and stacked townhouses qualified as low-rise apartments, given their enhanced density over the traditional townhouse archetype and given their treatment as apartments in other applicable City of Ottawa processes, like Development Charge collection.

Table 2: Stittsville South Development Statistics - HPDS Archetypes

Ottawa HPDS Archetypes	Stittsville South Building Archetype	Floor Area (m^2)
Singles, Townhomes	Semi and Single Detached Family Homes, Townhomes and Stacked Towns.	352,707
Total	-	**352,707**

It is assumed that Stittsville South will be steadily constructed over a seven-year period between 2027 and 2033.

3 Existing Context

Currently, the Subject Site generally consists of undeveloped, vacant land. It is bordered by Flewellyn Road to the south, residential dwellings to the west, a residential development to the north, and agricultural land and residential dwellings to the east.

The site gradually slopes downward from the northwest to the southeast. The site also gradually slopes downward from the northeast and southwest to the central portion of the site, resulting in a shallow valley striking northwest southeast. There is an existing stormwater management

facility centrally located on the subject lands, as well as the Faulkner Drain that runs north-south from the hydro corridor to Flewellyn Road which then runs east-west parallel to Flewellyn Road.

The property parcel of 5993 Flewellyn Road is void of trees and vegetation, whereas the property parcels comprising 6070 & 6115 Flewellyn Road are comprised of various treed areas. Further, an existing garage/storage building is located on the 6115 Flewellyn Road property.

4 Objectives of the Community Energy Plan Brief

The purpose of the CEP Brief is to summarize how a proposed subdivision or development will meet energy-efficiency, emissions-reduction, and resiliency goals, while demonstrating alignment with the existing approved Community Energy Plan and applicable policy frameworks. At each registration, Caivan will continue to explore the opportunities outlined in this CEP Brief.

5 Energy Use and Carbon Emissions

5.1 Proposed Design Scenario (Scenario 4)

Table 3 outlines the proposed targeted thermal energy demand intensity (TEDI), energy use intensity (EUI) and greenhouse gas intensity (GHGI) targets for Stittsville South. These targets align with modelling conducted on archetype buildings within the typologies being constructed at Stittsville South.

Table 3: Proposed Scenario – Stittsville South

Building Archetype	EUI (kWh/m^2)	TEDI (kWh/m^2)	GHGI (kgCO2$_e$/m^2)
Single Detached	160	57	19
Townhouse	113	33	13
Apartment (<6 Storeys)	108	10	12

5.2 Mitigation Strategies

5.2.1 Buildings

This section introduces a concise and targeted list of strategies that are currently being explored for their potential to reduce energy consumption and greenhouse gas emissions. It focuses on thermal energy use, overall energy demand, and GHG-reduction measures.

While many of the technologies and opportunities listed below may not be economically viable today, Caivan recognizes that technology is changing quickly. It is committed to monitoring the strategies below at each phase of the development to determine if and when deployment is possible.

Thermal Energy Consumption:

- Increased insulation to improve envelope performance.
- High performance glazing products with low solar heat gain coefficients
- Airtightness measures.

Energy Consumption:

- EnergySTAR appliances.
- High-efficiency LED lighting.
- Daylight and occupancy controls.
- Low flow plumbing fixtures to reduce domestic hot water consumption.
- Reduced domestic hot water energy use through low flow plumbing fixtures.
- Cold climate air source heat pumps.

GHG mitigation strategies:

- Cold climate heat pumps
- Dedicated ground source heat pumps on a home-by-home basis.
- Hybrid systems that leverage both heat pump technology and natural gas.

LED lighting and EnergySTAR appliances are already part of Caivan's standard specifications.

5.2.2 Transportation Network

Stittsville South is undertaking the following mitigation strategies related to transportation (please see the Transportation Report for more detailed information).

- Connected and Active Transportation Networks: The proponent has provided this through the design of the subdivision with 4 connections to existing roadways to ensure connectiveness. Sidewalks along Flewellyn Road and Shea Road are required as a condition of the draft plan.
- Strong Transit Connection: The proponent will be entering into a Transit Service Agreement with the City to provide strong transit connection from day one.

Stittsville South is monitoring the following mitigation strategy related to transportation (please see the Transportation Report for more detailed information).

- Electric Vehicle Charging Availability: This will be explored for the medium density blocks and local commercial block.

This transportation strategy would be monitored for viability for future phases as it's not feasible in phase 1.

5.2.3 Embodied Carbon

The following embodied carbon reduction strategies are under consideration for future phases of Stittsville South. Further investigation is underway to confirm the economic viability of these measures, and potential timing to implement them.

- Continue investigating ways in which modular and prefabricated components, such as those currently constructed at the Caivan AIBC manufacturing facility, can lower embodied carbon even further.
- Use lower carbon insulation.
- Use low-carbon concrete, verified by Environmental Product Declarations (EPDs), for specific site uses.
- Source higher recycled content in rebar.

6 Energy Resilience

As climate change progresses and weather events become more extreme and unpredictable, it will be critical for energy systems to be resilient to these changes. The shift towards higher average annual temperatures can lead to lower heating and higher cooling loads over the life of the building. Using up to date, or even predicted, weather data when doing early analysis can allow the project team to consider how the design will perform over the life of the building.

With increasing global temperatures, extreme weather events require designs to carefully evaluate back-up power solutions for emergency (life safety) requirements in certain buildings. Caivan continues to explore resiliency measures for the Stittsville South community.

7 Implementation Measuring and Monitoring

At each stage of registration, the feasibility of the strategies outlined in this CEP Brief will be further evaluated to find ways to balance the affordability of homes, with the need to reduce emissions.

8 Conclusions

This CEP Brief remains a working document that will continue to inform the design of Stittsville South and future Caivan developments.

This report was completed in draft by Urban Equation with inputs from Steve Dulmage, Director, Fin MacDonald, Senior Consultant, Sarah Hasan, Analyst and Atiq Khan, Analyst.